Facing Future: The Current State of Hopi Sustenance and Farming

2004 Hopi Community Food Assessment Report

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They asked permission to live there with him. He did not answer directly, for within them he saw evil. It is up to you, he said. I have nothing here. My life is simple. All I have is my planting stick and my corn. If you are willing to live as I do, and follow my instructions, the life plan which I shall give you, you may live here with me, and take care of the land. Then you shall have a long, happy, fruitful life.
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Dedication

I’ Ferrell Secakukut aw tungwani’ta, hongviyat niikyang suftaq qatsiyat aw.i’. Tuftsiwni’at niiqa, hak sutsef angq peq ahoy hiikyat ooviningwu. Pu’ tuftsiwni’taq, I’ nami’nangwat awksa himu aw antingwunöq’ö.

Dedicated to Ferrell Secakuku for having the humility and courage to believe that there is something worth returning to. And for trusting that by working together the journey can one day happen.
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Hopi Introduction
Executive Summary

Background

For nearly 2000 years Hopi have lived and farmed on the Colorado Plateau. In this time the ancestral people evolved a set of farming and food practices so sophisticated and complex that large communities could be sustained over time in an unforgiving and arid environment. About a hundred years ago, however, this situation would change dramatically. The boarding school experience removed children from their homes so that they could no longer learn the traditional farming practices. Division in leadership led to the degradation of farm land (as happened in the Oraibi valley in 1910). The trading post economy led to the introduction of white flour as a vehicle for exchange in place of corn meal. Wage jobs began to draw community members away from sustenance farming. And the paving of reservation roads increased easy access to food processed and grown off reservation. More importantly, the growing cash economy in combination with many other factors has led to a dramatic change in dietary practice and habit that have had dramatic consequences for the overall health and well being of Hopi. Simply put, in the long history that is Hopi, the current generation may be in danger of becoming the first that fundamentally does not know how to feed itself.

Living in a time of relative abundance, it is easy to believe that our food choices are in fact fair and equitable choices. We would like to believe that we are able to eat whatever we want, and furthermore that what we want is probably good for us. We might also assume that what we eat hasn’t changed that much from what our parents or grandparents once ate, and that it is all grown or produced as it once was before. The reality though is somewhat different. Even at Hopi there are gross inequalities as to what food is actually available. Often times we can’t actually tell where our food was grown or produced. In most cases it was grown (or more likely manufactured) in places far from Hopi and by people other than us.

In giving up the responsibility of growing of food and the stewardship of the land that is required, Hopi has broken a covenant. And the consequences are becoming evident. It requires a great deal of effort to recognize and understand the ways in which farming, transportation, food stores, and economics can have a direct, though sometimes unobserved, impact on the overall health and well-being of a community. Although most Hopi have access to food, we must ask whether it is healthy food, food that benefits both their bodies as well as the overall social, emotional, and economic health of the community.

This survey was conceived as a first step in trying to answer that question. As such, it may represent one of the more comprehensive surveys of contemporary Hopi food and farming practices since the transition of the Hopi food economy. The preliminary picture suggested by the data is revealing. Hopi grow and consume less of their own food than ever before. Of the food that is bought, 71% of all food purchasing
dollars leave the community and are spent off reservation. And the consequences are severe: 74% of the population are overweight or obese with community members experiencing correspondingly high incident rates of collateral diseases. In addition, socially disadvantaged, including elders, low income households, and the underemployed are less likely to have access to quality food.

This report describes a community health crisis, but one that unfortunately cannot be solved by health care or a health care system alone. It is a problem that is fundamentally rooted in the community, as well as in the decisions of individual community members, and the infrastructure and systems that help shape those decisions. Hopi readers may want to consider how our transportation and economic infrastructure in effect determine what food choices are available, and whether these choices are healthy, fair, and equitable for all Hopi.

Hopi, of course, did not consciously choose for it to be this way. They can, however, choose for it to be different. These circumstances are the result, in part, of larger forces affecting Hopi communities. By becoming aware of these forces and choosing to make decisions that will increase community health and well-being, Hopi can reverse the current trends. It will require the work of tribal and village governments, schools, stores and other institutions. Most of all, it will require the will, action and conscious choices of community members themselves.

Survey Demographics

In the summer of 2004, the survey was delivered to 419 individuals, representing 5% of the on-reservation population at the time. Taking into account the household size reported by each respondent, the survey data reflected the food consumption patterns of approximately 1723 Hopi, 19% of the on-reservation population.

- The respondents ranged in age from 17 to over 60. The majority (79%) of the respondents were between 21 and 49 years old. 65% of the respondents were female and 35% were male.
- The respondents represented all Hopi villages as well as Keams Canyon, Tuba City, and some of the outlying Navajo chapter houses.

Economic Data

The employment and salary information reported by the respondents is in line with information gathered by the Tribal Office of Economic Development. It should be noted that although the unemployment rate is high by off-reservation standards, it is lower than in other remote and rural tribal communities. This may be a consequence of traditional Hopi values of self-reliance and self-sufficiency. As well, although a
large number of respondents reported low household incomes, this does not reflect the high amount of
informal sharing between clan and family members that can serve as a strong social and economic net.

- 26% of all respondents over the age of 20 were unemployed.
- 56% of respondents older than 20 reported household incomes greater than $12,000/year, while
  35% reported incomes less than the federal poverty threshold of $12,000/year.

Food Shopping Patterns

The shopping patterns at Hopi reveal some of the grave food inequities and challenges that remote tribal
communities must grapple with. The vast majority of community members were dissatisfied with the food
choices available on reservation and shopped accordingly. Socially disadvantaged groups - those indi-
viduals who had the least access to alternative shopping opportunities - were also more likely to be satis-
fied with local stores.

The total size of the Hopi food economy is between $18 and $22 million dollars a year. This includes the
cost of food as well as the amount spent by Hopi to bring food on reservation, and the value of food grown
locally. If we include the health care costs associated with diet-related illnesses, the total annual cost of
food at Hopi may very well exceed $35 million dollars per year.

Of particular interest, Hopi pay a total of 6.9 million dollars a year to personally transport food into their
communities, in effect paying a 66% premium for all food purchased off reservation (vs. a 50% premium
for food purchased from other villages at Hopi). Individual Hopi shoppers pay on average an extra
$2,700/year to bring food into their homes and communities.

Typically stores bear the cost of food transportation and distribution within the local community. In the
case of Hopi, however, the burden of cost, energy, and time of transporting food to the Hopi community is
shouldered by individual households who must drive great distances just to procure food. The severe
dependence on outside stores for food, and the incumbent costs born by individual community members
amounts to a loss of community sovereignty.

Hopi spend in total between 8.1 and 11.2 million dollars on food each year. The amount of money spent
off-reservation for food is not insignificant: 71% of all food dollars -- totaling between 5.8 and 8 million
dollars each year -- were spent off-reservation, an amount equivalent to the royalties that the Hopi Tribe
formally received from Peabody Coal. Given the multiplier affect associated with spending money lo-
{}
offered better prices and selection, suggesting a clear opportunity for local stores to survey community members to better identify their food needs and to work with community members to expand and adapt their offerings.

- Only 16% of respondents felt that local stores offered a variety of foods at good prices.
- In addition, 84% of respondents said they would shop locally if stores offered better choices.
- On-reservation Hopi spent in total between $8.1 and $11.2 million dollars each year on food. It should be noted that all of these food dollars whether spent locally or off-reservation, were used to buy food that was grown, processed and packaged elsewhere.
- Although the majority of shopping trips were local, of all the money spent on food, 71% - between 5.8 and 8 million dollars -- were spent off reservation.
- On average, respondents reported spending $15.34 per trip to local stores compared to $54.96 per trip to off-reservation stores.
- Hopi travel a total of 15 million miles each year to buy food off-reservation or in other villages. With current transportation costs Hopi spend 6.9 million dollars each year to bring food home.
- On average, Hopi shoppers spend 100 hours a year driving to stores and back.
- Hopi release nearly 7000 tons of carbon dioxide into the atmosphere each year because of food transportation. Each Hopi would need to plant 5 trees a year to offset this carbon dioxide.

Respondents relied on local stores primarily to purchase snacks and beverages, while going off-reservation to purchase meat, fruits and vegetables. Ironically, these are the food items that are most readily grown and produced at home, again revealing an opportunity for restoring a local system for producing and distributing food.

Community members were largely unconcerned about where food came from or whether or not it was locally grown. It may be that because of remoteness, the community is less aware how it is tied into the global food system and the potential impacts to health, the environment and the local economy. In addition, many Hopi may not be aware of the ways in which a global food system may be in conflict with traditional Hopi values. Consequently there is an opportunity to educate community members about the health and community benefits of eating closer to home and in season.

Price was the primary determinant in what respondents chose to purchase. They also reported that the primary reason for not eating more healthy foods were price and availability, two factors which can only be addressed systematically at the community level.
The vast majority of respondents were interested in seeing a Hopi Farmers Market. Lastly, approximately half of the respondents definitively wanted a chain store at Hopi. Other respondents expressed ambivalence or were concerned about disruptions to Hopi culture. There are many reasons to have a store or food enterprises at Hopi, including economic development, increased access to quality food, and overall convenience. But if decisions are made carelessly, such enterprises can also have an adverse effect – large chain stores can drain money away from the local economy or reduce community self-sufficiency. Likewise, fast-food restaurants can have a negative impact on community and cultural health. Decisions should be made consciously and with full consideration of the range of issues and possible consequences. In short, to paraphrase the words of respondents, any food stores or development of a local food economy should affirm cultural values, should be locally run, keep dollars at Hopi and benefit the health of individuals and the community.

<table>
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<tr>
<th><strong>Food Access</strong></th>
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<td>Across the board, socially disadvantaged groups including those without transportation, elders, the unemployed and those from low-income families, had less access to quality, reasonably priced, nutritious food. Socially disadvantaged groups had greater difficulty in getting to stores than other sectors of the population. As a consequence they were more likely to shop at on-reservation stores with striking consequences: the more money respondents spent on reservation, the more likely they were to purchase increasing amounts of soda.</td>
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<td><strong>Food Access</strong></td>
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<tr>
<td><strong>•</strong> The primary reasons cited by respondents for going off-reservation to purchase food were better prices, better selection, and overall freshness and quality.</td>
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<tr>
<td><strong>•</strong> The primary reason for shopping on-reservation was close proximity to home. Less than 20% of respondents shopped locally because of price, selection, or quality of the food.</td>
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<tr>
<td><strong>•</strong> The primary consideration in what people chose to purchase was price. Brand, health and nutrition, ease of preparation and habit/taste were secondary concerns. Least important was whether it was locally or organically grown.</td>
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<tr>
<td><strong>•</strong> The items most commonly purchased on-reservation were snacks and beverages. Local stores in essence serve as snack and soda outlets.</td>
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<tr>
<td><strong>•</strong> The most frequent items to be purchased off-reservation were meat, fruits and vegetables. These are the items most easily grown at home.</td>
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<tr>
<td><strong>•</strong> 86% of respondents definitively stated that they would like to see a Farmers Market at Hopi.</td>
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<tr>
<td><strong>•</strong> Half of the respondents stated that they would like to see a large chain store at Hopi. 12% were opposed or cautionary, raising concerns about cultural disintegration and siphoning money away from the reservation.</td>
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Community and tribal decision makers should consider how low-income families are penalized by poor access to healthy food choices. Possible action could include incentives for the establishment of locally run markets that offer a variety of healthy and culturally appropriate food choices.

