

Chapter 1 : Rural Hunger and Access to Healthy Food Introduction - Rural Health Information Hub

Consumer choices about food spending and diet are likely to be influenced by the accessibility and affordability of food retailers—travel time to shopping, availability of healthy foods, and food prices.

Socioeconomic characteristics Why do food deserts exist in rural areas? Characteristics and Influential Factors of Food Deserts , from the USDA-ERS, reports that food deserts tend to have small populations, higher numbers of vacant homes, and more residents with less education, lower incomes, and higher rates of unemployment. Many rural areas lack a population base large enough to support a grocery store that carries a variety of affordable and healthy food. Also, some rural residents do not have access to reliable transportation to a grocery store. A article in the American Journal of Preventive Medicine discusses the impact that consolidation in the retail food industry has had on rural food access: What strategies have rural communities used to improve access to healthy and affordable food? Many different approaches have been used to address this issue. The Healthy Food Access Portal can help communities find funding and resources related to retail projects and policy efforts. **Special Financing for Food Retailers** Some rural communities offer subsidized financing for food retailers by participating in state programs. Examples include the Michigan Good Food Fund and the California FreshWorks Fund, which offer financing to enterprises that benefit underserved communities in those states. **Cooperative Grocery Stores** Some rural grocery stores are community-owned or use the cooperative model. Co-ops have long existed in rural communities to provide key services such as electricity and phone service, where distance and low volumes make providing that service unattractive and unsustainable for traditional businesses. Cooperatives are composed of members who are both customers and owners. The community-owned model closely resembles the cooperative model, although it is typically organized as a corporation, in which community members can buy shares. For more information, see **Rural Grocery Stores: Ownership Models that Work for Rural Communities**. **Farmers Markets** Farmers markets can be established in rural areas to help small local farmers financially, while also increasing access to fresh fruits and vegetables for local residents. However, it can be a challenge to establish a rural farmers market, due to large geographic distances and the small number of potential shoppers. **Attracting Vendors and Customers to Rural Farmers Markets** offers suggestions on how to choose a location for a market and how to promote the market to farmers and consumers. **Rural Farmers Market Promotes Food Security** highlights how one farmers market in rural Michigan has promoted programs to help disadvantaged residents access fresh produce more easily. Farmers receive a cash investment to operate their farm and residents receive a supply of fresh produce. This program allows farmers and consumers to share the risks and benefits of local farming. **Farm to School Initiatives** Farm to school initiatives help local farmers sell fresh fruits and vegetables directly to public schools or incorporate school gardens in meal programs so that nutritious meals and snacks can be served to students and teachers, as well as educating children about nutrition and local farming. The Center for Integrated Agricultural Systems offers toolkits and other resources related to farm to school initiatives. **Food Pantries** Food pantries and other forms of direct food assistance, such as backpack food programs for children , can fill an important need for rural residents experiencing food insecurity. Food pantries can distribute nutritious food to low-income families as well as work with the local social services staff to educate families on nutrition, the Supplemental Nutrition Assistance Program SNAP , and other social services in the community. Mobile food pantry trucks may be an option in rural communities without a suitable place to store and distribute food. For example, the Care and Share Food Bank provides mobile food pantry services to rural communities across Southern Colorado. **Community Education and Outreach** Community programs to improve access to food also include education and outreach activities. Approaches to assist low-income residents include education on food assistance programs, social services, and training related to home economics, such as cooking from scratch and getting the most for your food dollar. In addition, community organizations can start community gardens and teach people how to grow their own food. **How can rural healthcare organizations address food and nutrition issues in their community?** Rural healthcare organizations can work with human services providers to ensure that low-income patients are able to access healthy food

options. Human services organizations may be able to offer training and tools to primary care providers so that they can screen patients for food insecurity. Healthcare providers can refer patients to: Local food pantries Human services agencies for food assistance programs Women, Infants, and Children WIC office Meal programs for seniors In addition, rural healthcare providers can provide counseling and nutrition education for patients, to promote wellness and help manage chronic disease. Facilities may partner with other community organizations and businesses to provide or refer patients to cooking classes, meal programs, and other nutrition-related services and education. Healthcare providers can also prescribe healthy foods. Providing Patients with Access to Nutritious Food describes programs in which medical facilities actively promote consumption of healthy foods among patients and local residents. See the Models and Innovations section of this topic guide for examples of projects conducted in rural communities. How widely used are federal nutrition programs among rural families? Furthermore, child poverty is higher in rural areas. Fiscal Year , WIC provides nutritious food, information on healthy eating, education on breastfeeding, and referrals to healthcare. According to the document, Federal Child Nutrition Programs are Important to Rural Households , the percentage of households with a mother or child participating in the WIC program is higher in rural areas 9. What nutrition programs are available for children in rural schools, daycare centers, and other settings? In addition to SNAP, nutrition programs available for rural children include:

Chapter 2 : Impact of Food Availability on Diet - Prevention Research Center at Tulane University

View more Rural Hunger and Access to Healthy Food Gaining access to healthy and affordable food can be a challenge for rural residents. Many rural areas lack food retailers and are considered food deserts: areas with limited supplies of fresh, affordable foods.

