

WHOSE FOOD SECURITY? CONFRONTING EXPANDING COMMODITY PRODUCTION AND THE OBESITY AND DIABETES EPIDEMICS

*David V. Fazzino II**

I.	Introduction.....	393
II.	International Food Security Law and Policy	394
III.	Food Security Law and Policy in the United States	398
IV.	Health Impacts of Food Law and Policy	402
	A. Diseases of Affluence in the United States: Obesity and Diabetes.....	403
	B. Diseases of Affluence Among Native Americans: Obesity and Diabetes.....	406
V.	Historical Modifications of Tohono O’odham Food Systems	407
VI.	Food Security Revisited.....	409
	A. The Importance of Traditional Foods.....	409
	B. Community Food Security	413
	C. Traditional Food Security.....	414
VII.	Concluding Remarks and Policy Suggestions	415

I. INTRODUCTION

Food security in international politics has been examined extensively and used as a means by which food surpluses can be distributed on a global scale to those areas that are defined as “food insecure.” The United States is particularly well situated within this regime as a supplier of commodity foods through a number of mechanisms, including, but not limited to, the World Food Program. In contrast to viewing the current food security regime in terms of production for

* Assistant Professor, Department of Anthropology, University of Alaska Fairbanks. M.S., Sustainable Systems, Slippery Rock University, December 1999; J.D., University of Florida Levin College of Law, 2007; and Ph.D., Anthropology, University of Florida, 2008. This author would like to thank the Tohono O’odham who supported his research, as well as his dissertation committee members and students at the University of Alaska Fairbanks who provided feedback on earlier iterations of this Article. The copyright for this Article has been retained by the author, all rights reserved.

global distribution, this Article will examine food security health impacts of the U.S. commodity-oriented production system on Native Americans, particularly the Tohono O'odham. Original data for this Article was collected for doctoral research on the Tohono O'odham Nation from 2004-2007. The Tohono O'odham Nation's lands straddle the United States-Mexico border in southern Arizona and northern Sonora, Mexico.

This Article highlights the importance of asking, "Whose food security?" in order to more holistically confront contemporary health challenges created in part by the current structure of food systems. First, this Article will review both contemporary and historical aspects of global and U.S. discourses on food security through current international and U.S. food security law and policy. Second, this Article will discuss the impacts of the food system on Native Americans, particularly the Tohono O'odham, by highlighting the disproportionate increase in diseases of affluence among these populations, such as obesity and type 2 diabetes. Third, this Article will examine historical modifications of the Tohono O'odham traditional food system and will highlight the agency of the Tohono O'odham who are working within current frameworks and seeking creative approaches to confront type 2 diabetes. Finally, this Article will conclude with a discussion of how the efforts of the Tohono O'odham may inform more inclusive understandings of food security so that local definitions of food and health are more fully incorporated into discussions about the policy and law surrounding global food security.

II. INTERNATIONAL FOOD SECURITY LAW AND POLICY

The United Nations standard definition of food security is in the World Food Summit Plan of Action, a product of the 1996 World Food Summit.¹ According to the Plan of Action, "Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."² This food security concept considers that adequate food must not only be produced but also distributed and consumed.³ This definition also allows for consideration of the preferences of individual people to access foods so that they can live active and healthy lives.⁴ It allows for a qualitative, if partial, discussion of what food

1. World Food Summit, Nov. 13-17, 1996, *World Food Summit Plan of Action*, ¶ 1, U.N. Doc. W3613/E (Nov. 13, 1996).

2. *Id.*

3. *See id.*

4. *See id.* (stating that the food should meet both the individual's "dietary needs and food preferences").

security means for differently situated individuals.⁵ This definition fails to specifically account for cultural factors in determining food consumption at the household and community level; however, several sections within the World Food Summit Plan of Action expand the notion of food security beyond the individual, situating food security with indigenous peoples' approaches to economic and social development and utilization of traditional foods.⁶ The World Food Summit Plan of Action, like other international law policy statements, conventions and declarations offers a broad normative framework within which governments may act *as appropriate* to implement such policies at the state level.⁷ Hence, although the World Food Summit Plan of Action addresses several aspects of food security for indigenous peoples, the extent to which these are im-

5. *See id.*

6. *Id.* at ¶¶ 14, 21, 32.

To prevent and resolve conflicts peacefully and create a stable political environment, through respect for all human rights and fundamental freedoms

. . . [G]overnments, in partnership, as appropriate, with all actors of civil society, will where not already accomplished:

. . . .

(d) Recognize and support indigenous people and their communities in their pursuit of economic and social development, with full respect for their identity, traditions, forms of social organization and cultural values.

Id. ¶ 14.

To ensure that food supplies are safe, physically and economically accessible, appropriate and adequate to meet the energy and nutrient needs of the population.

To this end, governments, in partnership with all actors of civil society, as appropriate, will:

. . . .

(c) Encourage, where appropriate, the production and use of culturally appropriate, traditional and underutilized food crops . . . promoting home and, where appropriate, school gardens and urban agriculture, using sustainable technologies, and encourage the sustainable utilization of unused or underutilized fish resources

Id. ¶ 21.

To pursue, through participatory means, sustainable, intensified and diversified food production, increasing productivity, efficiency, safety gains, pest control and reduced wastes and losses, taking fully into account the need to sustain natural resources.

To this end, governments, in partnership with all actors of civil society, and with the support of international institutions, will, as appropriate:

. . . .

(b) Promote policies and programmes which encourage appropriate input technologies, farming techniques, and other sustainable methods, such as organic farming, to assist farming operations to become profitable, with the goal of reducing environmental degradation, while creating financial resources within the farming operation; such programmes should, when relevant, build upon farmers' own experiences and indigenous knowledge

Id. ¶ 32.

7. *See* World Food Summit, *supra* note 1, ¶ 12.

plemented is left to the discretion of individual states within which the indigenous communities are continually negotiating *appropriate* sovereignty, autonomy and access to resources.⁸ The World Food Summit Plan of Action also cites other international human rights and environmental instruments as imperative to confront challenges to food security.⁹ The U.N. Convention on Biological Diversity (CBD) also addresses food security at the genetic level.¹⁰

Although there is not an internationally recognized definition of the right to food agreed to by all States,¹¹ human rights instruments have offered varying degrees of commitment to food security for differently situated individuals and groups of people. These instruments include not only the International Covenant on Economic, Social and Cultural Rights,¹² but also the Declaration on the Right

8. *Id.*

9. *Id.* ¶¶ 17, 33, 61 (citing Convention on the Rights of the Child, G.A. Res 44/25, U.N. Doc. A/RES/44/25 (Nov. 20, 1989); United Nations Framework Convention on Climate Change, *entered into force* March 21, 1994, 1771 U.N.T.S. 107; International Covenant on Economic, Social and Cultural Rights, *opened for signature* Dec. 19, 1966, 993 U.N.T.S. 3).

10. Convention on Biological Diversity art. 1, *entered into force* Dec. 29, 1993, 1760 U.N.T.S. 79. According to Article 1, the three objectives of the CBD are: “the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources,” including by appropriate use of its technologies, “taking into account all rights over those resources and to technologies, and by appropriate funding.” *Id.* Under the CBD, it is ultimately the State that will decide on a fair appropriation of the resources between the government and the indigenous peoples. *Id.* art. 3. However, the CBD does provide some guidelines in Article 8, which states:

Each Contracting Party shall, as far as possible and as appropriate:

....

(j) subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices

Id. art. 8.