- Households with incomes greater than $12,000/year spent on average 22% more per capita on food.
- Elders (older than 60), the unemployed, and individuals from low income households had twice as much difficulty in getting to stores as other respondents. Low income families were 50% more likely to shop at local stores that may offer a smaller selection of foods at higher prices.

**Food Assistance**

Despite relatively high unemployment rates and low household incomes, in general survey respondents did not seem to take advantage of food assistance programs. Although 40% of all households reported low incomes less than $12,000 per year, only 12%-14% of individuals reported receiving WIC, Food Stamps, or commodities.

The low participation in food assistance programs may reflect community self-sufficiency and a desire not to fall into habits of dependency, as well as a possible mistrust of federal or outside institutions or programs. Conversely, it could result in possible food insecurity or poor access to food for lower income families.

- 12% of those surveyed received Food Stamps, 14% were WIC recipients, and less than 5% received commodities.
- Only half of the families with incomes less than $12,000 receive some form of food assistance.

**Soda Consumption**

The survey indicated that Hopi consume large amounts of soda with potential impacts to health and well-being. On average the respondents consumed 2.27 sodas per day with some respondents drinking as many as 12 per day. Based on the survey data, on-reservation Hopi consume between 5.3 and 7.4 million sodas each year.

Soda consumption (and its impacts) are more likely to affect certain segments of the population. In particular, the socially disadvantaged were twice as likely to drink large quantities of soda and on average consumed 40% more soda each day. As well, residents who shop more frequently at local stores also pur-
chase more soda, suggesting that their consumption patterns would shift if presented with other alternatives.

Given the extreme levels and potential health impacts, community leaders may well consider creative strategies for addressing soda consumption on-reservation. Tribal and community leaders should remember that this beverage was largely unavailable on reservation as recently as 60 years ago, with consumption increasing dramatically within the last 25-30 years. If there were one single dietary change Hopi could make to reverse their health statistics it would be to reduce the amount of soda consumed by individuals and families.

- Hopi consume a total of between 5.3 and 7.4 million sodas per year.
- If the equivalent number of cans were lined up at on Highway 264, they would stretch from the Hopi Cultural Center to Albuquerque.
- Individuals in households with incomes <$12,000/year drink between 31% and 38% more soda than higher income families.

Community Health

Diet and lifestyle changes are the leading cause of the diseases most commonly afflicting Hopi. High blood pressure, diabetes, and obesity were the most common diseases with between 15 and 21% of all respondents having been formally diagnosed with these afflictions.

In general respondents between the ages of 40 and 59 had the highest incident rates for obesity and high cholesterol. High blood pressure and diabetes were most prevalent among respondents older than 40.

The near epidemic rates of obesity reported by other surveys were affirmed by the 2004 assessment. The majority of the respondents had BMI levels that made them overweight or obese. In addition respondents who had been diagnosed as obese were 4-6 times more likely to experience other diseases.

60% of the respondents with BMIs in the obese range reported that they had not been formally diagnosed as obese. This is significant, in part, because those respondents who had been diagnosed demonstrated a greater knowledge of obesity and the consequent health risks. In addition, males, elders, youth, and individuals from low income families had significantly less knowledge of obesity and the health consequences.

In short, data suggests that education, outreach, and diagnosis can have a big effect in building understanding of obesity and diet-related diseases, but that more targeted outreach is needed in the community.
• 21% of all respondents had been diagnosed with high-blood pressure, 19% from diabetes, and 15% from obesity.

• Although it may not be statistically significant, the survey did show correlation between cancer and Moencopi. Of the 6 respondents who reported cancer, 4 were from Moencopi. All other villages reported little or no cancer.

• Respondents diagnosed as obese were 2-6 times as likely to experience high blood pressure, diabetes, high cholesterol, strokes and heart disease.

• 76% of the population had BMI levels indicating they were overweight or obese.

• Respondents between the ages of 21 and 59 were the most likely to be overweight or obese.

• 60% of respondents with BMIs in the obese range had not been formally diagnosed as obese.

• Respondents who had been diagnosed as obese were more likely to have an understanding of obesity and diabetes.

• Unemployed and low income respondents were 2-3 times less likely to have an understanding of diabetes and obesity.

• More than a quarter of respondents who were overweight did not think they were. Respondents who had been diagnosed as obese were more likely to have a correct understanding of their weight.

**Farming and Local Food Consumption**

Many of the responses pointed to a decline in farming traditions at Hopi. While at one time Hopi was almost entirely food self-sufficient, presently less than a third of the respondents farmed. The cultural and health consequences for Hopi are considerable. If farming is indeed the foundation of Hopi cultural and religious life, community leaders may well want to consider what it means if the majority of all food grown is produced elsewhere. Moreover, what steps are necessary if community members wish to reverse this trend?

Respondents also cited lack of water and access to productive lands as impediments to farming. Interestingly, respondents who did not farm were 10 times as likely to state that access to land was an issue. The challenges here go beyond village politics. Large scale changes to land management practices (including grazing, roads, and engineering infrastructure in flood plains) over the last 60 years have altered how water moves in and across the landscape. The cutting present in each of the Tusayan washes may have resulted in a drop in the water table that may have led to once fertile fields now being unproductive. Such challenges cannot be addressed unless community members become educated about healthy land and
resource management and village and tribal decision makers prioritize the use of land for agrarian purposes.

Perhaps most importantly, though many respondents said that youth were not interested in learning about Hopi farming and foods, youth themselves answered quite differently: nearly 75% said they were interested in learning. Across all age groups, respondents stated repeatedly that older generations need to work harder to pass on knowledge about traditional farming and food.

Contemporary Hopi youth face a considerable challenge. The future of Hopi farming depends on them. The older generation, however, face their own challenge as well. Those who did not learn about farming when they were growing up must find ways to learn themselves and encourage youth to learn. And those who grew up in farming families must learn how to pass on traditions under new conditions: it may no longer be enough to allow youth to passively absorb knowledge about food and farming. With less families farming than ever before, and with so many other forces competing for attention, we can’t simply assume youth will absorb information on their own and then fault them if they don’t. Unlike in previous times we may now need to actively and consciously work to pass on traditional farming knowledge.

- 28% of respondents said that they still farm or keep a food producing garden. 39% of males reported that they farmed.
- Employed males were more than twice as likely to farm as unemployed males.
- Farming is most prevalent at Third Mesa and declines steadily moving toward eastward.
- The top three impediments to gardening or farming were lack of water, time, and access to land.
- Those who did not farm were 10 times more likely to cite access to land as an issue.
- Only 22% of respondents said that more than a quarter of their food was grown locally by themselves or by clan relatives.
- Although farming trends were similar across all demographic groups, socially disadvantaged respondents reported that they consumed more locally grown food. This could be the result of redistribution of food through clan sharing.
- 52% of respondents felt that youth were interested in Hopi food traditions. Among youth, however, 75% percent reported that they were interested in learning about Hopi food and farming traditions.
Recommendations

Culturally distinct and geographically isolated, Hopi has sufficient cause to restore the local food and farming practices that have sustained it for so long. We need to recognize, however, that our food choices are often shaped by large forces that supersede the power of any single individual. To support and revitalize a local food culture at Hopi will require cooperation between villages, tribal agencies and non-governmental organizations. Putting aside differences and seeking solutions that accommodate differing points of view will be necessary. Unlike other larger communities, Hopi is in a unique position to affect positive change within a short period of time. Hopi is only two generations removed from a strong local food system. Returning to such a culture of self-sufficiency may in fact be the easiest way forward.

Recommendations have been broken out to address specific policy makers and constituents. We urge you as a reader of this report to examine the different roles you serve in the community and to examine in what ways you personally can take meaningful steps toward restoring a healthy diet and food habits here at Hopi. As individuals we have allowed the current state of affairs to develop as they have. It will be up to us as individuals to change it for the better.

Hopi Villages

Village leaders, boards and community service administrators are able to encourage the revitalization of village farming areas, as well as support the development of village-based stores and food enterprises. Since so much community activity occurs at the village level, the villages can work to encourage and support activity in their farming areas. Possible action includes:

Education and Outreach

1. Host community listening sessions on supporting Hopi farming and restoring a local food system.
2. Host workshops on neveni (wild foods).
3. Support community greenhouses or hoop houses as season extenders for producing kitchen vegetables.

Programs

4. Sponsor programs through village administrations to revitalize village garden and spring areas.
5. Establish farming programs and community gardens as part of the village youth programs.
6. Through youth and elder programs encourage intergenerational sharing about food and farming practices. Encourage elders to reach out to youth to teach them about Hopi food and farming.

Land Use
7. Support planting in traditional clan farming areas.
8. Re-establish village orchard areas that can be shared by village and clan members.
9. Redirect large construction projects away from farm lands or flood plains.
10. Encourage restoration of degraded riparian and wash areas that are within village boundaries.

**Community Enterprise**

11. Support village-based stores that are Hopi-owned and that provide locally produced food or healthy food choices at a reasonable cost. This could include the development of community stores, food purchasing cooperatives, or community food enterprises (community kitchens).

**Tribal Government**

The Hopi Tribe can establish broad policy guidelines and establish programs that would support the re-establishment of Hopi farming practices and strengthen local food production. Specific activities could include:

**Information Gathering**

1. Further assess local food availability and the secondary economic impact of encouraging local food production.
2. Conduct a comprehensive survey to better determine how many Hopi families presently farm.