But those who are food-insecure or low-income also face unique challenges in adopting and maintaining healthful behaviors, as described below. Limited resources and lack of access to healthy, affordable foods. Instead, residents “ especially those without reliable transportation ” may be limited to shopping at small neighborhood convenience and corner stores, where fresh produce and low-fat items are limited, if available at all. Comprehensive literature reviews examining neighborhood disparities in food access find that neighborhood residents with better access to supermarkets and limited access to convenience stores tend to have healthier diets and reduced risk for obesity Larson et al. Households with fewer resources e. Food choices and purchases may be constrained by limits on how much can be carried when walking or using public transit e. Transportation costs also cut into the already limited resources of low-income households, and these costs plus travel time can be substantial Rose et al. When available, healthy food may be more expensive in terms of the monetary cost as well as for perishable items the potential for waste, whereas refined grains, added sugars, and fats are generally inexpensive, palatable, and readily available in low-income communities Aggarwal et al. Households with limited resources to buy enough food often try to stretch their food budgets by purchasing cheap, energy-dense foods that are filling “ that is, they try to maximize their calories per dollar in order to stave off hunger DiSantis et al. When available, healthy food “ especially fresh produce “ is often of poorer quality in lower income neighborhoods, which diminishes the appeal of these items to buyers Andreyeva et al. Low-income communities have greater availability of fast food restaurants, especially near schools Fleischhacker et al. These restaurants serve many energy-dense, nutrient-poor foods at relatively low prices. Fast food consumption is associated with a diet high in calories and low in nutrients, and frequent consumption may lead to weight gain Larson et al. Cycles of Food Deprivation and Overeating Those who are eating less or skipping meals to stretch food budgets may overeat when food does become available, resulting in chronic ups and downs in food intake that can contribute to weight gain Bruening et al. Unfortunately, overconsumption is even easier given the availability of cheap, energy-dense foods in low-income communities Drewnowski, ; Hilmers et al. Such a coping mechanism puts them at risk for obesity “ and research shows that parental obesity, especially maternal obesity, is in turn a strong predictor of childhood obesity Dev et al. High Levels of Stress, Anxiety, and Depression Members of low-income families, including children, may face high levels of stress and poor mental health e. A number of recent studies find associations between food insecurity and stress, depression, psychological distress, and other mental disorders Laraia et al. Research has linked stress and poor mental health to obesity in children and adults, including for adults stress from job-related demands and difficulty paying bills Block et al. In addition, a number of studies find associations between maternal stress or depression and child obesity Gross et al. Emerging evidence also suggests that maternal stress in combination with food insecurity may negatively impact child weight status Lohman et al. There also is growing evidence that low-income mothers struggling with depression or food insecurity utilize obesogenic child feeding practices and unfavorable parenting practices that could influence child weight status Bronte-Tinkew et al. Fewer Opportunities for Physical Activity Lower income neighborhoods have fewer physical activity resources than higher income neighborhoods, including fewer parks, green spaces, and recreational facilities, making it difficult to lead a physically active lifestyle Mowen, Research shows that limited access to such resources is a risk factor for obesity Gordon-Larsen et al. There is emerging evidence that food insecurity is associated with less physical activity and greater perceived barriers to physical activity e. This is not surprising, given that many environmental barriers to physical activity exist in low-income communities. When available, physical activity resources may not be attractive places to play or be physically active because low-income neighborhoods often have fewer natural features e. Crime, traffic, and unsafe playground equipment are common barriers to physical activity in low-income communities

Neckerman et al. Because of these and other safety concerns, children and adults alike are more likely to stay indoors and engage in sedentary activities, such as watching television or playing video games. Not surprisingly, those living in unsafe neighborhoods are at greater risk for obesity Duncan et al. Low-income children are less likely to participate in organized sports C. Students in low-income schools spend less time being active during physical education classes and are less likely to have recess, both of which are of particular concern given the already limited opportunities for physical activity in their communities Barros et al. Greater Exposure to Marketing of Obesity-Promoting Products Low-income youth and adults are exposed to disproportionately more marketing and advertising for obesity-promoting products that encourage the consumption of unhealthful foods and discourage physical activity e. Such advertising has a particularly strong influence on the preferences, diets, and purchases of children, who are the targets of many marketing efforts Institute of Medicine, ; Institute of Medicine, This results in lack of screening for food insecurity and referrals for food assistance, as well as lack of diagnosis and treatment of emerging chronic health problems like obesity.

Chapter 3 : CDC - Healthy Places - Healthy Food Environment

Food security refers to "a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life". Lack of accessibility to healthy food is an important aspect of food insecurity, as good.

Healthy food can be available and affordable for all. Recent decades have seen a surge in obesity and the chronic metabolic diseases that go with it. And there is a growing consensus that changes in the American diet, particularly increased consumption of high-calorie processed foods, have played a central role in this disturbing trend. But for many Americans, healthy food is not as available or as affordable as it needs to be. Fortunately, there are things we can do to expand healthy food access for everyone. How Simple Dietary Changes Can Save Lives and Money, and How We Get There Reward farmers who grow healthy food American farming is currently dominated by the system of industrial agriculture that arose in the decades after World War II—a system built around immense farms growing commodity crops, such as corn and soybeans, that are used to produce processed foods. Production of these crops is heavily subsidized, which ensures that processed foods will be cheap and abundant. Farmers growing fruits and vegetables—known as "specialty crops" in the world of farm bureaucracy—are largely left outside this system. And if commodity-crop farmers want to branch out and plant fruits and vegetables, they may find that the terms of their subsidies actually prohibit them from doing this. In short, policy puts fruit and vegetable farmers at a disadvantage compared to their peers growing commodity crops. If we want a more abundant and affordable supply of healthy food in our markets, we need to make it easier—not harder—for farmers to grow it. Plant the Plate Support local and regional food systems One of the best ways to help people eat healthier is to give them convenient and affordable places to shop besides the convenience store and the supermarket, where processed foods predominate. Recent decades have seen rapid growth in local and regional food systems, in which farmers sell food to customers either directly—via farmers markets or community supported agriculture CSA operations—or through local institutions such as schools, hospitals or food hubs. Local and regional food systems not only provide a pathway for getting healthy food from the field to the plate. As UCS analysis has shown, they are also good for our economic health: Local and Regional Food Systems Ensuring food equity and security for all Growing healthier food, and marketing it through local and regional food systems, are big steps in the right direction. But they will only provide a real solution to our food system problems if everyone has access to them. Research has shown that diet-related health problems hit low-income communities hardest. People living in these communities often find it more difficult to buy healthy food than residents of more affluent neighborhoods; they may have few nearby food sources besides convenience stores and fast-food restaurants. UCS is working with a variety of partners to bring the voices of these underserved communities to the forefront. Together we are advocating for common-sense policies to ensure access to affordable, healthy food for people at every income level. One promising strategy is to leverage community institutions such as schools and hospitals. Stronger child nutrition policies can make schools reliable sources of healthy food for low-income students, while innovative Farm Bill programs are encouraging hospitals and health centers to partner with community groups on healthy food access as a public health initiative.

Chapter 4 : Improving access to and availability of healthy food - Active Healthy Communities

Home» Topics» Healthy Eating» Access to Healthy Affordable Food Diets high in vegetables, fruits, whole grains, and lean proteins can help us maintain a healthy weight and avoid chronic diseases such as diabetes, cancer, and heart disease.