11. For the former Special Rapporteur on the right to food, Mr. Jean Ziegler, “The right to food is the right to have regular, permanent and free access, either directly or by means of financial purchases, to quantitatively and qualitatively adequate and sufficient food corresponding to the cultural traditions of the people to which the consumer belongs, and which ensures a physical and mental, individual and collective, fulfilling and dignified life free of fear.”

U.N. Econ. & Soc. Council [ECOSOC], Comm’n on Human Rights, *Economic, Social and Cultural Rights: The Right to Food*, ¶ 3, U.N. Doc. E/CN.4/2005/47 (Jan. 24, 2005) (quoting U.N. Econ. & Soc. Council [ECOSOC], Comm’n on Human Rights, *Economic, Social and Cultural Rights: The Right to Food*, ¶ 14, U.N. Doc. E/CN.4/2001/53 (Feb. 7, 2001) (*prepared by Jean Ziegler*)).

12. International Covenant on Economic, Social, and Cultural Rights, *supra* note 9.

All peoples may, for their own ends, freely dispose of their natural wealth and resources without prejudice to any obligations arising out of international economic co-operation,

to Development and the Universal Declaration of Human Rights.¹³ The recently adopted U.N. Declaration on the Rights of Indigenous Peoples also addresses aspects of food security.¹⁴

based upon the principle of mutual benefit, and international law. In no case may a people be deprived of its own means of subsistence.

Id. art. 1, ¶ 2.

1. The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions. The States Parties will take appropriate steps to ensure the realization of this right, recognizing to this effect the essential importance of international co-operation based on free consent.

2. The States Parties to the present Covenant, recognizing the fundamental right of everyone to be free from hunger, shall take, individually and through international co-operation, the measures, including specific programmes, which are needed:

(a) To improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources;

(b) Taking into account the problems of both food-importing and food-exporting countries, to ensure an equitable distribution of world food supplies in relation to need.

Id. art. 11.

13. Declaration on the Right to Development, G.A. Res. 41/128, U.N. Doc.

A/Res/41/128 (Dec. 4, 1986).

(1) States should undertake, at the national level, all necessary measures for the realization of the right to development and shall ensure, inter alia, equality of opportunity for all in their access to basic resources, education, health services, food, housing, employment and the fair distribution of income Appropriate economic and social reforms should be carried out with a view to eradicating all social injustices.

Id. art. 8, ¶ 1. Universal Declaration of Human Rights, G.A. Res. 217A, at 71, U.N. GAOR, 3d Sess., 1st plen. mtg., U.N. Doc. A/810 (Dec. 12, 1948).

(1) Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.

Id. art. 25, ¶ 1.

14. According to the United Nations Declaration on the Rights of Indigenous People:

1. Indigenous peoples have the right to maintain and develop their political, economic and social systems or institutions, to be secure in the enjoyment of their own means of subsistence and development, and to engage freely in all their traditional and other economic activities.

2. Indigenous peoples deprived of their means of subsistence and development are entitled to just and fair redress.

....

1. Indigenous peoples have the right to the lands, territories and resources which they have traditionally owned, occupied or otherwise used or acquired.

....

III. FOOD SECURITY LAW AND POLICY IN THE UNITED STATES

As previously mentioned, these international concepts of food security are adopted *as appropriate* by countries, including the United States.¹⁵ Food security has also been defined at the federal level for consideration of national and international food security policy. One operational definition for measuring food security in the United States was formulated by the USDA.¹⁶ According to the USDA, food security is “access by all people at all times to enough food for an active, healthy life.”¹⁷ By utilizing this definition, the USDA determined that “[m]ost U.S. households have consistent, dependable access to enough food for active, healthy living—they are food secure.”¹⁸ The U.S. approach to food security at the international level has been developed by the United States Agency for International Cooperation and Development (USAID), which defines food security as, “When all people at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life.”¹⁹

The current food security policy of the United States, both nationally through the USDA and internationally through the USAID, focuses primarily on quantitative measures of food security—in terms of physical and economic access to enough foods—without considering actual household utilization of these foods or psychological and cultural values attached to food consumption and

3. States shall also take effective measures to ensure, as needed, that programmes for monitoring, maintaining and restoring the health of indigenous peoples, as developed and implemented by the peoples affected by such materials, are duly implemented.

United Nations Declaration on the Rights of Indigenous Peoples, G.A. Res. 295, U.N. Doc. A/RES/61/295, art. 20, 26, 29 (Sept. 13, 2007).

15. *See supra* Part I.

16. *See* MARK NORD ET AL., ECON. RESEARCH SERV., HOUSEHOLD FOOD SECURITY IN THE UNITED STATES, 2004, at 2 (2004).

17. *Id.*

18. *Id.* at iv.

19. U.S. AGENCY FOR INT’L COOPERATION & DEV. [USAID], PD-19, DEFINITION OF FOOD SECURITY (1992), available at <http://www.usaid.gov/policy/ads/200/pd19.pdf>. The USAID policy determination lists the four previous international and national definitions that were utilized in the formulation of the USAID definition of food security:

1. ‘Access by all people at all times to enough food for an active, healthy life.’ (World Bank)
2. ‘All people at all times have both physical and economic access to the basic food they need.’ (FAO Committee on World Food Security)
3. ‘Access by all people at all times to sufficient food and nutrition for a healthy and productive life.’ (The Agricultural Trade Development and Assistance Act of 1990 {P.L.480})
4. ‘When all people at all times have access to sufficient food to meet their dietary needs for a productive and healthy life.’ (USAID Bureau for Africa, 1986).

Id.

preparation.²⁰ Former President George W. Bush described U.S. food security policy in his speeches.²¹ In his address to the Future Farmers of America on July 27, 2001, he noted the high importance of producing enough food to feed people in the United States and linked this to national security and freedom from international pressure.²² He stated:

It's important for our nation to build—to grow foodstuffs, to feed our people. Can you imagine a country that was unable to grow enough food to feed the people? It would be a nation that would be subject to international pressure. It would be a nation at risk. And so when we're talking about American agriculture, we're really talking about a national security issue.²³

This concern over the relationship between food security and national security by the former President is obvious, considering that the United States has utilized food as a weapon; perhaps the most notable example is the embargo on Cuba.²⁴ The Cuban embargo has forced individual families and the Cuban government to make due with fewer ties to global circuits of food production and distribution.²⁵ The embargo led to an increase in the number of policies, programs, and measures to enhance food security by relying on local and national food production programs.²⁶ Similarly, the United States has been responsible for the imposition of Coalition Provisional Authority Order 81 in Iraq, which imposes World Trade Organization-friendly intellectual property rights, including limitations on the rights of farmers to use seeds from the previous season's

20. *See id.*; NORD ET AL., *supra* note 19, at iv.

21. *E.g.*, President George W. Bush, Address to the United States Global Leadership Council (May 31, 2007), *available at* <http://georgewbush-whitehouse.archives.gov/news/releases/2007/05/print/20070531-9.html> [hereinafter Bush, Address]; President George W. Bush, Remarks to the Future Farmers of America (July 27, 2001), *available at* <http://georgewbush-whitehouse.archives.gov/news/releases/2001/07/20010727-2.html> [hereinafter Bush, Remarks].

22. Bush, Remarks, *supra* note 21.

23. *Id.*

24. *U.S.–Cuba Policy: Hearing Before the Subcomm. on Trade of the Ways and Means Comm.*, 111th Cong. 3 (2010) (testimony of Roger Johnson, President, Nat'l Farmers Union).