**Policy and Planning**

3. Establish an interagency community-based Food and Agricultural Policy Council that would establish policy and priorities that would strengthen the local food system.
4. Develop a tribal plan for building a local food “economy” at Hopi in 25 years in which a majority of all food consumed is grown and shared locally.
5. Develop policies and guidelines for local stores and restaurants that support local health and the creation of a strong local economy (i.e. do not encourage outside chain stores or franchises that can drain money away from the local economy).
6. Provide incentives and possible subsidies to support the creation of local food enterprises (canning, value added products, restaurants, etc.) to retain Hopi food dollars at home.
7. Establish policy, guidelines and incentives to reduce the sale of sodas at on-reservation stores.
8. Structure on-reservation jobs and employment to accommodate farming activities during the growing season.

**Resource Management**

9. Prioritize agricultural activities (over ranching) within the Department of Natural Resources.
10. Preserve and maintain water resources, including washes, draws, and spring sites, for agricultural purposes.
11. Ensure that road construction and infrastructure improvements take into account drainages and support the collection and low impact redirection of water to support agricultural activities.

**Education and Outreach**

12. Host a reservation-wide summit to develop strategies for encouraging local food production and supporting the expansion of local food stores and food enterprises.

13. Encourage Hopi to purchase foods locally and keep their food dollars at home.

14. Work with Department of Economic Services to conduct stronger outreach to eligible community members.

15. Support agricultural activities through employment services and workforce training (e.g. Workforce Investment Act).

16. Encourage farming activities and agricultural training among incarcerated community members.

17. Provide food education and outreach through the Department of Economic Services. Participate in the Elderly and WIC Farmers Market Nutrition (FMNP) program.

**Health Care Services**

Hopi Health Care Center, Hopi Health and Human Services and other local health providers are in a unique position to offer education about healthy food practices. Dietary habits are notoriously difficult to change and will require a sustained effort and collaboration among multiple agencies and institutions. Specific recommendations include:

**Information Gathering**

1. Establishing Food Security and Food Sovereignty Indicators for Hopi. These could include measures like numbers of acres under cultivation, diabetes and obesity rates, WIC participation rates, etc. Metrics could be used to track progress toward gaining greater food self-sufficiency at Hopi.

**Education and Outreach**

2. Encouraging traditional food practices through outreach and education.

3. Offering healthy-cooking or “whole foods” cooking classes through the Special Diabetes Program, Community Health Representatives, Women’s Health Program, and the HHCC Health Promotions and Disease Prevention department.

4. Conduct food education to help lower income families stretch their food dollars (ie purchasing whole foods vs. processed foods).

5. Conduct education and outreach on body image since there are widely differing perceptions on what constitutes a healthy body size.
6. Launch a reservation-wide, inter-agency mass education campaign on obesity and the potential health complications with the goal of ensuring that 90% of the adolescent and adult population know their BMI and understand the health risks of being overweight or obese.

7. Provide more health education for men and encourage men to be checked for health and weight.

8. Provide targeted outreach and education to economically under-served groups since they are more likely to not have knowledge about obesity and the related health risks.

9. Expand health education and outreach about traditional foods, food practices, obesity and diabetes to youth.

**Schools and Parent Teacher Organizations**

Local schools offer an ideal arena for teaching a new generation about healthy eating habits and Hopi farming culture. In the United States, the generation currently in school may be one of the first in human history that fundamentally does not know how to feed itself. Long-term change must begin at this level. Around the country there are many models of how food education, gardening, and healthy foods can integrated within day to day school activities.

**Policy**

1. Establish a school Wellness Policy that encourages the consumption of healthy foods at schools and at home.

2. Set goals and plans for serving local food in schools in 5% of all meals.

3. Encourage bringing healthy or traditional foods to school events and fundraisers.

4. Initiate a Stop the Pop campaign at your school and encourage youth to drink water and other kinds of beverages.

5. Stock vending machines with water and healthy snack items (this sets an example for youth and children and promotes healthy food choices).

**School Programs**

6. Establish school gardens.

7. Promote traditional farming activities and training as part of the school curriculum.

**School Kitchens**

8. Provide training and support to food service staff to include healthy and locally produced foods into school lunches.

9. Establish Farm-to-School pilot programs that would make local and regional foods available in the schools (community). This would include linking schools to local farmers who can provide locally produced ingredients as part of school meals.

10. Include nutrition education as part of school meal programs. Programs could be modeled on similar initiatives in New Mexico (e.g. Santa Fe’s Cooking with Kids).
Local Stores and Restaurants

Local stores and restaurants are not just economic enterprises. In a remote rural community, they fill an important community need while also serving as a tool for providing education and outreach to the public. In many cities, food outlets (e.g. the Puget Consumer Coop in Seattle), have served as key advocates for changing food and dietary habits within their communities. Given the epidemic rates of diabetes and obesity at Hopi as well as the amount of revenue lost to off-reservation stores, local enterprises can play a unique role in educating and serving the public. Local stores and restaurants can:

**Education and Outreach**

1. Survey community members and hold community listening sessions to identify local food needs. In particular, work with elders and elder services to better understand their food needs.
2. Work with community members and organizations to change beverage consumption patterns.
3. Launch a Buy Local campaign to encourage shopping at local stores and enterprises.

**Food Selection**

4. Offer traditional Hopi foods on a seasonal basis.
5. Offer different selection and higher quality produce to recapture the 5 - 8 million dollars lost to off-reservation stores.
6. Reduce stocks of sodas and increase other beverages and non-snack food items. Data suggests that local stores can play a pivotal role in shaping food choices.
7. Provide a larger variety of fresh vegetables and local foods.
8. Procure as much food as possible from local or regional providers.

**Community Members**

Ultimately the viability of a local food system will depend on the decisions and habits of local consumers and community members. As an individual, you can:

**Farming**

1. Farm or garden.
2. Learn where your village spring sites and ancestral garden areas are.
3. Plant 3-4 fruit trees a year. Assume that two of them will not survive.
4. Organize your work activities around the Hopi agricultural and ceremonial calendar. Encourage employers to make allowance for farming activities. Community members cited lack of time as an impediment to farming. Other agricultural communities shift community activities to accommodate planting and harvest time.

**Diet and Lifestyle**
5. Incorporate more home-grown and traditional foods into your daily diet.

6. Bring traditional foods, natwani to ceremonial activities.

7. Drink water instead of purchasing soda for your household. Children will consume what is purchased for them.

8. Set a good example for your children by bringing healthy food choices into your household.

9. Limit consumption of processed foods.

10. Set goals for local purchase and production of food at Hopi.

11. Learn about cooking with local foods and whole un-processed foods

12. Run.

13. Eat fast food only once a month.

**Health**

14. Visit health care providers, health care representatives and learn your BMI. Learn if you are at risk for health complications so that you can take positive steps to improve your health and well being.

**Community**

15. Inform tribal and village leaders how you feel about food and agriculture.

16. Let your local stores know what healthy items you would like them to stock and commit to purchasing them.

17. Don’t bring soda to community or school events.

18. Support local food initiatives and ventures.

**Education and Knowledge Sharing**

19. If you know how to farm or garden, identify 1-2 youth or community members who you can teach.

20. If you are young, volunteer to work with an uncle or aunt who farms or gardens.

21. Teach your children how to farm in the traditional manner.
Hopi Food Map

The two maps are an attempt to show in simple terms the nature of the Hopi food system pre-contact, the food system in contemporary times, and how it has changed. In looking at the two illustrations, we must keep in mind the full nature of any food system. It involves not just the food we eat, but the ways we transport it, how far we travel, how much time we spend procuring food, and the nature of ceremonial food and how it binds together the land, the people and the natural elements that together constitute a community.

The growing and procurement of food and sustenance has always entailed cost and hardship. This is one of the great lessons of Hopi. When Hopi grew and distributed food in past times in a traditional manner, they paid with their own sweat as well as with isolated periods of famine. And though the current food system can supply a diverse array of food, we pay an economic cost, as well as through epidemic rates of diabetes and obesity.

The first map shows the size of the Hopi food economy as it stood before contact. The green square represents the relative value of all food consumed at Hopi. We can assume that 100% of the food was grown, hunted, or harvested on Hopi ancestral lands that encompassed the Colorado Plateau.

The second map shows the Hopi food system today. The area represented by the green square indicates the percentage of food that is still grown by Hopi. The red squares show the percentage of food that is purchased at each of the on-reservation and off-reservation locations. The value of purchased food also includes the transportation costs associated with bringing the food home from off-reservation or other villages.
Hopi food system pre-contact

- Map showing the area with a green square indicating food grown locally.

**Recommendations 21**
Hopi food system today

[Map showing food grown locally and food purchased at stores]
Survey Background

Community Food Assessment Basics

Community Food Assessments (or Food Sovereignty Assessments as they are sometimes referred to in native communities) are a useful tool for gauging local food consumption patterns in order to better understand a local food system.

We are so accustomed to how we get our food that we rarely pause to consider how the “system” actually works. Furthermore, precisely because it is so commonplace, it may not be immediately apparent how food choices and way of procuring food influences the health of our bodies and our communities. As well, it may not be clear how our food choices are governed by outside or abstract forces – not only entities like corporations and stores, but also our easy access to cheap transportation. In tribal communities that have become dependent on outside food, access to locally produced food is very closely tied to tribal and personal sovereignty.

A food assessment is basically an attempt to understand what we eat and why we eat what we do. It can also involve examining how access to good food may not be equitable among all community members.

In previous times, much (if not all) of the food that we consumed was derived locally. At Hopi, in fact, community members sustained themselves with local corn, squash, melons, peaches and other foodstuffs well into the 1930’s and 40’s. Community members knew where their food came from because they were the ones who grew it.

In recent times, however, the nature of our food and the complex systems that provide it to us become opaque. Most of the food that we now enjoy is produced in other parts of the world, sometimes under conditions that are not beneficial to the environment or our own health, in a way that may be counter to our spiritual values, and transported tremendous distances at great cost.

Survey Goals

The purpose of this Community Food Assessment was to gain an accurate picture of contemporary Hopi food purchasing and consumption habits. To this end there were a number of specific questions we were interested in answering. In particular:

- Where do people get or buy their food and why?
- How much do Hopi spend on food purchases?
- How far and how frequently do people travel to get their food?
• How many people use public food assistance (WIC, Food Stamps, etc.)?
• What do community members eat and drink and why?
• How many people are farming?
• How much of the food that is consumed is produced locally?
• What are the current prevalence of obesity diabetes and other ailments within the Hopi community?

Although this survey may represent one of the most comprehensive pictures of Hopi food practices in contemporary times, it is still represents only the first step in coming to understand the complex nature of contemporary Hopi diet and farming.

A full copy of the complete survey can be found in the Appendix. It was hoped that the answers to these questions could help inform community decisions about local agriculture, economic development and community health. As a corollary, it was felt that issues of sovereignty are tied directly to a community’s ability to sustain and support itself. Fundamentally this concerns how we feed ourselves and the degree to which our choices are conscious and driven by community need and priorities and not by outside forces. For this reason we also refer to the survey as a Food Sovereignty Assessment, in that it can be a useful tool for gauging how well Hopi has retained its values of autonomy and self-sufficiency.

