

Food System Research and Project Ideas for JHU Students AY2019

The following project ideas would make valuable contributions to the field of food systems and public health and tie in to programs currently underway at the Center for a Livable Future. This list is not comprehensive and variations of these projects may be viable. If you are interested in any of these project ideas, please discuss with the MPH Food Systems concentration faculty advisors or reach out to Phil McNab at pmcnab1@jhu.edu.

Healthy and Sustainable Diets, Food Access and Behavior Change

1. Examine awareness of virtual water content, land use, pesticide use, GHG footprint of different foods and how knowledge of that might influence food choices.
2. Assess the impact of the [Meatless Monday campaign](#) on consumer attitudes and food choices. Potential settings for evaluation include schools, college campuses, hospitals, restaurants, soup kitchens, or workplaces
3. Survey individuals who have committed to Meatless Monday through a pledge or group, such as a Meatless Monday listserv, to better understand why they committed to Meatless Monday, their dietary practices, use of Meatless Monday materials (recipes, etc), and changes they have made as a result of Meatless Monday.
4. Assess the demographic groups and settings where Meatless Monday has the greatest chance for successful expansion. Examples: using focus groups to study what makes people willing to make changes; or conduct a study comparing food service sites that are using different approaches to meat reduction. Assess outcomes such as customer food choice and satisfaction, changes in procurement practices, and impacts on profit.
5. Test different meat reduction messages with different consumer groups. Message testing could be done at Meatless Monday food service sites or among other consumer groups. The results will be used to develop initiatives and communication materials targeted at shifting consumers' animal and plant-based protein consumption.
6. Perform a market segment analysis of customers to better understand pathways to meat reduction, including vegetarianism and veganism (perhaps via collaboration with existing food-related research). Use existing databases and surveys. Consider additional data collection, such as focus groups, surveys, etc.
7. Evaluate meat consumption and availability of alternatives in lower income communities; pathways to behavior change, such as education, training/skills-development (ie, cooking classes); improving food environments/accessibility/affordability of plant-based foods.
8. Research plant and animal sources of omega-3 in the food system and the latest science on metabolism of PUFA's, including genetic variations in and across populations. Can some people better metabolize EPA and DHA from plant sources than others? What are the mechanisms? How could this impact dietary recommendations in terms of health and sustainability?
9. Conduct a review of the health, economic, environmental, animal welfare, and labor considerations associated with the rapidly growing number of alternative dairy products on the market. Explore how these alternative products compare to cows' milk products, and their potential role in more sustainable food systems.
10. Explore trends over time of locations and types of food retailers and the differences between urban, suburban and rural contexts.

11. Perform a literature review of online food shopping behaviors
12. Perform a literature review assessing rural food environments specifically related to healthy food access.
13. Examine how social media/data mining could be used to assess food environments
14. Evaluate the Lyft discounted ride program to grocery stores
15. Perform a review of critical writings from sociology, geography, history, anthropology, etc related to sustainable (or healthy) diets, and summarize perspectives that public health professionals and advocates should consider.
16. Gather information to support a case study of urban food system resilience following a crisis

Food Production, Supply Chains, and Occupational Health

17. Examine occupational health and safety issues in sustainable agricultural production and/or in other parts of the food supply chain.
18. Conduct a literature review on the impact of increasing wages on food insecurity, public health and diet, and in particular the impact on food chain workers. How does increasing wages impact the food supply chain?
19. Conduct a case study on the living and working conditions of animal agriculture workers on the Eastern Shore of Maryland.
20. Perform literature review on using GIS to assess food distribution and local food chains
21. Review differences in climate change mitigation potential (e.g., reducing urban heat island effect, reducing storm water runoff) between urban farms/gardens and urban forests.
22. Participate in media research about food animal production.
23. Assess the climate footprint and nutrition of meal kits, including packaging, transport, waste, etc.
24. Explore the narratives driving urban agriculture policy development and which types of operations they aim to support. For example, examine the paradoxes of indoor urban farms that require significant amounts of energy to operate.
25. Analyze the growth of marijuana legalization and how that is influencing urban agriculture policies.

Seafood and Aquaculture

26. Seafood is the primary protein source for over 1 billion people globally, and a major income generator for many people. The largest production centers are in South East Asia. Climate change, water and land scarcity, and ecosystem decline are all threats to food and nutrition security. What programs are being deployed in SE Asia to make aquaculture more resilient? What food and nutrition security programs are worth replicating?
27. Many large corporations have Corporate Social Responsibility (CSR) pledges related to sustainability. Assess the landscape of CSR for seafood at the producer, processor, and retail levels. What pledges exist and is compliance with CSR being tracked?
28. Animal welfare has typically focused on terrestrial animals. Explore the latest animal welfare discourse, research, and policy as it relates to aquatic farmed animals like fish and octopus.