25. *See, e.g.*, Marcos Nieto & Ricardo Delgado, *Cuban Agriculture and Food Security*, in *SUSTAINABLE AGRICULTURE AND RESISTANCE: TRANSFORMING FOOD PRODUCTION IN CUBA* 40, 46–47 (Fernando Funes et al. eds., Dulce María Vento Cárdenas et al. trans., Food First Books 2002) (2001).

26. *See, e.g.*, Fernando Funes, *The Organic Farming Movement in Cuba*, in *SUSTAINABLE AGRICULTURE AND RESISTANCE: TRANSFORMING FOOD PRODUCTION IN CUBA*, *supra* note 25, at 1, 6–8 (including structural measures in agriculture, such as the creation of basic units of cooperative production, new types of state farms, distribution of coffee and tobacco land to peasant families, distribution of plots for food production, encouraging food self-provisioning, urban agriculture, agricultural production cooperatives, and credit and service cooperatives).

harvest.²⁷ Coalition Provisional Authority Order 81 could undermine food security for farmers unable to afford required seed purchases if patented material is found among seeds which have been saved from the previous season.²⁸

When the operational definitions of food security are limited to measuring how much food is created and distributed, then the United States emerges as a superior nation in terms of its overall food security and food surpluses.²⁹ At the same time, the relative inability of so-called less developed countries to meet the caloric needs of their populace—due to chronic or acute instability in environmental, economic or political sectors—is described as vulnerability and reflective of their inferiority.³⁰ Those in international development circles would also point to the poor transportation infrastructure in these less developed countries, which limits the distribution of food to areas that may be in the greatest need of food assistance.³¹ In the United States, the temporal unfolding of science and technology is perceived as leading directly to the continual emergence of progress.³² Notions of this superiority are reflected in the literature concerning food production and security where the locus of food insecurity is consistently placed in the so-called less developed world, while the United States occupies the role of provider and breadbasket of the world.³³ The stated superiority of the U.S. interna-

27. See Patent, Industrial Design, Undisclosed Information, Integrated Circuits and Plant Variety Law, C.P.A. Order 81, ¶ 66, U.N. Doc. CPA/ORD/26 (Apr. 26, 2004).

28. See generally CARY FOWLER, UNNATURAL SELECTION: TECHNOLOGY, POLITICS, AND PLANT EVOLUTION 118-23 (1994) (discussing background information on the Plant Variety Protection Act of 1970); Rosemary J. Coombe, *Fear, Hope, and Longing for the Future of Authorship and a Revitalized Public Domain in Global Regimes of Intellectual Property*, 52 DEPAUL L. REV. 1171, 1173 (2003) (noting that the U.S. patent system is designed to protect investment first and rewards innovation or creativity as a secondary consideration); Cary Fowler, *By Policy or Law? The Challenge of Determining the Status and Future of Agro-Biodiversity*, 3 J. TECH. L. & POL'Y 1, 7 (1997) (noting the development of patent law as applied to plants in the United States was written by seed industry lawyers to protect the interests of the seed industry).

29. See ECON. RESEARCH SERV., USDA, AN ILLUSTRATED GUIDE TO RESEARCH FINDINGS FROM USDA'S ECONOMIC RESEARCH SERVICE 32-33 (2009), available at <http://www.ers.usda.gov/Publications/EIB48/EIB48.pdf>.

30. See FOOD & AGRIC. ORG., THE STATE OF FOOD INSECURITY IN THE WORLD 9 (2009), available at <ftp://ftp.fao.org/docrep/fao/012/i0876e/i0876e.pdf>.

31. See, e.g., Mark W. Rosegrant & Sarah A. Cline, *Global Food Security: Challenges and Policies*, 302 SCI. 1917, 1918 (2003).

32. Arturo Escobar, *Welcome to Cyberia: Notes on the Anthropology of Cyberculture*, CURRENT ANTHROPOLOGY, June 1994, at 211, 211-12.

33. E.g., Dan Morgan, *Emptying the Breadbasket*, WASH. POST, Apr. 29, 2008, available at <http://www.washingtonpost.com/wp-dyn/content/article/2008/04/28/AR2008042802509.html>.

tional agro-industrial complex is intimately connected with economics and politics; it is a historically produced discourse.³⁴

This growth-oriented approach to agriculture has been particularly apparent since U.S. Secretary of Agriculture Earl Butz challenged U.S. farmers to expand production by planting from “fence row to fence row” and by scaling up operations.³⁵ Indeed most farmers did answer the challenge of “get big or get out” with the deployment of this production regime in agriculture law and policy.³⁶ The industrialization of agriculture has condensed the processes of production into fewer hands via market forces. In the United States, this reduction in the number of agricultural workers is strikingly apparent as 137 hectares are farmed by the average American agricultural worker.³⁷ While the number of farmers has decreased in the U.S., adoption of Green Revolution technologies worldwide has been successful in increasing grain yields from 1.1 tons per hectare in 1950 to 2.8 tons per hectare in 1992.³⁸ At one point in the 1970s, the Food and Agriculture Organization of the United Nations estimated that the earth could support 157 billion people through Green Revolution technologies.³⁹

This technological optimism, as well as the belief in the ability of the United States to act as a compassionate nation to help feed the world has remained, despite reports of decreased yields, the degradation of soils and communities throughout the U.S. Great Plains, diminishing water supplies in the American West, and chemical and genetic contamination throughout the United States. In public discourse, the United States re-emerges time and again in self-congratulatory discourse as the exemplar of not only a big brother offering a less fortunate sibling assistance in time of need, but also the global center of innovation. This optimism, sense of superiority, and patriotism were reaffirmed in a 2007 speech by former President George W. Bush:

Millions suffer from hunger and poverty and disease in this world of ours. Many nations lack the capacity to meet the overwhelming needs of their people. Alleviat-

34. See Arturo Escobar, *After Nature: Steps to an Antiessentialist Political Ecology*, CURRENT ANTHROPOLOGY, Feb. 1999, at 1, 1 (stating that the meaning of nature is heavily influenced by human history).

35. See HAROLD F. BREIMYER, OVER-FULFILLED EXPECTATIONS: A LIFE AND AN ERA IN RURAL AMERICA 227-28 (1991); Eric Holt-Giménez, *The World Food Crisis: What is Behind it and What We Can Do*, WORLD HUNGER NOTES, Oct. 23, 2008, <http://www.worldhunger.org/articles/09/editorials/holt-gimenez.htm>.

36. See Holt-Giménez, *supra* note 35.

37. Gretchen C. Daily & Paul R. Ehrlich, *Socioeconomic Equity, Sustainability, and Earth's Carrying Capacity*, 6 ECOLOGICAL APPLICATIONS 991, 993 (1996).

38. Gregory Conko & Fred L. Smith, Jr., *Biotechnology and the Value of Ideas in Escaping the Malthusian Trap*, 2 AGBIOFORUM 150, 151 (1999).

39. HARVEY A. LEVENSTEIN, PARADOX OF PLENTY: A SOCIAL HISTORY OF EATING IN MODERN AMERICA 147 (rev. ed. Univ. of Cal. Press 2003) (1993).

ing this suffering requires bold action from America. It requires America's leadership and requires the action of developed nations, as well.