Project Background Alongside air, water, and shelter, food is a basic necessity for life. Food plays a role in our health, economy, and culture and is a critical part of a sustainable community. The World Health Organization and the United Nations consider access to safe and nutritious food a basic individual right, however many rural and urban residents have limited access to fresh produce and other healthful foods. Food access is not simply a health issue but also a community development and equity issue. For this reason, access to healthy, affordable, and culturally appropriate food is a key component not only in a healthy, sustainable local food system, but also in a healthy, sustainable community. There are many tools a local government can use to address complicated societal issues, such as food access, and plan for the future of a community. Municipal and county planning departments prepare a variety of plans to assess and address challenges in areas ranging from housing and economic development to land use and transportation. Food access and other food system issues, however, are often missing from local planning processes. The comprehensive plan is a leading policy tool with legal significance and the sustainability plan is an emerging and innovative policy tool with promising influence on local government sustainability actions. Both types of plans are increasingly addressing food access and other food systems issues as important plan components. However, many residents in low-income neighborhoods – both rural and urban – have limited access to fresh produce and other healthful foods. This research provides a better understanding of how and why some local governments have addressed food access and food system issues in the comprehensive or sustainability planning process and identifies common themes and innovative features for implementing plan policies and achieving plan goals. The free, page report is divided into four main sections and provides detailed results and analyses for each phase of the study: A total of valid responses from local governments in the U. The five most-cited food system topics in the identified comprehensive and sustainability plans were rural agriculture, food access and availability, urban agriculture, food retail, and food waste. Respondents reported that the food system-related goals, objectives, and policies of adopted plans had positive impacts on the community, including the creation of new community gardens, grocery stores, and farmers markets, as well as changes in land-use regulations and the promotion of locally grown food. Plan Evaluation A sample of plans 13 comprehensive plans and eight sustainability plans was selected for in-depth plan evaluation. Plans were evaluated for how they support and advance principles of a healthy, sustainable food system; how they promote access to safe, nutritious, affordable, culturally appropriate, and sustainably grown food; how they address implementation, monitoring, and evaluation of the food-related goals and policies; and the overall quality of food-related goals and policies. Case Studies The research team also conducted and recorded semi-structured, key informant phone interviews with local government planners and other stakeholders from 15 of the 21 selected plans to learn more about the food access and food systems planning process. Common themes emerged, including: Recommendations and Sample Plan Language The final section of the report provides recommendations for municipalities and counties that are engaging in or beginning to engage in food access and food systems planning, and sample plan language of food systems related vision statements, goals, policies, action items and implementation mechanisms, as well as data collection and assessment tools to monitor and evaluate changes in the local food system over time. The program supports research on environmental and policy strategies with strong potential to promote healthy eating among children to prevent childhood obesity, especially among low-income and racial and ethnic populations at highest risk for obesity. The Robert Wood Johnson Foundation focuses on the pressing health and health care issues facing our country. For more than 35 years, the foundation has brought experience, commitment and a rigorous, balanced approach to the problems that affect the health and health care of those it serves. When it comes to helping Americans lead healthier lives and get the care they need, the foundation expects to make a difference in your lifetime. For more information, visit www.rwjf.org.

Chapter 5 : Access to Healthy Affordable Food | Public Health Law Center

5 PolicyLink Access to Healthy Food and Why It Matters Th oo rust factors affect access to healthy food and its impact on individual and community health.

Received Jul 14; Accepted Oct 7. This is an open access article distributed under the terms of the Creative Commons Attribution License <http://creativecommons.org/licenses/by/4.0/>: This article has been cited by other articles in PMC. Abstract Good nutrition plays an important role in the optimal growth, development, health and well-being of individuals in all stages of life. Healthy eating can reduce the risk of chronic diseases, such as heart disease, stroke, diabetes and some types of cancer. However, the capitalist mindset that shapes the food environment has led to the commoditization of food. Food is not just a marketable commodity like any other commodity. Food is different from other commodities on the market in that it is explicitly and intrinsically linked to our human existence. While possessing another commodity allows for social benefits, food ensures survival. Millions of people in United States of America are either malnourished or food insecure. The purpose of this paper is to present a critique of the current food system using four meanings of the common good--as a framework, rhetorical device, ethical concept and practical tool for social justice. The first section of this paper provides a general overview of the notion of the common good. The second section outlines how each of the four meanings of the common good helps us understand public practices, social policies and market values that shape the distal causal factors of nutritious food inaccessibility. We then outline policy and empowerment initiatives for nutritious food access. Lack of accessibility to healthy food is an important aspect of food insecurity, as good nutrition plays an important role in the optimal growth, development, health and well-being of individuals in all stages of life. Healthy eating can also reduce the risk of chronic diseases such as heart disease, stroke, diabetes and some types of cancer. Female-headed households had a food insecurity prevalence of 18.5%. The impact of food insecurity on children needs to be considered as an issue that may diminish national productivity. Other consequences of food insecurity include the loss in educational attainment and worker productivity, as well as an investment burden into the emergency food system [5]. We intend to rely on the common good approach as an innovative and valuable lens to critically understand and address healthy food insecurity and its public health consequences in the USA. The notion of the common good has been central to conceptions of society from Plato, Aristotle, Cicero, Augustine to Thomas Aquinas [6 - 8]. Its most basic meaning refers to the way the community and its institutions treat citizens. This notion can be understood as a set of conditions that favor human flourishing [9]. In this paper, we will refer to the common good as an analytical tool, an accusatory-rhetorical device, a normative concept and a practical tool that may possibly shape the search for a better understanding of the origin of and concrete solutions to nutritious food inaccessibility. Approaches to the common good are not homogenous and, at times, can be antagonistic. David Hollenbach and Michael Novak, two important common good thinkers, clearly depart from each other. While Hollenbach defends an approach to the common good which is rooted in a communitarian notion of society based on the social nature of the human person [8], Novak develops a libertarian approach to the same notion based on his understanding of the human person as an individual endowed with the capacity for insight and choice, from which derives the principles which are the bases for human dignity [11]. The contemporary debate on the common good navigates among liberal, communitarian and egalitarian views of a just society. Hobbes argued that human behavior is inclined to anarchy, and therefore, he advocated for a strong central authority which could be the guarantor of the law [12]. John Locke did not really believe in the common good per se, but rather approached it as definable in terms of private property [13]. Subsequently, the enlightenment moved from the idea of the common good based on human nature to a contractual understanding of social life. Jeremy Bentham argued that the meaning of the common good was derived from a notion of private interests [14]. In the same line of thought, Adam Smith did not see the common good as the sum total of private interests. He understood moral persuasion to be the only way of solving the injustices that could result from the consideration of private interest as priority [15]. Modernity brought about a conception of personhood that appears to be a threat to social cohesion and the common good. The