29. Sustainable intensification is proposed as a way to meet the growing, global food demand without unduely degrading the environment. Some research suggests sustainable intensification is more resource efficient, while other studies find the opposite. Review the literature on sustainable intensification for aquaculture. Focus on a particular region (Africa, SE Asia, etc.), species (carp, tilapia, pangasius, etc.), or farming methods.
30. What are governments, international bodies, and organizations doing to combat human trafficking and forced labor in the fishing and seafood processing sectors? What’s working and what needs to be done?
31. Farm to school programs in coastal communities are now including seafood. Interview schools, wholesalers, and local experts and find out how a “fish to school” program could be introduced in Baltimore, MD.
32. Traceability is becoming a major issue for fisheries and aquaculture. Oceana found that 20% of seafood globally is mislabeled, which causes economic, health, and social problems. What are best practices for traceability in food supply chains generally, for example DNA barcoding or blockchain?
33. Explore factors influencing waste of seafood along the supply chain and among consumers, and strategies to reduce waste. CLF would mentor this project, and has ongoing research on this topic
34. Food waste mainly occurs at the end of the supply chain (retail, consumers stages) in high income countries and early in the supply chain (production, processing, and distribution stages) in low and middle income countries (LMIC). Explore factors influencing waste of seafood in LMICs and strategies to this reduce waste in value chains.
35. Use of antibiotics in food animal production has major public health implications, especially for drug resistance. Chile has reported using large amounts of antibiotics to raise salmon. What public health approaches and policies could be used to address this situation?
36. Help analyze data on consumer seafood waste

Wasted Food

37. Evaluate impacts of one of the many new food waste interventions, such as stores selling near-date foods at discount, or food recovery/gleaning projects. Or: design an evaluation template that can be used across projects to yield consistent/comparable results.
38. Perform research into food product grading processes and standards, and related opportunities to reduce food losses.
39. Perform analyses to support a research project involving modeling of an area’s food donation system
40. We advise people to buy more produce, and entice them with beautiful farmers market products – many of which decay before being eaten. Our nutritional and “foodie” messaging may be contributing to food waste. Work with CLF to study this and ways to address it.
41. How are consumers using frozen foods as a strategy to reduce food spoilage and waste?
42. Help analyze data on consumer seafood waste
43. Contribute to research on food donation processes
44. Explore use of nanotechnology and other novel materials in food waste prevention, and potential public health benefits and risks
45. More broadly, CLF is interested in mentoring other student projects related to wasted food, so if you have an idea, feel free to reach out.

Food System Policy

46. Track immigrant labor across the supply chain for one product (e.g. orange juice in Chicago – what immigrant labor has worked on producing, processing, and serving this product).
47. Assess the economic impact & food waste impact of undocumented immigrant deportations via changes in the agricultural labor market
48. Food security is often overlooked as a component of national security. Student research in this area can focus on case studies (such as the development of the 2008 food crisis, the role of the wheat crisis in Syria and Russia in the Syrian conflict, and more) as examples of the complex relationship between food, agriculture, and national security. Additional research projects include literature reviews and analyses of various elements of the food system and their influence on and relationship with national security.
49. Perform a landscape assessment of government and NGO “asks”, certification programs, guidelines, and recommendations for consumer behavior and institutional procurement related to food in the areas of environment and climate impact, animal welfare issues, and workers’ rights, as well as other issues. Identify the key players in this arena, areas of agreement and discord, and key audiences and targets.
50. Conduct a case study on industrial poultry production on the Eastern Shore, including interviews with conventional and sustainable poultry growers and an analysis of key policies guiding and influencing production practices in this area. Develop policy recommendations at federal and state levels that could facilitate transition to more sustainable farming methods in Maryland.
51. Conduct a comparison of the US agricultural workforce and guest worker visa programs to those in other countries, and identify similarities, differences, best practices, and areas for potential improvement in the US system.
52. Analyze the impacts of state and federal pre-emption of health and food systems laws (such as to animal agriculture zoning restrictions, public health ordinances related to animal agriculture, use of antibiotics in food animals, soda taxes, nutrition policies, and/or others) on public health and the environment. Identify trends and patterns in pre-emption efforts.
53. Review the evidence on the effectiveness and public health impact of food systems policy, in the areas of reducing food waste and recovery, expanding access to land and other resources for urban farming and community gardening, restricting or taxing unhealthy food, incentivizing new food retailers in food deserts, public procurement of regional, sustainable, fairly, or humanely produced food, increasing access to land for sustainable agriculture, etc.
54. Explore government funds supporting expansion of industrial food animal production (IFAP) in LMIC countries.
55. Perform an updated analysis of the usage of USDA EQIP conservation funds to support industrial food animal production.
56. Examine the levels of support for food and agriculture industry businesses in “socially responsible” mutual funds. To what extent are these supporting relatively unsustainable or unhealthy production? Describe relevant shareholder initiatives. Make recommendations for socially responsible fund investment.
57. Analyze the role of activist financial investing, and the ability of these investment actions to influence agricultural policy. Include consideration of actions to limit the ability of activist investors to pressure public companies on issues ranging from climate change to animal welfare.