....
We are a compassionate nation. When Americans see suffering and know that our country can help stop it, they expect our government to respond. I believe in the timeless truth, and so do a lot of other Americans, to whom much is given, much is required. We're blessed to live in this country. We're blessed to live in the world's most prosperous nation. And I believe we have a special responsibility to help those who are not as blessed. It is the call to share our prosperity with others, and to reach out to brothers and sisters in need.⁴⁰

Despite this optimism and the tremendous growth in U.S. agriculture production, there are still numerous food security issues in the United States.⁴¹ Both urban and rural populations suffer from a lack of food security as defined under international law and policy.⁴² In addition there are a number of health and nutritional disparities in the United States surrounding both undernutrition and overnutrition; in some instances, this may occur within the same individual who consumes an overabundance of calorie-dense, nutrient-poor foods.⁴³ These health disparities are particularly apparent when examining Native American populations.⁴⁴ The remainder of this Article will highlight the need for a more reflexive approach to food security, wherein the quantity of food produced and distributed as assistance is but one measurement in a series of metrics necessary to understand the ramifications of a food system focused primarily on commodity production to achieve food security.

IV. HEALTH IMPACTS OF FOOD LAW AND POLICY

Health depends upon diet as well as a number of other factors. Caloric shortfall has been a major concern in the United States, particularly during times of economic crisis. However, today much of the concern revolves around the overabundance of calories.⁴⁵ The increase in the number of calories consumed in

40. Bush, Address, *supra* note 21.

41. See generally GLYNWOOD CTR., NEW PERSPECTIVES ON FOOD SECURITY (2005), available at http://www.leopold.iastate.edu/pubs/other/files/food_security.pdf (containing several articles describing food security).

42. See Frederick Kirschenmann, *The Context of Food Security*, in GLYNWOOD CTR., *supra* note 41, at 57, 60-61.

43. See Keecha Harris, *Community Implications Food Programs, Policies, and Access Issues*, in GLYNWOOD CTR., *supra* note 41, at 113, 114.

44. Brenda A. Broussard et al., *Prevalence of Obesity in American Indians and Alaska Natives*, 53 AM. J. CLINICAL NUTRITION 1535S, 1535S (1991) (finding that recent studies suggest that American Indians have higher rates of obesity than other U.S. populations).

45. See generally Mark A. Pereira et al., *Fast-food Habits, Weight Gain, and Insulin Resistance (the CARDIA Study: 15-Year Prospective Analysis)*, 365 LANCET 36, 36 (2005) (describ-

relation to caloric expenditure leads to weight gain. Consequently, this weight gain leads to individuals becoming classified as “overweight” or “obese.” Overweight or obese persons are increasingly vulnerable to a number of diseases that have been collectively referred to as “diseases of affluence.” This section will discuss the scope of diseases of affluence, particularly type 2 diabetes, in terms of the overall U.S. population and Native Americans.

A. *Diseases of Affluence in the United States: Obesity and Diabetes*

From a biomedical perspective, an individual’s own decision-making regarding caloric consumption and activity levels are key factors in determining whether someone will gain weight and eventually become overweight or obese.⁴⁶ This perspective has been reiterated in public health discourse, which stresses self-management and personal responsibility.⁴⁷ Anthropologists and others have challenged the primacy of self-responsibility common in public health discourse and instead highlight the uneven distribution of healthy foods based on income and ethnicity.⁴⁸ Hence, although an individual may have choices among food options, those choices are limited by the physical, social and cultural environments within which individuals find themselves. As an example, an individual who relies on purchases to acquire food, has a low income, lacks access to transportation and lives in a neighborhood in which fresh foods are infrequently sold will face a greater challenge in consuming high quality, nutrient-rich foods than an individual who attains food through purchase as well as other means, has access to transportation, has a higher income and lives near farmers’ markets, grocery stores and produce stands. Hence, narratives of personal responsibility in health discourse deflect a critical examination of food systems by failing to ac-

ing factors increasing risk for obesity and diabetes, including excessive portion sizes in fast-food meals).

46. See Geof Rayner et al., *Why are we Fat? Discussions on the Socioeconomic Dimensions and Responses to Obesity*, GLOBALIZATION & HEALTH, 2010, at 1, 2, available at <http://www.globalizationandhealth.com/content/pdf/1744-8603-6-7.pdf>. There are a number of metrics by which one is determined to be medically categorized as overweight or obese. One is the Body Mass Index (BMI), which is the ratio of an adult’s height and weight. *Id.* at 1. An individual with a BMI between 25 and 29.9 is considered to be overweight, while an individual with a BMI over 30 is considered to be obese. *Id.* This measure has been critiqued because it fails to account for individuals who may have a weight to height ratio which is considered overweight or obese, while at the same time having a very low percentage of body fat. *Id.* at 1-2.

47. See, e.g., Melanie Rock, *Death, Taxes, Public Opinion, and the Midas Touch of Mary Tyler Moore: Accounting for Promises by Politicians to Help Avert and Control Diabetes*, 17 MED. ANTHROPOLOGY Q. 200, 212-13 (2003).

48. See, e.g., Anthony Winson, *Bringing Political Economy into the Debate on the Obesity Epidemic*, 21 AGRIC. & HUM. VALUES 299, 300-01 (2004).

count for the responsibility of others to ensure for the possibility of personal responsibility. In other words, structural inequities limit an individual's potential choices.

Popular media accounts have recently examined the environmental, health and societal risks posed by the vertical integration of food production. This has been illustrated most clearly in the 2004 Academy Award nominated film *Supersize Me* and in the non-fiction book and film *Fast Food Nation*. *Supersize Me* traces the path of Morgan Spurlock as he embarks on a month-long diet consisting only of items found on McDonald's menus throughout the United States.⁴⁹ During the same time, he measures his activity levels to mirror what the average person in the United States does for exercise.⁵⁰ The film points out the dangers of fast-food consumption coupled with a sedentary lifestyle.⁵¹ Despite challenges by the fast food industry to the validity of Spurlock's claims given his regimented diet—eat only McDonald's three times a day and “supersize”—a recent study suggests a connection between fast food consumption and obesity.⁵² The study, which followed 3031 subjects between eighteen and thirty years old in 1985-1986 for fifteen years, found that fast-food consumption has “strong, positive, and independent associations with weight gain and insulin resistance,” which can increase the risk of obesity and type 2 diabetes.⁵³ The *Fast Food Nation* film, based on the book by Eric Schlosser, provides accounts of a fictionalized fast food company's production through the eyes of the company's employees, associates and former employees.⁵⁴ This film gives some indication of the dangers faced by workers in feedlots, slaughterhouses and restaurants and others involved in fast food production and consumption.⁵⁵ These accounts may raise awareness among specific segments of the population; however, mere recognition of potential health consequences does not necessarily translate into actual dietary modification, particularly for those with neither the time nor monetary resources to make dietary modifications.

Despite media campaigns of public health professionals and agencies,⁵⁶ the majority of people over thirty in the U.S. are either overweight or obese, and the prevalence of overweight or obese individuals is likely to increase.⁵⁷ While

49. SUPERSIZE ME (Kathbur Pictures et al. 2004).

50. *Id.*

51. *Id.*

52. Pereira et al., *supra* note 45, at 42.

53. *Id.* at 37, 41-42.

54. FAST FOOD NATION (BBC Films et al. 2006)

55. *See id.*

56. Michael McCarthy, *The Economics of Obesity*, 364 LANCET 2169, 2169 (2004).

57. WORLD HEALTH ORG., THE IMPACT OF CHRONIC DISEASE IN THE UNITED STATES 2, http://www.who.int/chp/chronic_disease_report/usa.pdf (last visited Dec. 30, 2010).