How the Survey Was Conducted

The survey was developed and completed as a collaborative effort between the Hopi Health Care Center and the Natwani Coalition, a program of the Hopi Foundation. The students of the Indigenous Pride Health Workers summer program helped gather and process the data. As well, the overall direction of the survey was guide by work done by the Community Food Security Coalition, First Nations Development Institute and other community food advocacy groups such as Farm to Table in New Mexico and NAU’s Center for Sustainable Environments.

The data presented in this report was collected in 2004 as part of the Indigenous Pride Health Workers (IPHW) program conducted each year by the Hopi Health Care Center. The Hopi, Tewa, and Navajo students who were part of the program assisted with the development of the questionnaire. The survey was then conducted over a one week period in July, 2004. During that time, the students distributed surveys to community members at Keams Canyon, Polacca, First Mesa Villages, visitors at the Hopi Health Care Center, Second Mesa villages, the Kykotsmovi Village Store, Hopi Tribal Offices, the villages of Hotevilla and Bacavi, and the village offices for Lower and Upper Moencopi.
In 2005 IPHW student workers entered the data into an Excel spreadsheet so that the data could be cross-correlated. Student interns at Hopi Health Care assisted with the scrubbing of the data to ensure accuracy, as well as with generation of some of the initial pivot reports.
Results and Key Findings

Demographic and Economic Data Summary

An effort was made to ensure that data was gathered in all parts of the reservation and among a wide range of age groups to ensure that the survey represented a cross section of the Hopi population.

In general, the survey demographic, household, and economic data mirrored the 2004 statistics available through the Tribal Department of Economic Development.

Demographic Data

- Based on the household size indicated by the survey respondents, the survey data reflected the dietary and food shopping patterns of 1723 Hopi, approximately 19% of the Hopi population at the time.
- 65% of respondents were female. 35% of the respondents were male.
- The majority (79%) of the respondents fell between the ages 21 and 49.
- Respondents represented all Hopi villages. In addition, respondents came from Keams, Tuba City and other outlying Navajo chapter houses.
- 31% of respondents were from First Mesa, 19% from Second Mesa, 27% from Third Mesa, 10% from Moencopi and Tuba City, 6% from Keams Canyon/Jeddito, and 7% from Navajo, off-reservation, or unknown.

Household Size

The survey collected data on family size.

- 18% of the households consisted of 1 adult or were single parent households. 38% of the households had 2 adults. 40% of the households had 3 or more adults.
- 32% of the households had no children. 17% of the households had 1 child. 20% had 2 children. 31% had 3 or more children.
- The average number of children per household was 2.54.
- The average household size was 4.16 individuals.

Economic Data

The data revealed an unemployment rate of close to 30%, a number similar to that reported by the Hopi Office of Economic Development. Although from an outside perspective this may appear high, it should be noted that it is not as high as in other tribal communities and that it reflects the challenges faced by remote rural communities.
As well, a high number of respondents reported household incomes below the federal poverty threshold of $12,000/year. By outside standards such figures might reflect a high level of poverty; at Hopi, however, the numbers may be mitigated by the strong traditional social and clan networks that in effect provide a supplemental economic safety net. These economic statistics suggest a contemporary Hopi society that still straddles between a modern wage economy and a traditional subsistence society.

Specific economic statistics gleaned from the survey are as follows:

- 70% of the respondents reported to be employed. 28% reported to be unemployed. The survey did not distinguish between individuals who had full-time employment and those who were employed part-time or were self-employed (e.g. artisans and craftspeople) who may not have a steady income.
  - For respondents older than 20, the unemployment rate was 26%.
  - Respondents between 40 and 59 had the lowest unemployment rate at 17%.
  - 35% of respondents older than 20 reported household incomes of less than $12,000/year.
65% of respondents were female. 35% of the respondents were male.
Age of respondents

- The respondents represented age groups from 13 years of age to 60 and over.
- 79% of the respondents fell between the ages 21 and 59.
Respondents represented all Hopi villages. In addition, respondents came from Keams, Tuba City and other outlying Navajo chapter houses.

31% of respondents were from First Mesa, 19% from Second Mesa, 27% from Third Mesa, 10% from Moencopi/Tuba City, and 20% from Navajo, off-reservation, or unknown.
Household size

Adults in Household

Children in Household
• 18% of households consisted of 1 adult or were single parent households. 38% of the households had 2 adults. 40% of the households had 3 or more adults.

• 32% of the households had no children. 17% of the households had 1 child. 20% had 2 children. 31% had 3 or more children.

• The average number of children per household was 2.54

• The average household size was 4.16 individuals.
• 70% of the respondents reported to be employed. 28% reported to be unemployed. This mirrors official employment statistics collected by the Tribal Office of Economic Development.

• The survey did not distinguish between individuals who had full-time employment and those who were employed part-time or were self-employed (e.g. artisans and craftspeople) who may not have a steady income.

• For respondents older than 20, the unemployment rate was 26%.

• Respondents between 40 and 59 had the lowest unemployment rate at 17%.
Household income

- 35% of respondents older than 20 reported household incomes of less than $12,000/year. (the federal poverty threshold for a household of 2)
Grocery Shopping Summary

One of the primary objectives of the survey was to better understand contemporary Hopi food shopping patterns including satisfaction with local grocery stores, how much Hopi spend on groceries, how on-reservation spending compares to spending off-reservation, and how Hopi feel about new food stores at home. The extreme remoteness of Hopi coupled with the perceived inadequacies of local stores and the erosion (and supplanting) of local farming practices force many Hopi to travel vast distances to procure basic food necessities. Hopi will often drive 60 to 120 miles to do their grocery shopping. Despite its status as one of the oldest extant farming communities in North America, today Hopi lands may increasingly resemble a “food desert” in which healthy, reasonably priced, and culturally appropriate food is unavailable at home.

Satisfaction with local grocery stores

A minority of respondents (16%) were satisfied with the prices and selection at local grocery stores. When Moencopi and Tuba City respondents were excluded (because of the better access to large supermarkets), only 11% of respondents felt that local stores were adequate. Conversely, 55% of respondents from Moencopi and Tuba City were satisfied with their local stores. Residents of Third Mesa were the most dissatisfied with local store offerings.

In addition, socially disadvantaged groups, including unemployed respondents, elders, and those with limited access to transportation, were more likely to be dissatisfied with local store offerings and prices. Importantly, these socially disadvantaged groups are also the ones most dependent on local stores for meeting their grocery needs.

Specifically, satisfaction with grocery stores declined with age: only 5% of elders were pleased with local stores, while 68% were overtly dissatisfied. 12% of unemployed respondents were satisfied with local stores compared to 17% of employed respondents. And 10% of respondents without transportation were satisfied compared to 17% of those with transportation.

And yet, there are significant opportunities for local stores to attract more customers. The vast majority of respondents, 84%, said they would shop at local stores more often if they offered better choices.

Total size of Hopi food economy

The total size of the Hopi food economy is significant. Including the cost of food, the amount spent by shoppers to bring food on reservation, and the approximate value of local food, the total value of Hopi food is between $18 and $22 million dollars. If we include health care costs associated with diet related illnesses, the total cost of the Hopi diet may exceed $35 million dollars a year.
**How much Hopi spend on groceries**

In an effort to better understand how Hopi respond to perceived inadequacies with grocery shopping at home, respondents were asked to both estimate and itemize the amount they spent each month in regional stores and supermarkets. Both the estimated and itemized amounts mirrored one another.

On average, respondents spent between $75 and $104 per capita on food. Households with incomes greater than $12,000/year spent on average 22% more than lower income households. This could indicate possible food insecurity among lower income households, as well as food redistribution (through clan sharing) from higher income to lower income families.

In total, on-reservation Hopi spend between $8.1 and to $11.2 million dollars each year on food. The respondents estimated that they spent a total of 1.32 million dollars each year to feed 1465 individuals. When asked to itemize the amount spent, respondents claimed to spend approximately 1.84 million dollars each year.. The total estimated amount spent was determined by extrapolating these two numbers to an on-reservation population of 9000.

**On-reservation vs. off-reservation spending**

Of the total amount spent by Hopi on groceries, approximately 71% of all dollars - between 5.8 and 8 million dollars a year - are spent off reservation. This is equivalent to the lost annual revenues from the Peabody mining operations. It should be noted, however, that even those dollars spent on-reservation are used to purchase food that comes from somewhere else. Overall, the data suggests that Hopi could increase considerably the amount of food grown and distributed locally.

73% of respondents said that they combined off-reservation grocery shopping trips with other activities in town.

Individual stores at Hopi (Keams Canyon Store, Circle M, Kykotsmovi Village Store, and the Hotevilla Store) each garnered between 3% and 7% of all Hopi food dollars. The most popular off-reservation stores were Basha’s and Safeway that received 18% and 31% of Hopi food dollars respectively.

Although Hopi spent more off-reservation, the majority of shopping trips were made to local stores. 64% of all shopping trips were local, but only 29% of grocery dollars were spent at local stores. On average Hopi spent approximately $15 per trip at local stores compared to $55 per off-reservation trip.

Respondents cited different reasons for shopping on- and off-reservation. On-reservation stores offered easy accessibility and familiar staff. The primary reasons for shopping off-reservation, however, were lower prices, better selection, and the freshness and quality of the food.
Furthermore, respondents relied on local stores primarily for the purchase of snacks and beverages. The items least likely to be purchased on-reservation were dairy, meat, and fruits and vegetables. Some of these items are also the ones that historically were grown or raised locally.

Because of low turnover, stores stock products that are inexpensive and non-perishable. This in turn, shapes the spending and consumption patterns of local consumers. By serving as snack and soda outlets, local stores may unconsciously be contributing significantly to the diabetes and obesity epidemic at Hopi. In remote under-served communities, stores provide a vital community service that extends beyond those of a typical food or commercial enterprise. Local stores may need to understand and explore ways they can work as equal partners in meeting community health and economic needs.

Cost of bringing food to Hopi

Each year Hopi drive nearly 15 million miles to simply get food and bring it home, costing the Hopi community over 6.8 million dollars a year. Individual Hopi shoppers spend nearly 100 hours a year driving to stores and back. In addition, because of the cost of driving to other villages or into town to buy food, Hopi pay a 50% premium for food purchased locally and a 66% premium for food purchased off-reservation. Each Hopi shopper spends nearly $2700 a year to bring home food to their community.