fragmentation of the modern world has been expressed in terms of the decrease in social capital [16], failure in social integration [17] and weak sense of community and civic engagement [18]. The dominant approach to the common good in contemporary USA is essentially libertarian, stemming from the Anglo-American political tradition grounded in private property and liberal citizenship [12]. In human society, there is not only a responsibility not to harm the individual or public interest [19], but also the moral obligation to remedy social evils and overcome the problems that create a threat to human survival, no matter who has caused them. Even though there are rights pertaining to individuals, their realization often requires a common ground without which it cannot be achieved. The obligations that we have as a society are preconditions to the fulfillment of human flourishing. The common ground that society promotes and institutionalizes prevents fratricidal individualism and promotes genuine solidarity which is at the service of social cohesion and communal welfare. The future of society is at stake when we claim that we are bound by ends and roles we have chosen while our daily experience shows that ends we have not chosen shape our behaviors and determine public practices [18]. The widespread notion of liberal citizenship does not fully capture the veracity of human existence. Our choices are determined not simply by our own will but also by our identities as persons caught up in religious, family, neighborhood and other civil society networks [18]. The common good offers a space of relationality, where personal and social goals can be achieved justly. Individual autonomy and communal ventures are not mutually exclusive, but rather mutually enriching and intertwined. Underneath the common good tradition resides a fundamental attempt to reconcile personal interest and communal goals. The individual is a member of a moral community that sustains his or her life and in which he or she should participate fully. While society provides individuals with the social conditions for flourishing, individuals contribute to building a society where all members can flourish and prosper. This is done through various mechanisms that promote social and contributive justice. The approach to the common good that will be advocated in this paper is fundamentally social and institutional and does not begin with the libertarian emphasis on the individual. Instead, our approach emphasizes individual dependence and social interdependence. It stresses the welfare-enhancing role that public institutions should play in human societies in order to include those who are economically and politically marginalized. Asserting that there are goods which are common to members of society presupposes the recognition of sociality as an important dimension of human existence. Human society is not an atomistic entity but essentially a relational one. Society is a space where mutuality and interdependence shape human relationships and public institutions. Justice is not simply understood in terms of individual good and civil-political liberties but also in terms of structural equity and well-being understood at the population level. Hence, there is a moral relevance to the affirmation of the inherent sociality of the human person, since individuals are by necessity embedded in a social network that provides goods for the benefit of each member of society. Although sociality is both a choice and necessity, it is more a necessity than a choice, because human beings are finite beings. The human person by himself or herself has limitations that demand integration into a larger web without which the attainment of a full life would be impossible. The common good is a good which is applied to a human community. This community can be the family, professional groups, a social institution, and a national or an international community. The common good tempers individualism and all sorts of partisan interests that do not seek to achieve the goals set by society [20]. However, the need for constructing society should not undermine the dignity of the person and interfere with human rights. The institutionalization of a genuine solidarity can be implemented in such a way that individual welfare and liberty are not undermined. As a contestation to totalitarian misuse of political power by the Nazi regime, Jacques Maritain clearly stressed that in no way would the common good hinder the good of the human person [21]. He argues that the person transcends the social order and is ordained to the society of divine persons; the common good enables progress toward absolute goods [21]. The population-based dimension of health promotion, as well as the importance accorded to the community by health promoters, gives a prominent place to the common good language in public health. He draws his views on traditions which see the good of society as more than the sum of individual goods, and where that good is expressed through practices. The common good as an analytical framework: Social justice is often used as a prism through which evaluation is done and intervention carried out [23]. In the present case, this framing

process can help uncover the causes and consequences of healthy food inaccessibility in some population groups. When framed within the common good perspective, inaccessibility to quality food questions the degree of social cohesiveness in the USA. There is something morally disruptive about individualism, because it does not seem to promote the goods which are common to society. The common good challenges us to highlight how the lack of social cohesiveness [22], the progressive erosion of social capital and social relationships [16], prevents the institutionalization of a genuine solidarity [24]. The causes of healthy food inaccessibility are essentially structural. The association of diets high in fat, salt, and sugar with the development of obesity, type 2 diabetes DM2 , dyslipidemia, and cardiovascular disease CVD is well-documented [27 - 29]. The Dietary Guidelines for Americans focus on dietary quality, emphasizing consumption of fruits and vegetables, low-fat dairy products, and whole grains [30]. National efforts to increase healthy food consumption have included health promotion campaigns aimed at educating individuals regarding the dietary guidelines and reading nutrition labels. Moreover, meeting these dietary recommendations often proves difficult, particularly among low-income adults and certain ethnicities such as First Nations and non-Hispanic blacks [31 - 35]. Although cost and availability are important constraints to healthy food accessibility, addressing these barriers may be overlooked when prescribing lifestyle intervention or solutions based only on government provision for food stamps. Altering access barriers through policy may improve individual ability to choose a good lifestyle. Food insecurity is not simply an expression of an involuntary absence of food, rather, that poor diet can result from entitlement failure [36]. Access to adequate nutrition is influenced by structural and socioeconomic arrangements that prevent individuals from acquiring basic capabilities to function as agents of their own destiny [36 , 37]. Mariana Chilton and Donal Rose highlighted the social dimension of food insecurity. Within the common good frame, food inaccessibility is amenable to broad policy solutions when the determinants of accessibility are rethought in systemic terms. The common good framework is not an individualizing frame. Individualizing frames limit the causes of a problem to particular individuals, often those who are afflicted with the problem [23]. Instead, the common good broadens the focus, assigning responsibility for poor diet and its public health consequences not only to individuals but also the government, corporate business and larger social forces [23]. Since the common good refers to both social and personal realities, it includes both systemic and personalizing elements, even though the systemic pole tends to be dominant. Common good as an accusatory concept As an analytical tool, the common good helps interpret empirical facts of socioeconomic marginalization and their impact on individual well-being and on society. The economic and human cost of healthy food insecurity cannot be underestimated. A socially grounded analysis allows us to understand the connection between the fact of exclusion and the impact of food insecurity on individuals and communities. When the freedom to choose healthy food is constrained by factors beyond consumer control, it is morally unjustifiable to hold an individual accountable for the health damages caused by poor diet. The common good unveils the economic and health consequences of uneven access to nutritious food. Socioeconomic status has been inversely linked to type 2 diabetes DM2 [38] and cardiovascular disease CVD risk [39 , 40], and low-income consumers have cited unavailability and cost as constraints to healthy eating, thereby participating in behaviors that may be ultimately detrimental to their health [41]. Typically, healthy diets are more expensive than unhealthy ones [42 - 45]. Social barriers to food accessibility include crime and poverty which may not only deter residents from walking to local grocery stores but also may impede chain supermarkets from locating in these areas [46]. Consequently, geographically-isolated populations or low-income neighborhoods may be served only by smaller grocery stores, which often have limited access to healthy foods [47].

Chapter 6 : Expand Healthy Food Access | Union of Concerned Scientists

A study of block groups in New York found that African American block groups had fewer opportunities to obtain healthy foods and greater access to fast-food restaurants than did other ethnic block groups. Inequities in the availability of national and local fast-food restaurants within a single-minority community were reported in a study.