79% of men in the United States were overweight or obese in 2005, the World Health Organization (WHO) estimates that 87% will be overweight or obese by 2015.⁵⁸ While 77% of women in the United States were overweight or obese in 2005, the WHO estimates that 83% will be overweight or obese by 2015.⁵⁹ Eighty-eight percent of U.S. deaths a year, or 2.12 million, are due to chronic diseases.⁶⁰ The solution offered by the WHO is a healthy diet, regular exercise and avoidance of tobacco products.⁶¹ High rates of obesity among Native Americans have been documented for some time.⁶² In 1987 when the prevalence of obesity was 9.1% among men and 8.2% among women for the United States as a whole, Native Americans had rates of 13.8% for men and 16.6% for women.⁶³

Type 2 diabetes presents a serious challenge to community health professionals worldwide as the incidence rate of diabetes continues to rise in third world countries.⁶⁴ This increase will lead to a rise in the overall number of people living with type 2 diabetes in the coming decades.⁶⁵ Currently, the highest incidence rates are in developed countries such as the United States.⁶⁶ According to the WHO, the United States had 17.7 million cases of diabetes in 2000, compared to 33 million for all the WHO Region of the Americas.⁶⁷ In 2005, the total prevalence of diabetes in the United States was 20.8 million people or seven percent of the population.⁶⁸ Of these 20.8 million people, 14.6 million, or about 70%, were aware that they had diabetes, while 6.2 million had diabetes but had

58. *Id.*

59. *Id.*

60. *Id.* at 1.

61. *Id.* at 2.

62. See, e.g., William C. Knowler et al., *Obesity in the Pima Indians: Its Magnitude and Relationship with Diabetes*, 53 AM. J. CLINICAL NUTRITION 1543S, 1543S (1991); Dennis William Wiedman, *Adiposity or Longevity: Which Factor Accounts for the Increase in Type II Diabetes Mellitus When Populations Acculturate to an Industrial Technology?*, 11 MED. ANTHROPOLOGY 237, 241 (1989).

63. Broussard et al., *supra* note 44, at 1537S.

64. See Parvez Hossain et al., *Obesity and Diabetes in the Developing World—A Growing Challenge*, 356 NEW ENG. J. MED. 213, 214 (2007) (noting the increase in diabetes will be the most noticeable in developing countries with diabetes rates increasing from 84 million to 228 million between 2000 and 2030).

65. See *id.* (noting that diabetes is a rapidly emerging global healthcare problem with projected rates increasing from 171 million in 2000 to 366 million by 2030).

66. See World Health Org., *Country and Regional Data*, http://www.who.int/diabetes/facts/world_figures/en/index3.html (last visited Dec. 30, 2010).

67. *Id.*

68. CTRS. FOR DISEASE CONTROL & PREVENTION, NATIONAL DIABETES FACT SHEET: UNITED STATES, 2005, at 3 (2005), available at http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2005.pdf.

not been diagnosed.⁶⁹ The incidence of those over the age of twenty who had been newly diagnosed with diabetes in 2005 was 1.5 million people.⁷⁰ In 2002, diabetes was the sixth leading cause of death in the United States, and the total costs of diabetes were \$132 billion in medical costs, disability, work loss and premature mortality.⁷¹ In addition to the high number of deaths and economic costs, individuals, families and communities all suffer from the diminished quality of life experienced by individuals who have type 2 diabetes.⁷² These problems include loss of vision or blindness, nephropathy (kidney damage), atherosclerosis (fatty build-up causing hardening of the arteries), foot problems, neuropathy (peripheral nerve disorder), and dialysis.⁷³ However, as the next section will show, the risk of diabetes and the health consequences associated with it are unequally distributed within the United States.

B. Diseases of Affluence Among Native Americans: Obesity and Diabetes

Populations at high risk of developing type 2 diabetes include African Americans, Native Americans, Latinos and Asian Americans;⁷⁴ hence, programs that target these populations will be essential in slowing the overall increase of type 2 diabetes in the United States. Diabetes was virtually unknown among Native Americans prior to 1940.⁷⁵ The increase in levels of obesity in Native Americans has made this population more susceptible to type 2 diabetes.⁷⁶ Among Native Americans in 2003, aged twenty and over, who received care from Indian Health Services (IHS), 12.8% or 99,500 had been diagnosed with

69. *Id.*

70. *Id.* at 6.

71. *Id.* at 6, 8.

72. See generally Kenneth M. Weiss et al., *Diabetes Mellitus in American Indians: Characteristics, Origins and Preventative Health Care Implications*, 11 MED. ANTHROPOLOGY 283, 289-98 (1989) (giving background information on the physical and social effects of type 2 diabetes).

73. *Id.* at 291-93. See TRISTAN READER, TOHONO O'ODHAM CMTY. ACTION, THE HEALTH EFFECTS CAUSED BY THE LOSS OF THE TRADITIONAL FOOD SYSTEM (2010), http://www.tocaonline.org/www.tocaonline.org/Oodham_Foods/Entries/2010/3/30_The_Health_Effects_Caused_by_the_loss_of_the_Traditional_Food_System.html (listing "kidney failure, loss of eyesight, circulatory problems and severe organ damage" as health problems caused by diabetes). Dialysis may also be required for patients who have lost kidney function, and currently about 10% of Tohono O'odham people require dialysis. *Id.* Dialysis can have profound effects on family life for Tohono O'odham individuals. See *id.*

74. Karmeen D. Kulkarni, *Food, Culture, and Diabetes in the United States*, 22 CLINICAL DIABETES 190, 190 (2004).

75. See Wiedman, *supra* note 62, at 238.

76. See Knowler et al., *supra* note 62; Thomas K. Welty, *Health Implications of Obesity in American Indians and Alaska Natives*, 53 AM. J. CLINICAL NUTRITION 1616S, 1617S (1991).

diabetes.⁷⁷ There is an estimated total of 118,000 or 15.1% of those who receive care from IHS that have diabetes, although 18,500 of them have yet to be diagnosed.⁷⁸ The highest prevalence rate for type 2 diabetes, after adjustment for age differences, is in southern Arizona at 27.6%.⁷⁹

The increased exposure of Native American youth in the southwest to factors which contribute to diabetes and subsequent weight gain will translate into increased levels of mortality and end-stage renal disease as this population reaches middle age.⁸⁰ This will lower overall quality of life for individuals suffering from the disease, and will negatively impact families and communities in which these individuals live.

Native American populations were exposed to a series of new diseases and illnesses as colonial powers worked to *claim* territory in the Americas. Some of these illnesses were brought about through historical differences in exposure to disease associated with animals indigenous to the Old World. In some instances these differing rates of exposure were exploited in order to allow colonists to delve further into Native American territories with decreased resistance. Shifts in food systems also led to an increase in vulnerability to particular illnesses.

V. HISTORICAL MODIFICATIONS OF TOHONO O'ODHAM FOOD SYSTEMS

As part of a policy of assimilation, many Native American tribes had their food systems decimated with the intention of eliminating Native Americans as unique cultural groups.⁸¹ This was justified through the rhetoric of efficiency since the food systems of Native Americans were viewed as inefficient; thus, outsiders were simply providing more "appropriate" and efficient food systems.⁸² Hence food systems were refashioned to limit the mobility and autonomy of Native Americans by creating reliance upon non-native production, distribution and exchange mechanisms in order to meet nutritional needs. These incursions and

77. CTRS. FOR DISEASE CONTROL & PREVENTION, *supra* note 68, at 5.

78. *Id.*

79. *Id.*

80. See Knowler et al., *supra* note 62, at 1548S; Meda E. Pavkov et al., *Effect of Youth-Onset Type 2 Diabetes Mellitus on Incidence of End-Stage Renal Disease and Mortality in Young and Middle-Aged Pima Indians*, 296 J. AM. MED. ASS'N 421, 425 (2006).