New food outlets at Hopi

The vast majority of respondents indicated they would like to see a Hopi Farmers Market. It should be noted that such a market would not necessarily imply the commercialization of Hopi farming; rather it could be a formal mechanism to facilitate the barter, exchange or distribution of regional or local produce to consumers.

Half of the respondents definitively stated that they would like to have a large chain store at Hopi. Because of significant cultural issues, the community should carefully consider the nature of economic development at Hopi. Of respondents who were opposed to having a chain store at Hopi, there was a desire to have Hopi-owned stores that would benefit the local community. Others were concerned about cultural disintegration or further disincentives for farming. We may well heed their words and remember that many “progressive” developments in recent times have unexpected consequences, both positive and negative. For this reason Hopi community members and leaders should work together to consciously ensure that whatever solutions are chosen address the full spectrum of needs at Hopi and not be a response to short term desires or limited economic interests that may benefit only a few.
Food choices

Respondents indicated that fresh produce was the most frequently consumed food item, followed by canned and frozen foods. Price was the primary determinant in what foods respondents chose to purchase. Other considerations were health and nutrition, brand, and purchasing habits.

The primary reasons respondents gave for not eating more healthy foods were price and lack of availability. These factors can only be addressed systematically at the community level. Respondents also stated that they were familiar with what healthy foods were and knew how to prepare them.
68% of all respondents considered themselves the primary shopper.

80% of females who answered the question considered themselves to be the primary shopper compared to 58% of the men.
Satisfaction with local grocery stores

- Only 16% of respondents were satisfied with the offerings and prices of local grocery stores. Nearly half (43%) stated specifically that they were dissatisfied with local grocery stores.

- When Moencopi and Tuba City were excluded (because of the ready access to Basha’s), only 11% of respondents felt that local stores provided an adequate and fairly priced selection.
Dissatisfaction and food access

The next set of charts suggest that socially disadvantaged individuals – those people who have the least access to shopping alternatives – are also, as a whole, more dissatisfied with local store offerings. Without consistent access to better food choices from off reservation, they had the least access to alternative shopping opportunities and were forced to shop at stores that may offer less variety, and less healthy food options at higher prices.

- Respondents in Moencopi and Tuba City (55%) were considerably more satisfied with the local stores in their area than were residents of First, Second, or Third Mesa. Residents of Third Mesa (63%) were the most dissatisfied with local store offerings.
• Satisfaction with local store offerings declined with age. 22% of 13-20 year olds were satisfied compared to 5% of elders 60 years and older.

• As well, a significantly higher percentage of elders (68%) expressed overt dissatisfaction with local stores compared to young and middle aged respondents (33-43%).

• In general, elders may have less access to off-reservation stores or alternative food sources and are more dependent on local stores.
Unemployed respondents (who potentially might have less access to alternative shopping opportunities) also seemed less satisfied with local food choices than employed community members. 12% felt that local stores offered competitive selection and prices compared to 17% of employed respondents. 50% were dissatisfied compared to 41% of employed respondents.
Individuals who had difficulty getting to stores were also 50% more likely to be dissatisfied with local stores. Despite their dissatisfaction, because of transportation difficulties they had less access to a variety of affordable food.
If local stores offered better choices

The vast majority of respondents, 84%, said they would shop at local stores more often if the stores offered better choices. This suggests that there is a significant revenue potential for local stores if they could better identify and meet the needs of local consumers.

The percentages were the same regardless of employment status, household income, age, and transportation status.
Size of the Hopi Food Economy

The total size of the Hopi food economy is roughly between $18$ and $22$ million dollars including the cost of food purchased, transportation cost of bringing food on reservation¹, and the value of food raised locally.²

If we include the health care costs of diet-related diseases that did not exist with a traditional diet, the annual current cost of food at Hopi exceeds $35$ million dollars.

<table>
<thead>
<tr>
<th></th>
<th>Food Purchases</th>
<th>Transportation Costs</th>
<th>Local Farming</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated</td>
<td>$8,142,905</td>
<td>685,834</td>
<td>$3,078,380</td>
<td>$18,080,131</td>
</tr>
<tr>
<td>Itemized</td>
<td>$11,230,389</td>
<td>6,358,846</td>
<td>$3,907,119</td>
<td>$21,996,355</td>
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</table>

¹ Calculated using a GSA rate of 45.3 cents / mile.

² Since Hopi do not farm commercially determining this number is difficult at best. At Hopi all food has additional value as a medium of reciprocal exchange as well as unquantifiable ceremonial value. In this case, the value of the food is considered solely in terms of the quantity of food that does not need to be purchased because it is grown at home. It was calculated by looking at the itemized and estimated food expenditures and the estimated amount of food that respondents felt was grown locally. Although the number is only approximate it is a useful starting point for trying to understand and quantify the value of Hopi food from an outside vantage.

From this perspective, the number represents the amount Hopi would spend on food if they stopped farming, or conversely, the amount of money that would not be spent on food if Hopi survived exclusively on food grown on reservation. Further work could help identify appropriate and useful multipliers that could better determine the true value of Hopi foods in terms of overall social and community health. Alternate methods might involve measuring the true quantity of food grown at Hopi and assigning a market value, or alternatively assigning a value to the time spent farming and processing local food.
Travel and shopping information provided by the respondents was also used to determined the approximate amount that Hopi spend on and off reservation.

<table>
<thead>
<tr>
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<th>On Reservation</th>
<th>Off Reservation</th>
<th>Total Amount Spent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated</td>
<td>$2,337,837</td>
<td>$5,805,068</td>
<td>$8,142,905</td>
</tr>
<tr>
<td>Itemized</td>
<td>$3,224,258</td>
<td>$8,006,132</td>
<td>$11,230,389</td>
</tr>
</tbody>
</table>

• Using the estimated and itemized monthly amounts provided by the respondents and assuming an on-reservation population of 9000 persons, we estimate that each year Hopi spend between $8.1 million and $11.2 million dollars on groceries.

• Of this, between 5.8 and 8.0 million dollars are spent at off reservation stores. This is approximately equivalent to the lost revenues from the Peabody Mining operation.

• It should be noted that even the dollars spent at local stores are used to purchase food items that were grown or manufactured somewhere else.
Survey respondents were asked to estimate their monthly grocery expenditures as well as to itemize the amount spent each month at stores in the region. Both amounts mirrored one another. The above chart shows the distribution of the estimated and itemized amounts.

- The majority of households spent between $100 and $500 dollars per month. These amounts do not take into account household size.

- Each month respondents spent on average between $75.40 and $103.99 per capita on food (based on the estimated and itemized amounts provided).

- Households with an income greater than $12,000/year spent on average 22% more per capita on food. This could suggest possible food insecurity among lower income households or possibly reflect redistribution of food through clan sharing and ceremonial giving.

*These amounts were derived by dividing the total amount spent per month by the total number of persons in the households of all the respondents.
On-reservation vs. off-reservation spending

Since respondents itemized how much they spent each month at regional stores, it was possible to approximate the total amount of food dollars spent off reservation.

- 71% of all food dollars were spent off reservation, while 29% of food dollars were spent at on-reservation stores or trading posts.
Grocery shopping trips

Respondents were asked if they purchase food in town because they’d gone in for other reasons.

- 73% of the respondents said that they combine grocery shopping with other activities in town. It would be useful to discern whether food purchases are a primary or secondary reason for going into town.
Where Hopi spend their food dollars

The survey asked respondents to itemize the amount of money they spend each month at regional stores. In the case of Safeway and Basha’s they were asked to identify which location they frequented.

- Hopi spend significantly more at off reservation stores. The majority of on-reservation food purchases were made at Keams Canyon, Circle M, and the Kykotsmovi Village Store.
- When shopping off reservation, Hopi spent the most at Basha’s and Safeway.
Shopping trips: on-reservation vs. off-reservation

Respondents were asked to estimate the number of trips they made to various regional stores.

Al~ though Hopi made more shopping trips to local stores, they spent less. 64% of all grocery shopping trips were local, but only 29% of grocery dollars were spent at local stores.

The overall trend is clearly apparent when we compare the percentage of total food dollars spent to the percentage of total trips taken to each store.
The above table shows the approximate amount spent per trip at regional stores.

On average, Hopi consumers spent approximately $15.34 per trip at local stores. In comparison, respondents spent $54.96 per trip, nearly 3 1/2 times as much, on off-reservation shopping trips.
Transportation distances and costs

Respondents were asked to itemize how frequently they travelled to regional stores. This information along with the residence of each respondent and the household size was used to determine the total number of miles driven by Hopi for grocery purchases along with the associated costs.*

<table>
<thead>
<tr>
<th>Miles driven annually by Hopi to purchase food</th>
<th>On-reservation</th>
<th>Off-reservation</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miles driven annually by Hopi to purchase food</td>
<td>3,561,437 miles</td>
<td>11,579,504</td>
<td>15,140,941 miles</td>
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<tr>
<td>Annual transportation costs for food purchases</td>
<td>$1,613,331</td>
<td>$5,245,515</td>
<td>$6,858,846</td>
</tr>
</tbody>
</table>

- Because of transportation costs associated with driving to other villages or into town to shop, Hopi pay a 50% premium for on-reservation purchases and a 66% premium for purchases made off-reservation.

- In total Hopi drive over 15 million miles a year to purchase food, adding a total of 6.9 million dollars to their food costs. The vast majority of these miles (76%) are driven to purchase food off reservation.

- In essence, individual Hopi families are bearing the tremendous cost of bringing food into their communities, compared to urban communities in which this cost is absorbed by the supermarkets themselves.

The amount of miles, time and cost absorbed annually by individual shoppers were also calculated

<table>
<thead>
<tr>
<th>Annual miles driven per/shopper</th>
<th>5,868 miles</th>
</tr>
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<tbody>
<tr>
<td>Hours spent driving to stores each year</td>
<td>98 hours</td>
</tr>
<tr>
<td>Annual transportation costs per/shopper</td>
<td>$2,658</td>
</tr>
</tbody>
</table>

- Each Hopi shopper drives nearly 6000 miles a year to purchase food, spending nearly 98 hours on the road. On average, each shopper spends over $2600 a year driving to stores and back. 74% of these transportation costs, nearly $2000, are spent driving to stores off reservation.

*Costs were calculated using a GSA rate of 45.3 cents/gallon.
When shopping locally, mesa residents tended to shop at the village store that was closest. If the stores offered better selection, they could capture more purchases. This information could also help store owners to target their marketing and outreach.
Shoppers were drawn to shop at on-reservation and off-reservation stores for different reasons. The primary reasons respondents shopped on reservation were the easy accessibility and familiarity with the staff. The primary reasons respondents went off-reservation to shop were good prices, better selection, and the freshness and quality of the food.
On-reservation vs. off-reservation purchases

Respondents were asked to indicate which food items they purchased predominantly on- and off-reservation.