Male Regardless of daily calorie intake, if a person does not eat foods that are rich in vitamins and nutrients they are susceptible to malnourishment related diseases. These diseases include scurvy which results from low vitamin C levels, rickets from low vitamin D levels, and pellagra from insufficient nicotinic acid. Studies show that malnutrition in children can cause problems with academic performance, attention span, and motivation. Instead they have access to cheap, fast, and easy food which typically contains excess fats, sugars, and carbohydrates. Examples of such foods include chips, candy, and soda. Several diseases can result from consuming large amounts of these unhealthy food options, including cardiovascular disease , hypertension , diabetes, osteoporosis and even cancer. Vegetables are good sources of fiber, potassium, folate, iron, manganese, choline, and vitamins A, C, K, E, B6 and more. The USDA recommends eating whole fruit instead of fruit juice because juice has less fiber and added sugars. Protein, a good source of vitamin B and lasting energy, can be found in both plant and animal products. Processed foods[edit] Even knowing the importance of nutrition, an additional barrier people may face is whether they even have the choice. Corner stores often only carry processed food, eliminating the choice of eating fresh. Processed food encompasses any type of food that has been modified from its original state whether from washing, cooking, or adding preservative or other additives. Because it is such a general category, processed foods can be broken down into four more specific groups: Similarly, with meats that are dried, there is salt added to help preserve it but results in the consumer having a higher sodium intake. For example, East Oakland has 4 supermarkets and 40 liquor stores in their community. Both Latinos and African Americans are predisposed to getting a disease from alcohol consumption. Some alcohol-related illnesses include stroke, hypertension, diabetes, colon and GI cancer, and obesity. Self care is greatly influenced by food choices and dietary intake. Access, affordability, and health literacy are all social determinants of health , which are accentuated by living in a food desert. The community may be overnourished due to a lack of affordable supermarkets with whole foods and a higher concentration of convenience stores and fast-food restaurants that offer pre-packaged foods often high in sugar, fat, and salt. Living in a food desert contributes to a higher prevalence of chronic diseases associated with being overweight. Transportation and geography[edit] People tend to make food choices based on what is available in their neighborhood. In food deserts there is often a high density of fast-food restaurants and corner stores that offer prepared foods. Food security can imply either a complete lack of food, which contributes to undernourishment , or a lack of nutritious food, which contributes to over-nourishment. This insecurity occurs because food choices in rural areas are often restricted because transportation is needed to access a major supermarket or a food supply that offers a wide, healthy variety versus smaller convenience stores that do not offer as much produce. Distance from shops influences the quality of food eaten. When neither a car or nor public transportation is available, diets are rarely healthy. This is because fast food and convenience stores are easier to access and do not cost much money or time. Further, those who walk to food shops typically have poorer diets, which has been attributed to having to carry shopping bags home. Many approaches to helping people eat a healthy, balanced diet are ineffective because of "adherence problems" with behavior changes. People employ both rational and naturalistic decision-making processes on a routine basis. Naturalistic decisions occur in situations where time is limited, stakes are high, needed information is missing, the situation is ambiguous and the decision-maker is uncertain. Rational decisions are more likely when people have time to weigh options and consider the consequences. Communities with higher than state average poverty statistics often report low access to affordable food, thus limiting their ability to maintain a healthy diet. High rates of crime are a barrier for those living in food deserts. In this way, people prioritize their safety over fresh, healthy foods. Proximity to fast food restaurants is related to having a higher BMI, while proximity to a grocery store is associated with a lower BMI. Health literacy and food deserts can affect

all sectors of the population, but it is known that they both unjustly affect underserved, low-income individuals. Additionally, health literacy and self-efficacy can predict the likelihood of reading food labels, which predicts dietary choices. Gaining access to fresh and affordable food is essential to improving health and decreasing social disparities in those living in food deserts. Increasing health education and resources to improve health literacy are also vital in order for individuals to engage in healthy behaviors, adhere to dietary recommendations, and practice self-care. On the larger scale, there have been national public policy initiatives. The creation of these resources provides nutritious food options to those living in food deserts. Between and , HFFI created or supported projects aimed at healthy food access. Because operating in underserved areas is more financially straining on retailers, the program provides subsidized financing incentives for retailers to open in areas where need is high. Community gardens can play a similar role in food deserts, generating fresh produce by having local residents share in the maintenance of food production. In an effort to increase accessibility for healthier food and fresh produce, Food Trust farmers markets accept SNAP benefits. The garden provides fresh produce to those in the city who do not have easily accessible grocery stores nearby. Organizations such as the Detroit Black Community Food Security Network use community building gardens in order to promote community around healthy food. In major urban centers such as Boston, mobile food markets travel to low income areas with fresh produce. The trucks travel to assisted living communities, schools, workplaces, and health centers. The ability for elderly people, disabled people, and those who live geographically far from supermarkets to use SNAP benefits online to order groceries is a major resource. Free groceries, all compliant with the American Diabetes Association guidelines, are provided to those in this program. Youth education[edit] Food deserts are a result of lack of access to food and not enough money to afford the food that is available, which causes many people and especially children to not get enough nutrients their bodies require. The Grow Hartford Program was implemented in a school in Connecticut to have students address an issue in their community and they chose to focus on food justice. The program even led kids to start a community garden at their school. This program allowed the students to engage in hands on learning to educate them about agriculture, food scarcity and nutrition while helping bridge the gap of food access for some of their peers who could now bring home food from the surrounding farms or the school garden.

Chapter 7 : Food desert - Wikipedia

The survey assessed the availability of nutritious food in each store but did not evaluate price or accessibility, such as proximity to public transportation, which could affect the ability of some people to access nutritious foods.

PCD interviewed Kersten about her research and asked her what she has planned after graduation. Prev Chronic Dis ;9: The objective of this study was to determine whether data from 3 sources would yield a single, homogenous, healthful food store category that can be used to accurately characterize community nutrition environments for public health research. We compared survey results with commercial database information and neighborhood sociodemographic data by using independent sample t tests and classification and regression trees. Results Sampled small food stores yielded a heterogeneous group of stores in terms of store type and nutritious food options. Convenience and specialty stores were smaller and carried fewer nutritious and fresh food items. The availability of nutritious food and produce was better in stores in neighborhoods that had a higher percentage of white residents and a lower population density but did not differ significantly by neighborhood income. Conclusion Commercial databases alone may not adequately categorize small food stores and the availability of nutritious foods. Alternative measures are needed to more accurately inform research and policies that seek to address disparities in diet-related health conditions. Top of Page Introduction One aspect of neighborhood context that has received attention from public health researchers and advocates in recent years is the availability of food outlets and nutritious food, commonly referred to as the community nutrition environment 1. To evaluate community nutrition environments, researchers frequently use food store location and classification data from secondary data sources, such as proprietary commercial databases or business listings from public agencies 4. Supermarkets and large chain grocery stores tend to offer a variety of nutritious foods, and access to such stores is related to improved diet and reduced risk for obesity 2,3. However, the classification of small, independently owned nonchain food stores remains a challenge. Small, independent food stores have been either ignored 5,6 or distinguished from supermarkets and convenience stores according to the number of cash registers 7 , industry codes 8 , store name 9,10 , number of employees 11,12 , or annual sales volume Small, independent food stores comprise most food retail locations in urban neighborhoods; proper categorization of such stores is important for studies on community nutrition environments. The primary objective of this study was to examine the categorization of small food stores and determine whether data from 3 sources would yield a single homogenous healthful food store category. Secondary objectives were to examine the availability of nutritious foods in small food stores across neighborhood sociodemographic contexts and test for inaccuracies in commercial database variables that could bias or misrepresent measures of nutritious food availability. Methods Study design We used stratified random sampling to select stores from a commercial database to survey. We used in-store surveys to assess store type and the availability of fresh and nutritious food items at selected stores and compared these measures with neighborhood-level sociodemographic characteristics and commercial database attributes. Institutional review board approval was not required for this study because no human participants were involved. We identified all small grocery stores in the study area by using data from InfoUSA www. The InfoUSA database includes attributes for each business location, including industry code as reported by each business using the North American Industry Classification System [NAICS] , annual sales volume, number of employees, franchise status, and size categorical square footage. After also excluding stores designated as headquarters or franchises, we had 1, small, nonchain food stores in our sample. All of these stores were in the same size category 1â€™2, sq ft and had fewer than 5 employees. To ensure sampling across the number of employees that has been used to differentiate stores in previous studies 14 , we divided the sample into 2 groups: Of the stores, we could not survey 15; we could not find 4 stores, 3 were out of business, and 8 were not food stores. No store managers declined to have their stores surveyed. Our final sample included 87 stores. In-store survey We designed a 2-page, question survey to assess each store Appendix. We conducted surveys from May through early September In each store, surveyors introduced themselves to store managers, described the survey, and provided a letter, including author contact information, about the study. The survey