81. See DAVID RICH LEWIS, NEITHER WOLF NOR DOG: AMERICAN INDIANS, ENVIRONMENT, AND AGRARIAN CHANGE 168 (1994) (describing the heart of U.S. Indian policy as one to civilize and assimilate Native Americans into American society as farmers).

82. See *id.* at 16-18.

attempted modifications of the Tohono O'odham food system pre-dated the formal arrival of the U.S. government into the region.⁸³

Outsiders have, since the first contact with the Spanish, attempted to re-fashion the food systems of the Tohono O'odham in order to make them less "wasteful."⁸⁴ Early missionaries into the region encouraged the Tohono O'odham to settle around missions by introducing new options to food security.⁸⁵ The Tohono O'odham adopted and modified Spanish crops and farming practices for incorporation into their food system, which had previously relied on floodwater farming, hunting and gathering to produce food. It was not until the 1940s that outside factors made the continuance of traditional styles of farming a more difficult choice or even a non-option for many Tohono O'odham individuals. These factors included the implementation of programs designed to enhance food security among the Tohono O'odham through food assistance and other means, work opportunities in agriculture at times of the year when attention was needed in their own fields, relocations to cities and boarding schools, and increased availability and relative low cost of purchased food items.⁸⁶ These factors combined in varying intensities over the course of several decades to bring about a steady decline in traditional food production by the Tohono O'odham Nation. Traditionally, many O'odham planted fields with the summer rains they relied upon for irrigation. These rains were brought through rituals surrounding the harvesting and consumption of wine made from *bahidaj* or saguaro fruit. There were an estimated 9177 to 16,000 acres of floodwater farming on Tohono O'odham lands in the late 1910s.⁸⁷ Production utilizing floodwater farming declined from over 20,000 acres in the late 1920s to 2500 by 1949 and then to less than twenty-five in 2002.⁸⁸ There were mere remnants of these floodwater fields in 1986,⁸⁹ and only a handful of farmers still practiced farming in this manner when the research for this Article was completed. With the decline in overall acreage in traditional production, there was also a dramatic decline in traditional food production. As an example, the tepary bean (*Phaseolus acutifolius* A. Gray) production on the Tohono O'odham Nation fell from 1.8 million pounds in the

83. *Id.* at 133-35.

84. *See id.* at 133-37.

85. *See id.* at 134.

86. *See* DANIEL LOPEZ ET AL., TOHONO O'ODHAM CMTY. ACTION & TOHONO O'ODHAM CMTY. COLL., COMMUNITY ATTITUDES TOWARD TRADITIONAL TOHONO O'ODHAM FOODS 9 (2002), available at <http://www.safs.msu.edu/culturaldiv/Tohono%20O'odham%20Foods.pdf>.

87. G.P. Nabhan, *Papago Indian Desert Agriculture and Water Control in the Sonoran Desert, 1697-1934*, APPLIED GEOGRAPHY, Jan. 1986, at 43, 53-54.

88. LOPEZ ET AL., *supra* note 86.

89. *See* Nabhan, *supra* note 87, at 43.

1930s to less than 100 pounds in 2001.⁹⁰ Declines in production of traditional foods logically corresponded with a decrease in the consumption of traditional foods.⁹¹

VI. FOOD SECURITY REVISITED

The previous section highlighted the attempts of outsiders to refashion food systems towards meeting the needs of non-Tohono O'odham. This section will highlight the agency of the Tohono O'odham, who along with scientists, are not only highlighting the importance of traditional foods in terms of health and cultural continuity, but also working to make these foods more available. For local communities and indigenous peoples such as the Tohono O'odham, the American approach to food security is woefully inadequate to address the cultural appropriateness of foods and diseases of affluence which plague community members. Tohono O'odham Community Action (TOCA) has brought attention to the need to revise the concept of food security to more effectively consider the unique challenges that the Tohono O'odham face.⁹² This section will discuss the importance of traditional foods for contemporary Tohono O'odham, the community food security concept, and the application of the community food security concept to the Tohono O'odham food system, or what this author refers to as "traditional food security."

A. *The Importance of Traditional Foods*

Recent academic articles have highlighted the connection between traditional foods and health. Shifts in dietary consumption, coupled with more sedentary lifestyles and concomitant health and nutritional consequences, have been well documented by social scientists and others.⁹³ A study in the 1970s showed that some of the traditional foods of both the Hopi and the Tohono O'odham are nutritionally superior to foods provided to these two groups through the U.S.

90. LOPEZ ET AL., *supra* note 86, at 19.

91. Although floodwater farming has nearly disappeared from the Tohono O'odham Nation, in the last decade traditional food production, particularly tepary bean production, on the Tohono O'odham Nation has begun to rebound. The two major farms which produce traditional foods on the Tohono O'odham Nation, San Xavier Cooperative Farm and Papago Farms, are utilizing both tractors and non-flood water irrigation to grow crops that have historically relied on hand or draft power with floodwater farming. Hence, the Tohono O'odham are selecting appropriate tools to allow for a revitalization of traditional foods production.

92. *See, e.g.*, LOPEZ ET AL., *supra* note 86.

93. *See, e.g.*, WINONA LADUKE, *RECOVERING THE SACRED: THE POWER OF NAMING AND CLAIMING* 199-02 (2005).

government's commodity program.⁹⁴ Many times these studies note that either assimilation or acculturation are occurring to the point where the original food form has become unrecognizable.⁹⁵ For the Tohono O'odham, food remains an essential component of identity, relationship and place.

Preliminary studies of the connection between traditional food consumption and health indicate that a traditional Native American diet, in conjunction with exercise, and subsequent weight loss assists in improving the condition of patients with type 2 diabetes.⁹⁶ While O'Dea worked with Australian indigenous peoples,⁹⁷ Swinburn's research was on the Pima,⁹⁸ who are closely related to the Tohono O'odham. Swinburn's study used traditional foods collected from the Sonoran Desert or grown utilizing floodwater farming methods.⁹⁹ These traditional foods include buds of the cholla cactus (*Cylindropuntia acanthocarpa* Knuth), fruits of the saguaro cactus (*Carnegiea gigantea* (Engelmann) Britton & Rose) and tepary beans. Gary Paul Nabhan, an ethnobotanist advocate for the strong connections between place, people and health, has brought Swinburn's research to the attention of larger audiences.¹⁰⁰ He writes,

Boyd Swinburn demonstrated in a clinical experiment at Phoenix Indian School that a complete diet of these foods was sufficient to control diabetes without the supplemental use of medications or altered exercise regimes. Conversely, he determined that a diet consisting of convenience store foods with the same number of calories and the same fat/protein/carbohydrate ratio was all that was needed to trigger diabetes.¹⁰¹

Another study primarily on Pima suggests that the incidence rate of type 2 diabetes may be lowered by a dietary preference for traditional foods, including

94. D.H. Calloway et al., *The Superior Mineral Content of Some American Indian Foods in Comparison to Federally Donated Counterpart Commodities*, 3 *ECOLOGY FOOD & NUTRITION* 203, 209 (1974).

95. *See generally id.* (noting the replacement of locally grown food by processed food from federal program donations and the resulting effects on nutrition).