- The items most frequently purchased on-reservation were snacks and beverages.
- The items least likely to be purchased on-reservation were dairy, meat, and fruits and vegetables.
- It should be noted that meat and fruits and vegetables are the food stuffs most easily produced locally. In the past, these items were grown or raised exclusively at Hopi. They also represent a distinct opportunity for local stores to improve their selection and offerings.
Hopi Farmers Market

Respondents were asked if they would like to have a Hopi Farmers’ Market.

- 86% of respondents indicated that they would like a Hopi Farmers Market,
- As a concept, Farmers Markets can involve barter or exchange, as well as distribution of produce grown by regional (not necessarily local) farmers. As a community initiative it would not necessarily need to provide market incentives to local farmers, but could provide incentives for off-reservation farmers to bring fresh, healthy produce to Hopi.
- Farmers markets can also increase the amount of fruits and vegetables going to WIC recipients and elders through the federal Farmers Market Nutrition Program.
Chain stores on Hopi

Respondents were asked how they felt about having a large chain store at Hopi. Although the overall dissatisfaction with local stores would suggest a high demand for a large chain store, the survey revealed a slightly more complex picture.

How do you feel about having a large chain store at Hopi?

- Of the free form answers given to the question, half the respondents indicated definitively that they would like to have a large chain store at Hopi while 38% left the question blank. A total of 12% of respondents were either against a chain store or expressed ambivalence.

- A significant number of respondents did not answer the question, suggesting a need to carefully consider the nature and form of economic development at Hopi. (See detailed responses below)
Respondents **WOULD LIKE** a chain store because:

<table>
<thead>
<tr>
<th>Reason</th>
<th># of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good idea</td>
<td>97</td>
</tr>
<tr>
<td>Transportation</td>
<td>14</td>
</tr>
<tr>
<td>Job creation</td>
<td>8</td>
</tr>
<tr>
<td>Lower prices</td>
<td>7</td>
</tr>
<tr>
<td>Variety</td>
<td>6</td>
</tr>
<tr>
<td>Freshness</td>
<td>1</td>
</tr>
</tbody>
</table>

- The most commonly stated reason for having a chain store was convenience and ease of getting to stores. Job creation and lower prices were secondary reasons.

Respondents **WOULD NOT LIKE** a chain store because:

<table>
<thead>
<tr>
<th>Reason</th>
<th># of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Want Hopi owned stores</td>
<td>8</td>
</tr>
<tr>
<td>Not sure it’s good for Hopi</td>
<td>4</td>
</tr>
<tr>
<td>Land issues</td>
<td>3</td>
</tr>
<tr>
<td>Don’t want</td>
<td>2</td>
</tr>
<tr>
<td>Need to farm</td>
<td>2</td>
</tr>
<tr>
<td>Cultural disintegration</td>
<td>2</td>
</tr>
<tr>
<td>Need healthy foods</td>
<td>1</td>
</tr>
</tbody>
</table>

- Among respondents who gave reasons for not wanting a chain store, the primary reason was a desire to have Hopi owned stores that would benefit the local community. A smaller number did not specify a reason, but felt it would not benefit Hopi as a whole. Others cited the difficulty in acquiring land and expressed a fear that it would draw people away from farming.

- Although a minority of respondents (12%) voiced concern about a chain store, the responses reaffirm the importance of weighing the full impact of bringing in outside enterprises, and recognizing the possible impact on cultural integrity and local economy. Any efforts should consider ways to strengthen local culture and not diminish the unique aspects of Hopi.
Food choices

Respondents indicated that fresh produce was the most frequently consumed food item, followed by canned and frozen food.

On average, those without transportation consumed 23% fewer servings of vegetables than those who had transportation.

In general there did not appear to be a strong correlation, however, between income, employment status, or age, and fresh vegetable and processed food consumption.
What determines food choices

- Respondents were most influenced by price when making food choices. Health and nutrition, brand, and habits were additional considerations.

- Consumers were less concerned whether food was organic or locally grown.
• The primary reasons respondents gave for not eating healthy foods were cost and lack of availability. The long term solution to these challenges can only be found at a community level and will require partnership between villages, stores, and community members.

• The least important factors to respondents were knowledge of what healthy foods are and how to prepare them.
Food Access Summary

Although most respondents were dissatisfied with the selection and prices offered by on-reservation stores, across the board, socially disadvantaged respondents—including elders, the unemployed and low income, residents who lived in the center of the reservation, and those with inadequate transportation—expressed the greatest dissatisfaction with local food stores. The most dissatisfied community members were also the ones with the least opportunity to shop elsewhere. Overall, the data suggested that a subset of Hopi residents have especially inequitable access to healthy and affordable food.

Difficulty in getting to stores

Although only 15% of the respondents overall indicated that they had difficulty in getting to stores, socially disadvantaged respondents had greater difficulty than other sectors of the population. As a consequence, they were more likely to shop at local stores and had less access to fresh, healthy foods.

In particular, elders, respondents who were unemployed, and those from low-income households were twice as likely to have difficulty in getting to stores as compared to members of the larger population.

Spending patterns among socially disadvantaged respondents

Because of transportation issues and other challenges, socially disadvantaged groups were significantly more likely to shop at reservation stores. The unemployed were more than a third more likely to shop on reservation than respondents who had jobs. Low income respondents were 41% more likely, while individuals with poor access to transportation were 37% more likely to shop at local stores.

On-reservation spending and soda consumption

Shopping at local stores is not a neutral activity. Because of the stocking of non-perishables and the relative lack of fresh, healthy food items, on-reservation shoppers are in effect driven to making less healthy food choices. One indicator of this pattern is the amount of soda consumed by respondents in relation to how often they frequented on reservation stores.

Simply put, the more money respondents spent on-reservation, the more likely they were to drink increasing amounts of soda. Respondents who shopped exclusively at local stores consumed on average twice as much soda as those who shopped exclusively off-reservation. In addition, those who made more shopping trips to local stores consumed considerably more soda than those who tended to shop off-reservation. This suggests that local stores can play a significant role in shaping consumption patterns and encouraging local residents to make more healthy food choices.
Access to transportation

Respondents were asked if they had difficulty getting to the store. Although only 15% of respondents overall indicated that they had poor access to transportation, socially disadvantaged groups, including the unemployed, low income households, and the elderly, indicated that they had much more difficulty getting to the stores than other sectors of the population.

With limited transportation, these respondents were more likely to shop at local stores and had less access to fresh, healthy food items at a reasonable price.

- 15% of respondents stated that they had difficulty getting to the store. 81% of respondents felt that they had adequate access to transportation.
Respondents from low income households were more than twice as likely to have difficulty getting to the store as individuals who came from households above the federal poverty threshold.
Respondents who were unemployed were twice as likely to have difficulty getting to stores.

<table>
<thead>
<tr>
<th>Employment Status</th>
<th>Percent of respondents who have difficulty in getting to stores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td>12%</td>
</tr>
<tr>
<td>Unemployed</td>
<td>24%</td>
</tr>
</tbody>
</table>

![Graph showing difficulty in getting to stores by employment status]
• Elders were twice as likely to have difficulty getting to stores than younger respondents.
Spending patterns among socially disadvantaged respondents

Because of transportation difficulties as well as other issues, socially disadvantaged groups were significantly more likely to shop at on-reservation stores. These same respondents also expressed the greatest dissatisfaction with local store offerings.

Since socially disadvantaged groups are forced to depend on these local stores, local establishments have the added challenge of trying to meet the needs of these groups and ensure that have equitable access to a variety of fresh and healthy foods.

- The unemployed were 38% more likely than employed respondents to shop on reservation.
Households with incomes below $12,000/year were 41% more likely to shop on reservation.
• Individuals who have difficulty getting to stores were also 37% more likely to shop on reservation.
**On-reservation spending and soda consumption**

Because of the relative lack of perishables and fresh, healthy food items in local stores, on-reservation shoppers are penalized and in effect driven to make less healthy food choices. One indicator of this is the amount of soda consumed by respondents who shop primarily on-reservation vs. off-reservation.

Survey data also suggests that local stores are used most frequently to purchase soda and snack items.

- The amount of soda respondents drink closely correlates to the amount of money they spend at on-reservation stores. The more money they spend on-reservation, the more likely they are to drink increasing amounts of soda.

- This is one indication that low income socially disadvantaged groups might make less healthy food choices because of their reliance on local food establishments.
• The above chart shows the average number sodas drunk each day in relation to the percent of food dollars spent on reservation. The trend line clearly shows that soda consumption increases as more dollars are spent on reservation.

• Respondents who shop exclusively on-reservation on average drink twice as much soda as those who shop primarily off-reservation.
The soda consumption pattern is also reflected in the percent of shopping trips to on reservation stores. The more trips people take to local stores, the more soda they consume.
Food Assistance Summary

Despite relatively low household incomes and high unemployment or under-employment rates, survey respondents in general did not seem to take advantage of food assistance programs. Between 12 - 14% of respondents received WIC or Food Stamps while only a small fraction received commodities.

Households with annual incomes less than $12,000 or respondents who were unemployed were only slightly more likely to participate in food assistance programs. Although this could reveal a community strength (i.e. a strong culture of self-sufficiency and robust informal social safety net), it could also indicate a disparity in food access.

Overall, 25% of respondents and 39% of low-income respondents participated in food assistance programs.

In addition, respondents who were unemployed were more likely to receive food assistance. Of unemployed respondents, 19% received WIC, 26% received food stamps, and 6% received Commodities.
Access to food assistance

Respondents were asked to identify what forms of food assistance they took advantage of. In general respondents, including socially disadvantaged groups, tended not to rely on federal food assistance programs.

- Only 14% of respondents received Women, Infant and Children (WIC) support.
- A slightly higher percentage (18%) of households with incomes less than $12,000 per year reported receiving WIC support.
• 12% of respondents reported that they received Food Stamps.
• Nearly 1/4th of low income households reported receiving Food Stamps.
- 3% of respondents reported receiving government commodities.
- 5% of low income households reported receiving commodities.
**Soda Consumption Summary**

As part of the survey, respondents were asked how many 12 oz. servings of soda they consume each day. This piece of information was felt to be useful for several reasons: high levels of soda consumption can contribute significantly to obesity and diabetes; as well it can be an indicator of whether respondents have an opportunity to, and are in fact making, healthy food choices.