58. Assess effectiveness of [Food Policy Council \(FPC\) Listserv and Resource Library](#): The FPC listserv has been in operation for several years and currently has over 1200 subscribers. It serves as an information exchange resource for those sharing and seeking information on a variety of local and state food policy topics as well as food policy council practices. The assessment would determine how the listserv could be enhanced, better serve more subscribers, improve the range and quality of its content, and improve its management.
59. Develop [Food Policy](#) Issue Briefs: A series of food policy issue briefs could be developed on numerous topics that are currently gaining ascendance in to the FPC community. Topics could include public purchasing of regionally, sustainably, fairly and humanely produced food, expanding access to land and other resources for urban farming and community gardening, local wage and benefits laws for food workers, restrictions and taxes on unhealthy food, comprehensive planning that includes local/regional food systems, and policies designed to improve access to healthy and affordable food. The briefs would be up to five pages in length and outline the issue (pros and cons), identify common approaches to the issue, describe model legislation, ordinances, and regulations, and review a couple of outcomes. Additional readings, links, and other resources could be attached. Where possible, take the resources that are on the resource library and decide categorically which topics warrant an issue brief.
60. Examine the membership of food policy councils to understand how councils address conflicting viewpoints or interests of members representing seemingly contrasting viewpoints, like restaurant owners and labor union representatives, or large-scale, commodity agriculture and small-scale diversified producers. What are the tensions that exist across members of food policy councils? How do food policy councils encourage representation from diverse stakeholders? What systems or structures have food policy councils established to help resolve issues amongst members with contrasting viewpoints? What strategies have food policy councils used to reach consensus?
61. Regional Food Policy Networks: More states and regions are creating networks of councils in order to foster collaboration. We are interested in understanding what is happening at these various levels. This will involve document review, possible interviews and listserv inquiries. Might include reviewing the status of FPCs in other countries.
62. Research the network of food policy council members and partners to map the relational capacity of FPCs and better understand how many people are part of the food policy council movement. Explore difference in the network by regions and rural/urban areas.
63. Research how food policy councils promote and support civic governance. What value does citizen engagement add to the policy process? What impact does citizen engagement have on the success of policy changes? What value does civic governance provide to citizens?
64. Evaluate the grocery store personal property tax credit in Baltimore City.

Food Systems Outreach/Education

65. Literature review on the concept of “food literacy” in adults and youth and exploration of changes in food literacy based on participation in urban agriculture or other activities that engaged with local/regional/sustainable food systems.

Other

66. Complete an assessment of the Sustainable Development Goals (SDG’s) and how they align with the food system and the core focus areas of CLF.

Additional Food System Research and Project Ideas

The following research and project ideas could advance the science, policy and/or practice of food systems or provide valuable learning opportunities for students. The Center for a Livable Future is ***not*** directly involved in the following projects and is not able to mentor students pursuing these ideas. If you'd like to pursue a project idea from this list, you should speak with your academic advisor for next steps. If you complete any of these projects as a capstone, please let us know!

Healthy and Sustainable Diets, Food Access and Behavior Change

- Many senior citizens and immigrants in Baltimore have experience with gardening and farming in their childhoods. Examine current interest among these populations in getting engaged in gardening activities or garden education.
- Research the undergirding philosophies of Baltimore area soup kitchens and food pantries to see how many of them are religiously motivated, and for those that are, what theology undergirds the actions of their organization.
- Discuss whether there are “obesogens” in the environment and/or food system that should be banned on a precautionary basis, based on existing evidence.
- Perform a literature review of articles specific to motivating environmentally sustainable food consumption and especially, to maintaining motivation. Or apply a relevant behavioral science theory to these questions.
- The “what you should eat” message in the context of climate change and environmental sustainability is complex. Identify one or more areas of complexity (e.g., meat or seafood consumption) and, in light of behavior change/communication theory or data gathered from interviews, focus groups, or surveys, discuss how this complexity should be communicated to consumers.
- Examine trust of the food system among different demographic groups.
- Assess the level of awareness among youth regarding food system issues, e.g. industrial food animal production, agricultural chemical use, links to public health, social justice and the environment; health implications of food processing; inequitable access to healthy, culturally appropriate food.