96. *See, e.g.,* Kerin O'Dea, *Marked Improvement in Carbohydrate and Lipid Metabolism in Diabetic Australian Aborigines After Temporary Reversion to Traditional Lifestyle*, 33 *DIABETES* 596, 596 (1984); *cf.* B.A. Swinburn et al., *Deterioration in Carbohydrate Metabolism and Lipoprotein Changes Induced by Modern, High Fat Diet in Pima Indians and Caucasians*, 73 *J. CLINICAL ENDOCRINOLOGY & METABOLISM* 156, 164 (1991) ("[T]he change from a high carbohydrate, traditional Pima diet to a high fat, modern diet caused" a rise in type 2 diabetes).

97. O'Dea, *supra* note 96, at 596-97.

98. Swinburn et al., *supra* note 96, at 156.

99. *See id.* at 157.

100. *See* GARY PAUL NABHAN, *CROSS-POLLINATIONS: THE MARRIAGE OF SCIENCE AND POETRY* 57 (2004).

101. *Id.*

post-contact foods, when compared to an Anglo dietary preference.¹⁰² Pre-contact Tohono O’odham foods are high in dietary fiber and complex carbohydrates that slowly release sugar, leading to a more gradual rise in blood sugar.¹⁰³ Further, “Mucilage present in mesquite pods and cactus pads also dramatically lowers the insulin response by slowing the digestion and absorption of starches.”¹⁰⁴

Over the course of this author’s fieldwork, many O’odham individuals and entities expressed concern that despite decades of biomedical research, little has been done to curb ever-increasing rates of diabetes.¹⁰⁵ At the same time, mere education efforts describing the extent of the type 2 diabetes epidemic among the O’odham will not be sufficient to confront the epidemic. A recent study on obesity among Native American adolescents concluded, “[I]ntervention programs need to place less emphasis on convincing Native American youth of the importance of weight control, and more emphasis on enabling them to successfully modify their lifestyles to prevent excessive weight gain.”¹⁰⁶ The Tohono O’odham are addressing type 2 diabetes not only through biomedical education and outreach efforts, but also through initiatives which promote physical activity and pre-contact traditional foods.

Traditional diets and the time and energy required for procurement and processing have been effective in maintaining the health of populations in the ecosystems within which they have co-existed and co-created.¹⁰⁷ Although sub-

102. See Desmond E. Williams et al., *The Effect of Indian or Anglo Dietary Preference on the Incidence of Diabetes in Pima Indians*, 24 *DIABETES CARE* 811, 814 (2001).

103. See MICHAEL J. BALICK & PAUL ALAN COX, *PLANTS, PEOPLE, AND CULTURE: THE SCIENCE OF ETHNOBOTANY* 66-67 (1996).

104. *Id.* at 67. See generally WENDY C. HODGSON, *FOOD PLANTS OF THE SONORAN DESERT* 5 (2001) (describing other traditional foods of the O’odham with slow digestion and absorption rates).

105. See Carolyn Smith-Morris, *Autonomous Individuals or Self-Determined Communities? The Changing Ethics of Research Among Native Americans*, 66 *HUM. ORG.* 327, 331 (2007). After forty years, Pima perceptions of biomedical research are not positive. *Id.* There are three concerns Pima have with diabetes research: (1) a cure or reasonable control mechanism will never materialize; (2) research done by outsiders is a fake or exploitative scheme; and (3) benefits are primarily for non-Pima and non-Indian people. *Id.*

106. Dianne Neumark-Sztainer et al., *Psychosocial Concerns and Weight Control Behaviors Among Overweight and Nonoverweight Native American Adolescents*, 97 *J. AM. DIETETIC ASS’N* 598, 603 (1997).

107. See generally *EATING AND HEALING: TRADITIONAL FOOD AS MEDICINE* (Andrea Pieroni & Lisa Leimar Price eds., 2006) (linking human health to traditional foods); Louis E. Grivetti & Britta M. Ogle, *Value of Traditional Foods in Meeting Macro- and Micronutrient Needs: The Wild Plant Connection*, 13 *NUTRITION RES. REV.* 31 (2000) (characterizing scholarship linking edible wild plants to human health); Donald A. Hegwood, *Human Health Discoveries*

stantiated with primarily circumstantial information, TOCA and Tohono O'odham Community College (TOCC) maintain that the increase in the incidence rate of type 2 diabetes began with the departure from a traditional diet to a more Western diet.¹⁰⁸ This belief is shared by many O'odham who note the greater nutritional qualities of foods collected, grown and hunted in their homelands in relation to foods purchased in grocery stores.¹⁰⁹ Indeed, one of the first anthropologists to work in the area noted the belief of a connection between change in diet and declining health with the shift to the grocery-store economy.¹¹⁰ During this transition from a traditional food system to one centered around the grocery store, it was not merely the diet that was changing, but also other aspects of the Tohono O'odham lifestyle. Many O'odham were less involved in the physical activities previously required in a subsistence lifestyle.

Although the author did not specifically mention the connection between diabetes and traditional foods during interviews, diabetes was viewed as connected to traditional foods by over half of the respondents in the author's dissertation study.¹¹¹

[R]egardless of whether there is definitive biomedical proof of the relationship between decreased traditional food consumption and increased incidence of type 2 diabetes, there [are]: (1) A number of studies documenting the nutritional quality of food, traditional and contemporary; (2) A belief amongst organizations in Native American communities and particularly the Tohono O'odham that there is a strong link between declining traditional food consumption and increased incidence of diabetes; and (3) The importance of diabetes as a major issue in the lives of individuals and families of Tohono O'odham.¹¹²

This section has suggested that the current U.S. paradigm of food security, which focuses primarily on quantitative measures of food security, may not meet the unique needs of Native Americans in general and the Tohono O'odham in particular, as it does not fully account for the connections between the consumption of traditional foods and health.

with *Opuntia sp. (Prickly Pear)*, 25 HORTSCIENCE 1515 (1990) (discussing the connection between food and health).

108. See LOPEZ ET AL., *supra* note 86, at 9-10.

109. *Id.* at 10.

110. See RUTH M. UNDERHILL, *PAPAGO WOMAN* 37, 39 (Waveland Press 1985) (1979).

111. David V. Fazzino II, *Traditional Food Security: Tohono O'odham Traditional Foods in Transition* 32 (May 2008) (unpublished Ph.D dissertation, Univ. of Florida), available at http://etd.fcla.edu/UF/UFE0021669/fazzino_d.pdf.

112. *Id.* at 33.

B. *Community Food Security*

The community food security concept offers an alternative way of envisioning and working to create food systems, which can confront contemporary concerns. The Community Food Security Coalition, a California-based NGO, has extended the food security concept to “all persons in a community having access to culturally acceptable, nutritionally adequate food through local, non-emergency sources at all times.”¹¹³

Quite different from the internationally formulated definition of food security put forth by USAID, the Community Food Security Toolkit was developed at the 1999 Community Food Security Assessment Conference and was designed for local organizations and individuals in the private, public and third sectors.¹¹⁴ The toolkit provides a much broader definition of food security at the community level such that community food insecurity may manifest if any of the following are present:

- There are inadequate resources from which people can purchase foods.
- The available food purchasing resources are not accessible to all community members.
- The food available through the resources is not sufficient in quantity or variety.
- The food available is not competitively priced and thus is not affordable to all households.
- There are inadequate food assistance resources to help low-income people purchase foods at retail markets.
- There are no local food production resources.
- Locally produced food is not available to community members.
- There is no support for local food production resources.