**Amount of soda consumed at Hopi**

Nearly all respondents drank some amount of soda each day while some respondents reported drinking as many as 12 sodas per day. On average, the respondents consumed 2.27 sodas per day. Based on the survey data, Hopi consume an estimated 5.8 to 7.4 million servings of soda per year.

The highest level of soda consumption was among 21 to 39 year olds who consumed on average 2.59 sodas per day. The lowest consumption was among elders 60 and older.

Soda consumption is tied directly to increased rates of obesity and diabetes. Ironically, this beverage has only been present at Hopi for 2-3 generations. And it has only been within the last quarter century that it has been available in super size portions that invite increased consumption.

If the equivalent number of 12 oz. cans were lined up on Highway 264, the line off cans would stretch from the Hopi Cultural Center all the way to Albuquerque.

**Soda consumption and the socially disadvantaged**

As described earlier, increased shopping at local stores correlates to increased soda consumption. As well, unemployed respondents and those from low income households consumed more soda than the rest of the population. These groups were twice as likely to drink large quantities of soda and on average consumed close to 40% more soda each day.

Given the health implications, it seems that health care providers and community leaders should work with community members and local store outlets to identify creative strategies to reduce soda consumption among those most at risk.
Amount of soda consumed at Hopi

Respondents were asked to provide the number of 12 oz sodas they drink each day. The question was asked since soda consumption is tied directly to obesity and diabetes.

According to the survey data, nearly all respondents drank some amount of soda each day. Less than 1% of those who answered the question reported drinking no soda whatsoever.

The majority of respondents reported that they drank between 1 and 2 sodas per day. 14% of respondents drank more than 3 sodas per day. On average, respondents drank 2.27 sodas per day.

If these soda consumption patterns are extrapolated to the entire Hopi population, Hopi drink between 5.8 and 7.4 million servings of soda per year.
High levels of soda consumption was most prevalent in the 21-39 year old age group who drank on average 2.57 sodas per day.

The least likely to consume large quantities of soda were elders age 60 and over.
Soda consumption and socially disadvantaged groups

- Unemployed respondents were more than twice as likely to consume large quantities of soda.
- Unemployed respondents consumed on average 3 sodas per day vs. 2 sodas per day for employed individuals, an increase of 50% more per day.

- On average respondents who were from low income households consumed 2.65 sodas per day vs. 1.92 among individuals from households that earned more than $12,000 per year. This is equivalent to 38% more soda per day.
Soda consumption and visits to on-reservation stores

As described earlier, respondents who shopped more frequently at on-reservation stores were more likely to consume soda.

- Respondents who shopped between 70 and 100% at local stores consumed an average of 2.1 sodas per day compared to 1.3 sodas per day for respondents who did the majority of their shopping off reservation.
Community Health Summary

Community members were asked if they had been diagnosed with a variety of diseases common at Hopi. They were also asked to provide their height and weight. This information was used to derive their Body Mass Index (BMI). Lastly, respondents were asked several questions to gauge their knowledge about obesity and diabetes.

One possible pattern suggested by the data was that a significant subset of the population was overweight, but had not been formally diagnosed by healthcare. In addition, those respondents who had been diagnosed by health providers were far more likely to view themselves as overweight and to have an understanding of obesity and the related health complications. This suggests a need to find creative ways to identify and get information to community members who may still be uneducated about these vital community health issues.

Disease incident rate at Hopi

The disease incident rate reported by respondents was similar to the reservation wide incident wide incident rates observed at Hopi Health Care. The most common diseases affecting respondents were high blood pressure, diabetes, and obesity. Respondents 60 and over had the highest prevalence of most diseases. Two notable exceptions were obesity and high cholesterol in which the highest prevalence was among those in the 40-59 age group.

There was no clear correlation between village and particular diseases with the exception of cancer in which there was a high incident rate of cancer in Moencopi, Tuba City and Kykotsmovi. This could be a statistical aberration due to the small sample size.

Respondents who had been formally diagnosed as being obese were 2 to 6 times more likely to be diagnosed with other health problems.

Body Mass Index (BMI)

More than three quarters of respondents had BMIs that put them in the overweight and obese category. 66% of respondents who had BMIs in the obese range had not been formally diagnosed as obese; this could be a consequence of respondents not accessing on-reservation health services. It could also indicate a further need for continued outreach and education among community members.

Community knowledge about obesity and diabetes

Although most respondents knew what obesity meant and were aware of the connection between obesity and diabetes, there were significant differences among groups that were socially disadvantaged. Respon-
dents under 20 and over 60 were twice as likely to not know what obesity meant. In addition, respondents who were unemployed or from low income families were 2-3 times more likely to not know what diabetes means or to understand the connection between obesity and diabetes.

Patients who had high BMIs but had not been formally diagnosed as obese were 4 times more likely to not understand the term and to understand the connection between weight and diabetes. This suggests that a) outreach and education from health care providers is instrumental in educating the public about health risks is effective; and b) underscores the importance of community members engaging with HHCC, the Special Diabetes Program, and local health organizations.

Lastly, obese women were more likely than obese men to have visited a health professional and been formally diagnosed. As well, women in general had received more education about obesity and the related health risks. This suggests that health educators should work to provide more outreach to men.

**Body perception**

64% of respondents felt they were overweight with female respondents being more likely to feel they were overweight than men. In general, though, women had a more accurate perception of their bodies than men (e.g. women who were overweight were more likely to think so than overweight men), further supporting the need for increased health education for males.

More than a quarter of overweight or obese respondents (gauged by their BMIs) did not feel they were overweight. Once again, however, contact with health care providers seemed to play a role in how respondents viewed their bodies. Of those respondents who were obese, 100% of those who had been diagnosed by healthcare felt that they were overweight. For those who had not been formally diagnosed as obese, only 70% felt they were overweight.
Disease incident rate at Hopi

Respondents were asked if they had been diagnosed with a variety of diseases common at Hopi.

- The most common diseases affecting respondents were high blood pressure, diabetes, and obesity. All of these illnesses are related to diet and lack of exercise.
- Since the survey was delivered to a cross-section of community members regardless of whether they are regular visitors at local health care facilities, the percentage of respondents who have been formally diagnosed may actually be smaller than the numbers reported through Hopi Health Care.
• Those 60 and over had the highest prevalence of most diseases.

• A notable exception were obesity and high cholesterol for which the highest prevalence was among those in the 40-59 age bracket. This might reflect a generational change in diet.
Body Mass Index

Respondents were asked to provide their height and weight. This information was used to calculate the Body Mass Index (BMI) of each respondent. BMI data is used as an indicator of whether a respondent is overweight or obese.

- More than 75% of respondents had BMIs that put them in the overweight and obese category. This compares to 64% at the national level.
- The BMI distribution was similar among both women and men. Similar percentages of women and men were in the obese range (35% and 33% respectively), and in the overweight range (42% and 41%).
- 66% of respondents who had BMIs in the obese range, had not formally been diagnosed as being obese. This could be because these respondents are not accessing health services on reservation.
- In general, obese women were more likely than obese men to have been formally diagnosed. (39% vs. 21%).
The percentage of respondents who were in the normal BMI range seemed to decline with age, while those in the obese range seemed to increase.
Obesity and disease incident rate

- Respondents who had been diagnosed as obese were 2 to 6 times more likely to be diagnosed with other health problems.
- Respondents suffering from heart disease, high blood pressure, or diabetes, on average had BMIs that were 7 to 11% higher than respondents who had not been diagnosed with these diseases.
Community knowledge about obesity and diabetes

Although most respondents knew what obesity meant, there were significant differences among different age groups and among groups that were socially disadvantaged.

In addition, individuals who had been formally diagnosed as obese were more likely to understand the term than obese respondents who had not been diagnosed.

- The majority of respondents who answered the question understood what obesity meant.

- Respondents under 20 and over 60 were twice as likely to not know what obesity means.
Respondents who were unemployed or who came from low income households were twice as likely to not know what obesity meant, suggesting a need to provide continued outreach to socially disadvantaged groups — populations who in general are at the greatest risk to experience diet-related health complications.
• As well, obese respondents who had never been diagnosed were 4 times as likely to not know what obesity meant than respondents who had visited health care and been diagnosed as obese. This suggests that outreach and education from Hopi Health Care, the Special Diabetes Program and other health care agencies was effective in educating the community.
Knowledge about weight and risk for diabetes

Respondents were asked if they thought being overweight put them at risk for diabetes. Although the majority of respondents understood the correlation, there were again significant discrepancies between those who were socially disadvantaged and those who were not, as well as between respondents had been formally diagnosed with obesity and those who had not.

<table>
<thead>
<tr>
<th>Do you think that being overweight makes you at risk for diabetes?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Yes</strong> (84%)</td>
</tr>
</tbody>
</table>

- 84% of respondents understood the connection between weight and diabetes risks.
Obese respondents who had received a formal diagnosis (and had therefore visited health care or had received information from a community health organization) were far more likely to understand the complication risks of being overweight or obese.

In addition, women were more likely than men to be aware of the health risks associated with obesity (87% vs. 78%)
The unemployed and individuals from low-income families were also twice as likely to not understand the health complications associated with being overweight.
Body perception

Respondents were asked if they thought they were overweight. Their responses were then correlated with their Body Mass Index (BMI) as well as whether they had ever been diagnosed with obesity.

- 64% of respondents felt they were overweight.
Female respondents were more likely to feel they were overweight than men. This pattern was consistent across age groups. In addition, obese women were more likely to feel they were overweight than obese men, further suggesting the need for increased health education and outreach to males in the community.

- 28% of respondents with BMIs in the overweight or obese range did not feel they were overweight.

- However, of obese respondents who had visited healthcare and been diagnosed as obese, 100% felt they were overweight. Of those who had not received a formal diagnosis, only 70% felt they were overweight. This suggests that information from healthcare providers can be instrumental in helping community members better understand obesity and their own body type.
Farming and Local Food Consumption Summary

The survey data suggested that although Hopi farming is in decline, a significant number of Hopi men still farm and garden.

**Farming and gardening at Hopi**

28% of respondents affirmatively stated that they still farmed or kept a food-producing garden, while nearly 40% of male respondents said that they farmed. Interestingly, employed males were more than twice as likely to farm as unemployed men.

The survey data suggested that farming was more prevalent in the western part of the reservation and declined as one moved eastward. This could be due to the historical influence of the Keams Canyon Indian Agency, unequal access to good farm land or decline in traditional practices.

**Factors that limit farming**

Respondents felt that water, time and access to land were the three greatest impediments to farming. Although the distribution of answers was similar among both those who farmed and those who did not, there was one notable exception: those who did not farm or garden were 10 times more likely to cite access to land as an issue.