included questions in 7 main categories: We created 4 categories of store type as the dependent variable for analyses: These stores do not sell fresh raw meat. Neighborhood sociodemographic context We used US Census data at the tract level 19 to characterize the neighborhood sociodemographic context for each store. The more positive the score, the more deprived the census tract. We divided the index into quartiles for sampling purposes. We characterized each neighborhood according to population density total population divided by area in square miles, percentage of children population aged younger than 18 divided by total population and elderly total population 65 or older divided by total population, and neighborhood stability percentage of population that lived at the same location in and Statistical analyses We used independent sample t tests to compare the mean differences for fresh food availability among store types and to evaluate the differences between neighborhood sociodemographic context and store type. We conducted classification and regression tree CART analysis by using variables from the in-store surveys, the InfoUSA database, and census information to identify store attributes and neighborhood characteristics that most parsimoniously identified store type. This method can handle multiple outcome groups and dichotomous, ordinal, categorical, and continuous explanatory variables, which makes it an ideal method in this analysis, where various attributes are associated with each food store. For the CART analysis, large and small grocery stores were combined into 1 outcome group because these 2 store types represented the same outcome of interest, healthful food availability. Convenience and specialty stores remained separate groups because of their more varied and distinct survey results, for a total of 3 outcome groups. Results Types of food stores The 87 stores surveyed were categorized as 4 large grocery stores, 17 small grocery stores, 47 convenience stores, and 19 specialty stores Figure 1. Of the 19 specialty stores, 12 were ethnic food stores, 3 were liquor stores that sold some microwavable food items, 2 sold only meat and produce, 1 was a delicatessen, and 1 was a wine and cheese store that sold some produce items. Spatial distribution of food stores surveyed, by store type and county, San Francisco Bay Area and Sacramento, California, Nutritious and fresh food availability varied by store type Table 1. All 4 large grocery stores had a variety of nutritious food items and good-quality produce and meat products. The small grocery stores had a greater number of nutritious food items and fresh fruit and vegetables than convenience or specialty stores. Of the stores that carried some fruits or vegetables, larger grocery stores had better-quality vegetables than small grocery stores and better-quality fruits and vegetables than convenience stores. Specialty stores that had some fruit had better-quality fruit than convenience stores. Other store attributes According to in-store surveys, large grocery stores had the greatest estimated square footage, and small grocery stores were larger than convenience and specialty stores. According to InfoUSA, the mean number of employees did not differ significantly by store type; large grocery stores had a significantly larger sales volume than convenience stores Table 1. Neighborhood sociodemographic differences by store type Neighborhood deprivation did not differ by store type Table 2. No other sociodemographic measure differed by store type. The most distinguishing variables were variety of vegetables, estimated store square footage, and nutritious food score. A CART analysis of the InfoUSA values for the number of employees and annual sales volume could not be completed because none of the database variables adequately distinguished store type. Classification and regression tree results based on a in-store survey and b sociodemographic variables. The variables included in each tree are those that most significantly differentiate store types. Reading the tree from top to bottom, the stores that meet the criteria at each node are moved down the tree to the left, and stores that do not meet the node criteria move to the right. The counts in boxes are the number of stores that follow the same pattern; bolded text indicates the best fit store type for the criteria of the nodes above it. Top of Page Discussion A stratified random selection of small, independent food stores drawn from a single industry category in a single commercial database did not yield a homogenous group of small food stores. Instead, the sample yielded a heterogeneous group of stores in terms of nutritious food options: Store attributes number of employees and sales volume listed in the commercial database did not distinguish store type as well as the in-store survey and census data did. These findings reinforce those of previous studies that found significant discrepancies between store categorizations from secondary food retail databases and field observations and suggest that database imprecision may introduce error or bias or both into public health and epidemiological research. Commercial databases may not identify food stores in more

deprived neighborhoods as accurately as they do in less deprived neighborhoods. This was not the case in our study. However, convenience stores limited availability of nutritious foods tended to be in more densely populated census tracts, and grocery stores better availability of nutritious food tended to be in tracts that had a higher percentage of whites. Convenience and specialty stores were found in tracts that had a higher average percentage of Asians. Store visits may be necessary to obtain a more accurate understanding of the availability of nutritious food. Our results show discrepancies between a commercial database and surveyed characterizations of store types across neighborhoods, thereby complicating efforts to quantify the availability of nutritious food in large areas by using commercial databases. Improving the availability of nutritious food items and fresh foods at small grocery, convenience, and specialty food stores is a promising approach for improving community nutrition environments in underserved communities. Now that funding is available to support community nutrition environments, it is essential to identify accurately high-need areas that should be prioritized for intervention. Our study had several limitations. The survey assessed the availability of nutritious food in each store but did not evaluate price or accessibility, such as proximity to public transportation, which could affect the ability of some people to access nutritious foods. We did not compare the availability of nutritious foods with energy-dense and snack foods, which are associated with body mass index 28 and fruit and vegetable intake 29, nor did we examine the proximity of each store to other food stores. This study used data that are not temporally consistent. Socioeconomic and demographic data were from the US Census, commercial data were from , and surveys were conducted in . Our study results may not be generalizable to other areas. Each county in this study has a higher median household income than that of California and the United States. Our study had several strengths. It is the first to compare data from in-store surveys of nutritious food availability at small food stores with data from a commercial database and data on socioeconomic and demographic characteristics. It demonstrates the use of a multidimensional approach to evaluate variability in community nutrition environments 30 by considering both the location and context of food stores and the food products offered. The variables in a commonly used commercial database do not accurately correspond to the variables public health and epidemiology researchers are interested in, namely indicators of the availability of nutritious and fresh food. Industry classification for small food stores varies. Although conducting in-store surveys requires more time and resources than collecting information from a database, surveys may be necessary to assess accurately the food environment and identify where improved availability of nutritious food is most needed. *Am J Prev Med* ;36 4 Suppl: *Am J Prev Med* ;36 1: Disparities and access to healthy food in the United States: *Health Place* ;16 5: Measuring local food environments: *Health Place* ;17 6: Neighborhood racial composition, neighborhood poverty, and the spatial accessibility of supermarkets in metropolitan Detroit. *Am J Public Health* ;95 4: Comparing perception-based and geographic information system GIS -based characterizations of the local food environment. *J Urban Health* ;85 2: *Am J Prev Med* ;32 4: Associations between access to food stores and adolescent body mass index. *Am J Prev Med* ;33 4 Suppl:

Chapter 8 : Food security - Wikipedia

Center for Healthy Food Access (initiative with The Food Trust) The Center for Healthy Food Access is a joint project between the Tulane Prevention Research Center and the Nutrition Section of the Global Community Health and Behavioral Sciences Department in the Tulane School of Public Health and Tropical Medicine.

About 30 million Americans currently suffer from diabetes, and nearly 95 percent of these cases are type 2 diabetes, the diet-related form of the disease. If recent trends continue, close to one-third of the population could be diabetic by 2050. Untreated or poorly managed diabetes can lead to devastating and sometimes fatal complications: Diets high in sugar, salt, and fat—and low in fiber, vitamins, and minerals, such as fruits, vegetables, and whole grains—increase the risk for type 2 diabetes. Race and income are highly correlated with healthy food access—and with diabetes rates. Diabetes and communities of color Rising diabetes rates are a problem for all Americans—but they have hit African American, Latino, and Native American communities hardest. Members of these communities are about twice as likely as whites to be diabetic, they face higher diabetes-related mortality rates, and they suffer disproportionately from complications such as kidney damage and lower-limb amputations. Multiple causes drive these disparities. Lower incomes, combined with historical and perceived racism encountered in the health care system, make it harder for people of color to access both healthy food and health care. Barriers to health care access—including a shortage of community-based clinics, lack of personal transportation, and high out-of-pocket prescription drug costs—make diagnosing and managing diabetes particularly challenging in many communities of color. We looked at the most recent publicly available county-level data on retail food stores, food access, health outcomes, food insecurity, and socioeconomic composition. Counties were categorized according to racial or economic composition: The study defined "healthy food retailers" as grocery stores, supercenters, farmers markets, and specialized food stores such as bakeries, meat and seafood markets, dairy stores, and produce markets, all of which reliably offer fresh and less-processed foods. Click for larger version Access, race, and income. Counties with higher-than-average percentages of residents of color have both fewer healthy food retailers and more unhealthy food retailers. Access and diabetes rates. We found statistically significant correlations between food access and diabetes rates: Click for larger version Proximity to healthy food has a bigger impact in communities of color The correlation between food access and diabetes rates is stronger in communities of color: The effects of food access—both the positive effect of increased access to healthy food, and the negative effect of increased access to unhealthy food—were less pronounced in lower-income counties than higher-income counties Figure 2. This suggests that lack of economic access can override physical access: Recommendations Our study shows that increasing access to healthy food could help reduce diabetes rates, especially in communities of color. Unfortunately, current federal food policies, which encourage the production of unhealthy processed foods, are part of the problem. Access to healthy food is a multidimensional issue. Future federal policy needs to take a multifaceted approach that aims to accomplish the following: Bring more healthy food to the places where people of color and lower-income people live and gather. Encouraging healthy food retailers to build in underserved locations; creating and expanding food hubs and other distribution mechanisms; and changing nutrition assistance programs to encourage participants to purchase and consume more fruits and vegetables are a few ways to increase access. Prioritize culturally appropriate nutrition education for children, food service personnel, and parents. Eating habits are formed early in childhood, and in many cases schools are the best staging point for nutrition education. Using school meal programs to help children, parents, and food service personnel learn more about proper nutrition is a commonsense way to prime children for a lifetime of healthy eating. Create a comprehensive national food and farm policy that incorporates all of the above and more. In recent years, federal policies have taken important steps toward making the US food system more healthful and equitable. But current programs are still too small and piecemeal. Your generous support helps develop science-based solutions for a healthy, safe, and sustainable future.

Chapter 9 : USDA ERS - Food Access

And rural communities often have a higher number of convenience stores, where healthy foods are less available than in larger, retail food markets. Planning for improvement in overall community health should include access to affordable and healthy food.

The prevalence of under-weight, stunting, and wasting in children under 5 years of age is also very high. Food security in Mexico Food insecurity has distressed Mexico throughout its history and continues to do so in the present. Food availability is not the issue; rather, severe deficiencies in the accessibility of food contributes to the insecurity. Between and , the total Mexican food supply was well above the sufficient to meet the requirements of the Mexican population, averaging 3, kilocalories per daily capita, higher than the minimum requirements of 1, kilocalories per daily capita. However, at least 10 percent of the population in every Mexican state suffers from inadequate food access. In nine states, 25â€”35 percent live in food-insecure households. More than 10 percent of the populations of seven Mexica states fall into the category of Serious Food Insecurity. Hunger in the United States The United States Department of Agriculture defines food insecurity as "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways. This continuum has four categories: The prevalence of food insecurity has been relatively in the United States since the economic recession Both children and adults were food insecure in 8. Democratic Republic of Congo[edit] The Democratic Republic of Congo is the second largest country in Africa; the country is dealing with food insecurity. Although they have an abundance of natural resources, they lack accessibility of essential foods makes it difficult for the Congolese people in their daily lives. Malnutrition is high among children affects their ability, and children who live in a rural area are affected more than children who are live in an urban area. A study showed the correlation of food insecurity negatively affecting at-risk HIV adults in the Democratic Republic of Congo. In grain prices increased and the people in the Democratic Republic of the Congo went to civil unrest, there were riots and protest. Hunger is frequent in this country, but sometimes it is to the extreme that many families cannot afford to eat every day. Bushmeat trade was used to measure the trend of food security. The trend signifies the amount of consumption in urban and rural areas. Urban areas mainly consume bushmeat because they cannot afford other types of meat. The Food and Agriculture Organization of the United Nations FAO called the summit in response to widespread under-nutrition and growing concern about the capacity of agriculture to meet future food needs. The Plan of Action set a number of targets for government and non-governmental organizations for achieving food security, at the individual, household, national, regional and global levels. Heads of state and government attended this summit. Pillars of food security[edit] Growth in food production has been greater than population growth. Food per person increased since Food and Agriculture Organization. Food distribution involves the storage, processing, transport, packaging, and marketing of food. This creates the need for a bartering, exchange, or cash economy to acquire food. Food access refers to the affordability and allocation of food, as well as the preferences of individuals and households. In order to achieve food security, the food ingested must be safe and must be enough to meet the physiological requirements of each individual. Food insecurity can be transitory, seasonal, or chronic. Civil conflicts can also decrease access to food. Other factors that can temporarily cause food insecurity are loss of employment or productivity, which can be caused by illness. Seasonal food insecurity can result from the regular pattern of growing seasons in food production. Chronic and transitory food insecurity are linked, since the reoccurrence of transitory food security can make households more vulnerable to chronic food insecurity. Chronic food insecurity translates into a high degree of vulnerability to famine and hunger; ensuring food security presupposes elimination of that vulnerability. Malnutrition Children with symptoms of low calorie and protein intake and a nurse attendant at a Nigerian orphanage in the late s Many countries experience ongoing food shortages and distribution problems. These result in chronic and often widespread hunger amongst significant numbers of people. Human populations can respond to chronic hunger and malnutrition by decreasing body size, known in medical terms as stunting or stunted growth. It leads to higher infant and