113. KATHERINE H. BROWN & ANNE CARTER, CMTY. FOOD SEC. COAL., URBAN AGRICULTURE AND COMMUNITY FOOD SECURITY IN THE UNITED STATES: FARMING FROM THE CITY CENTER TO THE URBAN FRINGE 4 (2003), *available at* <http://www.foodsecurity.org/PrimerCFSCUAC.pdf>.

114. *See* BARBARA COHEN, ECON. RESEARCH SERV., COMMUNITY FOOD SECURITY ASSESSMENT TOOLKIT 5 (2002), *available at* <http://www.ers.usda.gov/publications/efan02013/efan02013.pdf>.

- There is any significant level of household food insecurity within the community.¹¹⁵

These criteria offer a much more realistic point of departure than USAID's measures for examining the current state of food insecurity on the Tohono O'odham Nation. Certainly, large-scale agricultural production and distribution systems are capable of offering immediate solutions for food insecurity crisis management. Yet, as the preceding section on diseases of affluence demonstrates, these systems do not address the unique needs of indigenous peoples who have co-created the landscapes which they have historically occupied. Small-scale agricultural production and distribution systems, while not as capable in short-term crisis management, offer the potential for long-term food security by taking into account the unique nutritional needs of the populations that they serve. Critics of small-scale agricultural systems as a primary means for ensuring food security point to the increasing advancements in applications of chemical, breeding, and biotechnology technologies, which have allowed for increasing gains in the production of foods for the ever increasing global population.¹¹⁶

Many O'odham noted, "Knowledge of place and process provides a knowing of the overall quality of foods including taste and nutrition."¹¹⁷ The O'odham critiqued food systems in much the same way that proponents of sustainable and bioregional-based agriculture would, by noting the difference in food quality between distant and local whole foods.

Eating locally for some O'odham, much like for proponents of sustainable agriculture becomes a way to eat "natural" and . . . "real" foods that are not tarnished with the chemical residues typical of foods available in most supermarkets and fast food restaurants.¹¹⁸

For some O'odham, eating local provides a greater sense of security from increasing uncertainty in supply chains and potential terrorist attacks.¹¹⁹

C. *Traditional Food Security*

Traditional food security extends the community food security concept and draws on indigenous peoples' rich history of interactions with the landscape.¹²⁰

115. *Id.* at 3-4.

116. *See, e.g.,* Conko & Smith, *supra* note 38, at 150.

117. Fazzino, *supra* note 111, at 37.

118. *Id.*

119. *Id.* at 38.

120. *Id.* at 196.

The Tohono O'odham view food as intimately connected not only with identity but also health and well-being. Acts of procurement, preparation and sharing of traditional foods amongst the Tohono O'odham are moments of intimacy with the human and the non-human worlds.

....

This [author's] research has shown that for the Tohono O'odham Nation traditional food security would be present if all of the following conditions were true[:]

- Availability of not only local and healthy foods but also traditional foods which enhance the overall health and well-being of individuals and communities.
- Revitalization, redevelopment and maintenance of traditional farming systems (in the case of the Tohono O'odham this would be floodwater farming including *ak chin* farming) to serve as sites of interaction of individuals with their environmental companions.
- Enhancement and spread of household and community knowledge concerning traditional foods, including the knowledge of where to find these foods and how to prepare them.
- Adequate time or financial resources available to engage in procurement and preparation of traditional foods, at the household and community levels.
- Equivalence of desired consumption of traditional foods and actual consumption of traditional foods.¹²¹

VII. CONCLUDING REMARKS AND POLICY SUGGESTIONS

Since most current agriculture operations are subsidized in one way or another by the U.S. government, it is crucial to examine recent decision-making regarding allocation of funding for agriculture in the region. The USDA favors an industrial approach to agriculture on the Nation in terms of overall assistance given to the Tohono O'odham. The USDA did promote what it refers to as a culturally-appropriate system to revitalize traditional cultural practices and reduce the incidence and severity of diabetes among tribal members through an \$80,000 competitive grant in 1997 and a \$135,000 grant in 2001, both awarded to TOCA.¹²² While these figures may sound significant, it is crucial to consider the

121. *Id.*

122. MAYA TAUBER & ANDY FISHER, CMTY. FOOD SEC. COAL., A GUIDE TO COMMUNITY FOOD PROJECTS 2 (2004), available at http://www.foodsecurity.org/cfsc_case_studies.pdf; Press Release, Alisa Harrison & Maria Bynum, USDA, USDA Awards \$2.4 Million in Community Food Project Grants to 14 States (Nov. 21, 2001), available at <http://www.csrees.usda.gov/newsroom/news/2001news/foodgrants.html>. The competitive grant in 2007 was through the Community Food Projects Competitive Grants Program, administered through the Cooperative State Research, Education, and Extension Service (CSREES) of the USDA. TAUBER & FISHER, *supra* note 122, at 1. It

competitive nature of securing grant funding for the short term in relation to the expenditures for promotion of industrial styles of agriculture production.¹²³

In the United States, a shift towards a community food security framework would pave the way for other policy shifts promoting the health of Native American Nations, rural communities and other improperly nourished populations. The following are policy recommendations that would advance and support traditional food security:

1. Restructure the U.S. Farm Bill to shift away from mass production of commodities to a qualitative approach to food security including traditional food security which promotes health and community.
2. Increase funding to institutional cafeterias to allow for on-site food production. This will allow traditional and local foods to be incorporated into meals.
3. Include locally grown foods (including Tohono O'odham traditional foods) in federal food programs. This will allow low-income families the opportunity to access traditional foods, support local growers and the local economy.
4. Grant U.S. citizenship for all [Native Americans located on the U.S.-Mexico border or U.S.-Canada border] and allow for the free flow of [Native American] peoples across . . . international border[s] so that cultural and social ties and traditions can be maintained.
5. Increase and provide systematic funding at the national level to Native Americans to fund traditional food projects. Currently this funding is sporadic and requires tribal entities to compete with other communities at risk of dietary diseases[,] such as type 2 diabetes, for a relatively meager pool of resources relative to overall U.S. food security funding.¹²⁴

Native American communities, including the Tohono O'odham, Zuni, Hopi, Navajo, Anishinaabe and others, have already done much to restore their traditional food systems.¹²⁵ New initiatives and current efforts will be fostered by a paradigm shift in U.S. food security policy. Food security of Native American Nations will be determined both for and by each Native American Nation. This shift would preface acceptance of the aforementioned policy recommendations

was established in 1996 as part of the Farm Bill and titled the Community Food Security Act. *Id.* Total funding from the program's inception in 1996 through 2003 included \$22 million to 166 programs. *Id.*

123. See generally Env'tl. Working Group, Cotton Subsidies in Pima County, Arizona Totaled \$9.1 Million in Program Years 2003-2005, <http://farm.ewg.org/sites/farmbill2007/progdetail1614.php?fips=04019&progcode=cotton> (last visited Dec. 30, 2010) (indicating that in 2003 alone, \$1,642,351 in cotton subsidies were paid in Pima County, Arizona).

124. Fazzino, *supra* note 111, at 199 (citations omitted).

125. See LADUKE, *supra* note 93, at 198-10 (describing projects regarding revitalization efforts of traditional foods and food systems among Native Americans).

2010] *Commodity Production & the Obesity & Diabetes Epidemics* 417

and assist the Tohono O'odham, Native American groups, and other communities in developing initiatives to deal with issues related to diseases of affluence and address community concerns of cultural degradation by promoting traditional food security.