Food Supply Chains, Occupational Health and Agriculture

- Survey farmers in a farmers market or elsewhere to gain insight into how many small, local-market farmers are using farming techniques that would be considered USDA-certified organic, but have not gotten certified (and the reason why they have not done so). Additionally, ask about what types of pest control they DO use. This could also include exploring farm labor practices and treatment of local farmers (may require more ethnography and social science methodologies)
- Describe issues and barriers for farmers transitioning to more sustainable methods.
- Discuss “ecosystem services” – ecosystem contributions whose economic value is generally not quantified and thus not appropriately appreciated or subsidized. Try to put a dollar value on one “ecosystem service” (e.g., water filtering by soil) provided by sustainable or urban farms.
- Develop a review paper on animal agriculture contributions to foodborne illness and discuss relevant policy or technical options.
- Review the literature on possible links between animal welfare and public health. For example, does the welfare of animals have any direct bearing on the healthfulness of

animal products (e.g. does the release of stress hormones in hogs introduce chemicals into their meat)? Do industrial food animal production workers suffer psychological harms from slaughter and other forms of animal handling?

- Describe “land grabs” in which some governments, multi-national companies, or even wealthy individuals purchase land in developing countries for their own agricultural production, and the potential impacts on food security in affected areas. Review available information on mutual fund investment in this process.
- Develop case studies of successful policies or covenants between competing users of freshwater, e.g. agriculture and municipalities.
- Develop alternative scenarios for different agricultural systems in Maryland, and analyze the varied environmental and public health impacts associated with each.
- Analyze agriculture on the Eastern Shore of Maryland, conducting an economic impact of the poultry industry – the dominant industry – leaving the area.
- Historical analysis of different dominant forms of agriculture that have evolved on the Eastern Shore, such as vegetable production, seafood industries, forestry and poultry.
- Many households have old containers of garden pesticides and herbicides stored in their garages. Review municipal or other guidelines for disposal and discuss how consumers might likely respond to them in the real world, considering safety for both consumers and the environment.
- Choose one processed food and research its ingredients in terms of one or more of: sources, chemistry, water use, pesticide use, etc. Calculate the water or energy it took to produce it and get it to that store.
- Examine the USDA Agricultural Marketing Service (AMS) commodity purchasing program, which purchases farm products for school lunches and other food assistance programs, and has the dual aim of stabilizing commodity prices. Discuss what foods are purchased, their healthfulness, and the potential economic and environmental impacts of these purchases.
- Develop a case study looking at ethanol impact on chemical use, land use, food costs. What is the impact in Maryland and on the Chesapeake Bay?
- Conduct qualitative interviews with farmers to learn about their needs for compost from off-farm.

Seafood and Aquaculture

- How do aquaculture production systems, ranging from open-ocean to closed system aquaculture, compare regarding public health risks to communities and employees? Topic examples: water quality, veterinary drug use, pollution generated.
- Is there a relationship between aquaculture production methods with increased sustainability and reduced threats to environmental/occupational public health?
- Do the environmental public health risks from industrial aquaculture affect minority populations or groups with few resources differently than others (i.e. environmental justice)?
- What are the impacts of climate change on production of (and demand for) aquaculture? Are the impacts differential by aquaculture methods?
- What aquaculture production trends are occurring globally, in the U.S., and/or regionally (i.e. in the Chesapeake Bay watershed)? Are sustainable methods gaining ground?

- What policy changes (at any level) are needed to increase use of sustainable aquaculture methods? What barriers need to be addressed?
- How do food safety risks differ between various seafood sourcing, aquaculture production methods, and species consumed?
- What do consumers understand about food safety risks, sustainability, and nutritional value of different types of seafood and different sourcing/production methods? What messages work best to convey important information about these topics?
- How do different labeling schemes and/or communication materials impact consumers' seafood choices?
- Are messages comparing consumption of land animals and sea animals regarding nutritional value, sustainability, and food safety effective in changing dietary choices?
- How do different production methods affect food security and employment in surrounding communities and regions (i.e. Chesapeake Bay watershed)? How many jobs are created using different aquaculture production methods?
- What is the status of vaccine development for aquaculture species; any relevant pending policies and regulations?
- Assess newly implemented oyster aquaculture regulations in Maryland. Are policies modifying production and harvest practices?
- Research plant and animal sources of omega-3 in the food system and the latest science on metabolism of these PUFA's, including genetic variations in and across populations. Can some people better metabolize EPA and DHA from plant sources than others? What are the mechanisms? How could this impact dietary recommendations in terms of health and sustainability?

Food System Policy

- Create a map of the “political terrain” of Chesapeake Bay Watershed regulation, legislation, and advocacy – who are the key players, what are their roles, how are they related, etc.
- Examine perceptions of local and state food systems policy and food policy councils, among a variety of groups representing different demographics and regions, particularly youth, communities in the south, rural areas and elected officials to understand appropriate messages for food policy councils to engage the surrounding community and key stakeholders in their efforts.