**Amount of food consumed that is grown at home**

When respondents were asked how much of their food was grown by clan relatives or at home, two key points emerged:

1) Only 22% of respondents said that more than 1/4 of their food was grown locally. This demonstrates a significant decline in a community that was still almost entirely food self-sufficient as recently as 60 years ago.

2) Although farming trends were similar across age, employment status, and household income, socially disadvantaged groups - including youth, elders, low income households, etc. reported that they consumed more local food. This could be the result of the redistribution of locally grown food through clan sharing and ceremonial giving.

**Youth interest in Hopi food traditions**

A slight majority (52%) of respondents felt that youth were interested in Hopi food traditions. Importantly, when youth themselves were asked, 75% stated that they were interested in Hopi food and farming. Respondents emphasized repeatedly that parents and elders were not taking on the responsibility of educating the youth and that as a result youth were being drawn away by outside influences.
Farming and gardening at Hopi

Respondents were asked if they farmed or kept a food producing garden.

- 28% of respondents stated affirmatively that they farmed or kept a garden.
• Nearly 40% of male respondents, however, said that they farmed.
• 42% of men between 21 and 60 farmed compared to 33% of men 60 and over.

• As well, employed males were significantly more likely to farm than unemployed males.
When viewed by village, the percent of respondents who farmed in general seemed to decline from west to east. This may be a consequence of access to good farming land, the strength of traditional culture, or historical consequences of proximity to the Indian Agency in Keams Canyon.
Factors that limit farming

Respondents were asked to indicate which factors limited their ability to farm or garden.

- The primary limitations indicated by respondents were water, time and access to land.

- There were, however, some notable differences between those who farmed or gardened and those who did not. Those who did not farm were 10 times more likely to cite access to land as an impediment.
• Although the numbers may not be statistically significant, Moencopi and First Mesa had the greatest number of respondents who cited access to land as a significant issue.
Consumption of locally grown food

Respondents were asked to identify what percent of the food they consume comes from clan relatives or from their own farm or garden.

- A total of 22% of respondents said that more than \( \frac{1}{4} \) of their food was grown locally. It should be noted that a century ago, nearly 100% of all food consumed by Hopi was grown locally.

- More locally grown foods appeared to be consumed on the western side of the reservation and appeared to decline moving toward the east.
• Both younger and older respondents reported eating a higher percentage of locally grown food. This could be because they are more likely to farm or because they are more likely to receive food from family and clan relatives.
Consumption of locally grown food among the socially disadvantaged

The socially disadvantaged reported consuming more locally grown food than other groups. Interestingly, they appeared to farm and garden less, suggesting that a lot of food grown for consumption is redistributed to community members who may be in need.

- Unemployed respondents reported consuming more than twice as much locally grown food as those who held jobs. In contrast, employed respondents appeared to farm and garden more frequently.
Again, low income households appeared to consume significantly more locally grown produce though they farmed less.
Are young people interested in Hopi food traditions?

- Respondents were nearly evenly divided on whether youth were interested in Hopi food traditions.
- When segmented by age group, however, the majority of youth themselves stated that they were interested in Hopi food traditions. 73% of youth felt they were interested in Hopi food and farming compared to 49% of older respondents.
- When asked for reasons, older respondents were more likely to say young people were lazy or not interested in learning. Younger generations, however, expressed a desire to learn and stated that older generations were reluctant to teach.
Appendix

Survey Instrument

Indigenous Pride Healthcare Workers
Community Food Assessment and Health Survey
Summer, 2004

Many of the diseases that currently affect the Hopi people are related to changes in diet and the availability of healthy foods. The following information will help us better understand what we eat and where we shop so as to help address diet-related illnesses at Hopi.

Your participation is completely voluntary and confidential. Do not write your name or address on the survey. Please do not fill out this survey more than once.

Date: _____

Demographic Information
1. Gender: Male Female

2. How old are you?
   13-20 21-39 40-59 60 & over

3. What village are you from?

4. How many people do you have in your household?
   Adults ages 18 and over 0 1 2 3 4 5
   Children ages 0-17 0 1 2 3 4 5

5. Are you employed outside of the household? Yes No

6. Do you earn above or below $12,000 per year (optional)? Above Below

Where You Shop
Are you one of the main people in your family who buys food? Yes No
7. Do your local grocery stores offer a variety of foods for purchase at good prices?
   Not enough
   Enough

Appendices 110
8. Do you receive any of the following types of food assistance?
   - WIC
   - Food Stamps
   - Commodities (FDPIR)
   - Don’t Know
   - None

9. How much do you think your household spends per month on food?

10. The following question is intended to find out where people shop, how frequently, and how much money leaves the reservation for food purchases.

<table>
<thead>
<tr>
<th>Store</th>
<th>How much do you think you spend on food each month at each of these stores?</th>
<th>How many times a month do you shop here?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keams Canyon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circle M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secakuku’s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kykotsmovi Store</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotevilla Co-op</td>
<td></td>
<td></td>
</tr>
<tr>
<td>John Ortega – Fruit van</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schwann truck</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safeway</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bash’a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sam’s Club</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farmer’s Market store</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. How much of your food is grown by clan relatives or comes from your own fields or garden?
   - less than 25%
   - 25 to 50%
   - more than 50%

12. If local stores offered healthier choices would you shop there more often? Yes  No
13. What are the top reasons you shop on rez and off rez?

<table>
<thead>
<tr>
<th>Reason</th>
<th>On rez</th>
<th>Off rez</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close to my house or easily accessible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good prices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good selection of foods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freshness and quality of food</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friendly / Know the staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. What are the top three things that determine what food you purchase?

- _____ Locally grown
- _____ Good price for the amount you get (overall cost)
- _____ Favorite brand
- _____ Ease of preparation
- _____ Health and nutrition
- _____ Pressure from children and family
- _____ Habit / taste
- _____ Organic / naturally grown

15. What food items do you buy only on-reservation? (optional)

- Meat
- Dairy
- Vegetables and Fruit
- Bread/Cereal/Flour
- Beverages
- Snacks

16. Only off reservation?

- Meat
- Dairy
- Vegetables and Fruit
- Bread/Cereal/Flour
- Beverages
- Snacks

17. Do you have difficulty getting to stores?  Yes  No

18. Would you like to have a Hopi Farmer’s Market?  Yes  No

19. How do you feel about having large chain stores at Hopi?
20. When you purchase food in town, is it because you’ve also gone there for other reasons?
   Yes  No

Growing Food (Optional)
21. Do you farm or keep a food-producing garden?  Yes  No

22. If no, what limits your ability to garden?
   _____ Time
   _____ physical limits
   _____ space, land
   _____ money
   _____ lack of help
   _____ knowledge
   _____ water

What You Eat
23. How often do you eat:
   Not at all  once a week  2-4 times/week  every day
   fresh produce
   frozen foods
   locally grown foods
   canned foods
   packaged/pre-prepared

24. How many servings of soda or pop do you think you drink each day? _____
   (1 serving = 12 oz. can)?

25. What things keep you from eating more healthy foods (Rate 1-5.  1=very true, 5=not true)?
   _____ Healthy foods not readily available
   _____ They cost too much
   _____ Don’t know what they are
   _____ Don’t know how to prepare them
   _____ Don’t have time to prepare them
   _____ Don’t like how they taste
   _____ Need help with budgeting
   _____ Need help on how to grow a garden
Health

26. Has a doctor ever told you that you have/had (optional):
   Diabetes or high blood sugar     Yes       No
   High blood pressure (hypertension) Yes       No
   Heart disease                   Yes       No
   Cancer                         Yes       No
   Obesity                        Yes       No
   High blood cholesterol         Yes       No
   Stroke                         Yes       No

27. How tall are you?  ______________________

28. About how much do you weigh?

29. Do you know what obesity means?  Yes       No

30. Do you think that you are overweight?  Yes       No

31. Do you think being overweight puts you at high risk for diabetes?  Yes       No

Culture  (Optional)

32. Do you think that young people in your community are interested in food traditions?  If not, why do you think this is so?

33. If you could tell your tribal and village leaders anything about food and nutrition issues, in your community, what would you tell them?
Food Mapping exercise (to be done at village level)
Glossary

Food security:

Food Sovereignty

Food System

Farmers markets

Community supported agriculture

Whole food vs. processed food

Organic vs. commercial

Locally produced vs. global
Recommended Reading

Omnivore’s dilemma

Food Fight

Coming Home to Eat

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Community Food Project Tools, Resources, Organizations

The following organizations have worked to promote local food systems around the country. If you would like further information you may contact the Natwani Coalition or reach out to them directly.

National Organizations

Slow Food USA
434 Broadway, 6th floor
New York, NY 10013
212 965 5640

Slow Foods Arizona

Regional Organizations

Southwest Marketing Network
3900 Paseo del Sol
Santa Fe, NM 87507
505 473 1004
pamelaroy@aol.com

TOCA
PO Box 1790
Sells, AZ 85634
520 383 4966
wynread@earthlink.net
treader@tocaonline.org

Local Organizations

Native Movement
Natwani Coalition

Other Regions

Wai‘anae Community Redevelopment Corp
PO Box 444
Wai‘anae, HI 96792
808 864 9485
kukuig6792@hawaii.rr.com
**Funding Sources**

Kellogg Foundation  
USDA Community Food Project  
USDA RMA

**Seventh Generation Fund**  
PO Box 4569  
Arcata, CA 95528  
707 825 7640

**Seva Foundation**  
1786 Fifth Street  
Berkeley, CA 94710  
510 845 7382 x308  
jmalvido@seva.org

**Training**

**UC Farm and Garden Program**  
1156 High St.  
Santa Cruz, CA 95064  
831 459 3695

**Traditional Native American Farmers Association**  
PO Box 31267  
Santa Fe, NM 87594-1267  
505 983 4047  
cbrascoupe@yahoo.com

**The Food Project**  
PO Box 705  
Lincoln, MA 01773

**TCEDC**  
PO Box 1389  
Taos, NM 87571
Farmers Markets

Flagstaff Farmers Market

Flagstaff Community Supported Farmers Market

Acoma Farmers Market

San Felipe Farmers Market

Shiprock Farmers Market
Local Community Assets and contact information

**Sidebars**

**What can you do**
Practical suggestions on what people can do to address the issue highlighted by the data

**Hopi Factoids**
Facts from other surveys or historical information about Hopi farming

**Hopi Food Project Profiles**
Ferrell Orchard Project
Wepo
Hungry Bear
Food Symposium
Seed Run
Sumitnangwa
Water Run
Boy Power planting
Bacavi terraces
HBCS kitchen
HPDP / CPO farming curriculum
Hopi Farmers Market
Orchard Restoration project