child mortality, but at rates far lower than during famines. Stunting itself can be viewed as a coping mechanism, bringing body size into alignment with the calories available during adulthood in the location where the child is born. Challenges to achieving food security[edit] Global water crisis[edit] See also: Water resource policy Irrigation canals have opened dry desert areas of Egypt to agriculture. Water deficits , which are already spurring heavy grain imports in numerous smaller countries, [55] may soon do the same in larger countries, such as China or India. Other countries affected include Pakistan, Afghanistan, and Iran. This will eventually lead to water scarcity and cutbacks in grain harvest. Even with the overpumping of its aquifers , China is developing a grain deficit. Most of the 3 billion people projected to be born worldwide by mid-century will be born in countries already experiencing water shortages. After China and India, there is a second tier of smaller countries with large water deficits â€” Afghanistan, Algeria, Egypt, Iran, Mexico, and Pakistan. Four of these already import a large share of their grain. Only Pakistan remains self-sufficient. But with a population expanding by 4 million a year, it will likely soon turn to the world market for grain. Multimillion-dollar investments beginning in the s by the World Bank have reclaimed desert and turned the Ica Valley in Peru, one of the driest places on earth, into the largest supplier of asparagus in the world. However, the constant irrigation has caused a rapid drop in the water table, in some places as much as eight meters per year, one of the fastest rates of aquifer depletion in the world. The wells of small farmers and local people are beginning to run dry and the water supply for the main city in the valley is under threat. As a cash crop, asparagus has provided jobs for local people, but most of the money goes to the buyers, mainly the British. A report concluded that the industry is not sustainable and accuses investors, including the World Bank, of failing to take proper responsibility for the effect of their decisions on the water resources of poorer countries. Land degradation and Desertification Intensive farming often leads to a vicious cycle of exhaustion of soil fertility and decline of agricultural yields. Climate change and agriculture Extreme events, such as droughts and floods, are forecast to increase as climate change and global warming takes hold. Lessons from the IPCC SREX Report, the effects will include changing productivity and livelihood patterns, economic losses, and effects on infrastructure, markets and food security. Food security in future will be linked to our ability to adapt agricultural systems to extreme events. An example of a shifting weather pattern would be a rise in temperatures. As temperatures rise due to climate change there is a risk of a diminished food supply due to heat damage. From this the price of grain will rise, along with the developing nations trying to grow the grain. Due to this, every 2â€”2. The timing and length of the growing seasons, when farmers plant their crops, are going to be changing dramatically, per the USDA, due to unknown changes in soil temperature and moisture conditions. His approach is to explore the vulnerability of food systems to climate change and he defines vulnerability to climate change as situations that occur when relatively minor environmental problems cause major effects on food security. Examples of this include the Irish Potato Famine [76] [dubious â€” discuss], which was caused by a rainy year that created ideal conditions for the fungal blight to spread in potato fields, or the Ethiopian Famine in the early s. In , the hungry population could range from million to million with climate change Chen et al. By the year , Cereal crops will decrease from 15 to 19 percent, temperatures are estimated to rise from 1 degrees Celsius to 2. In prediction farming countries will be the worst sectors hit, hot countries and drought countries will reach even higher temperatures and richer countries will be hit the least as they have more access to more resources Devereux et al. From a food security perspective, climate change is the dominant rationale to the increase in recent years and predicted years to come. Agricultural diseases[edit] Diseases affecting livestock or crops can have devastating effects on food availability especially if there are no contingency plans in place. In their centers of origin wild wheat plants are screened for resistance to rust, then their genetic information is studied and finally wild plants and modern varieties are crossed through means of modern plant breeding in order to transfer the resistance genes from the wild plants to the modern varieties. Food versus fuel Farmland and other agricultural resources have long been used to produce non-food crops including industrial materials such as cotton , flax , and rubber; drug crops such as tobacco and opium , and biofuels such as firewood , etc. In the 21st century the production of fuel crops has increased, adding to this diversion. However technologies are also developed to commercially produce food from energy such as natural gas and electrical energy with tiny water and land foot print.

Political corruption Nobel Prize winning economist Amartya Sen observed that "there is no such thing as an apolitical food problem. Governments sometimes have a narrow base of support, built upon cronyism and patronage. Fred Cuny pointed out in that under these conditions: Governments in most countries give priority to urban areas, since that is where the most influential and powerful families and enterprises are usually located. The government often neglects subsistence farmers and rural areas in general. The more remote and underdeveloped the area the less likely the government will be to effectively meet its needs. Many agrarian policies, especially the pricing of agricultural commodities, discriminate against rural areas. Governments often keep prices of basic grains at such artificially low levels that subsistence producers cannot accumulate enough capital to make investments to improve their production. Thus, they are effectively prevented from getting out of their precarious situation. Under such conditions food becomes a currency with which to buy support and famine becomes an effective weapon against opposition. When government monopolizes trade, farmers may find that they are free to grow cash crops for export, but under penalty of law only able to sell their crops to government buyers at prices far below the world market price. When the rule of law is absent, or private property is non-existent, farmers have little incentive to improve their productivity. Rather than risk being noticed and possibly losing their land, farmers may be content with the perceived safety of mediocrity. It contends that multinational corporations have the financial resources available to buy up the agricultural resources of impoverished nations, particularly in the tropics. They also have the political clout to convert these resources to the exclusive production of cash crops for sale to industrialized nations outside of the tropics, and in the process to squeeze the poor off of the more productive lands. Likewise, food sovereignty holds it to be true that communities should be able to define their own means of production and that food is a basic human right. With several multinational corporations now pushing agricultural technologies on developing countries, technologies that include improved seeds, chemical fertilizers, and pesticides, crop production has become an increasingly analyzed and debated issue. Many communities calling for food sovereignty are protesting the imposition of Western technologies on to their indigenous systems and agency.