JOHNS HOPKINS
CENTER *for* A LIVABLE FUTURE

FOOD SYSTEM RESEARCH AND PROJECT IDEAS FOR STUDENTS

COMPILED BY THE JOHNS HOPKINS CENTER FOR A LIVABLE FUTURE FOR AY2020-2021

1. For Students of Johns Hopkins University

These research and project ideas could make valuable contributions to the increasing body of knowledge in the field of food systems and public health, and potentially tie in to programs underway at the Johns Hopkins Center for a Livable Future (CLF). This list is not comprehensive, and variations of these projects may be viable. It is our hope these ideas will stimulate thinking and encourage students to explore this growing field. Some of these ideas could form the basis for practicum experiences or a capstone project. If you are interested in any of these project ideas, please reach out to CLF's Education Program Specialist, Phil McNab, at **pmcnab1@jhu.edu**. We would love to hear about your interest and potentially connect you with a mentor. **Additional ideas not directly related to CLF's current work can be found on pages 6-8.**

1a. Food Animal Production

Food animal production is a major focus of CLF, and the projects below are merely a sampling of the possibilities. Please email Phil if you are especially interested in and/or have proposals about food animal production.

1a-1.   Conduct a media review of the systemic breakdown in food animal production and slaughter capacity of the US due to COVID-19. The review could also explore potential remedies.

1a-2.   Examine occupational health and safety issues in industrial food animal production (IFAP), sustainable agricultural production and/or in other parts of the food supply chain.

1a-3.   Conduct a case study on the living and working conditions of animal agriculture workers on the Eastern Shore of Maryland.

1a-4.   Perform media research (e.g., analyses of newspaper articles) about food animal production.

1a-5.   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?

1a-6.   Explore government funds supporting expansion of industrial food animal production (IFAP) in LMIC countries.

1a-7.   Perform an updated analysis of the usage of United States Department of Agriculture's (USDA) Environmental Qualtity Incentives Program (EQIP) conservation funds to support industrial food animal production.

1b. Healthy and Sustainable Diets, Food Access and Behavior Change

1b-1.   Assess the impact of the **Meatless Monday campaign** on attitudes and food choices. Potential settings for evaluation include schools, college campuses, hospitals, restaurants, or workplaces.

1b-2.   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.

1b-3.   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. This may also involve focus groups and stakeholder interviews. The results will be used to develop initiatives and communication materials targeted at shifting consumers' animal and plant-based protein consumption.

1b-4.   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.

1b-5.   Evaluate meat consumption and availability of alternatives in lower-income communities; pathways to behavior change, such as education and training/skills-development (i.e., cooking classes); and ways to improve food environments (e.g., accessibility, affordability) of plant-based foods.

1b-6.   Research plant and animal sources of omega-3 in the food system and the latest science on metabolism of polyunsaturated unfatty acids (PUFAs), including genetic variations in and across populations. Can some people better metabolize eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) from plant sources than others? What are the mechanisms? How could this impact dietary recommendations in terms of health and sustainability?

1b-7.   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. Perform a literature review of online food shopping behaviors.

1b-8.   Examine how social media/data mining could be used to assess food environments.

1b-9.   Perform a review of critical writings (such as those challenging the status quo, typical responses, or accepted ideas) from sociology, geography, history, anthropology, etc. related to sustainable or healthy diets and summarize perspectives that public health professionals and advocates should consider.

1c. COVID-19 and Food Systems Resilience

1c-1.   Examine how COVID-19 has changed the way people shop for food. Consider examining how the food environment has changed (stores closing/opening, online shopping, new store policies, limited stock, etc.), as well as peoples' perceptions and responses to these changes.

1c-2.   Survey local governments about food system resilience pre- and post-COVID-19

1c-3.   Perform spatial analysis of COVID-19 and food system functioning outcomes by geography.

1c-4.   Pilot a post-disaster food environment assessment tool. The CLF and other collaborators are conducting national and Maryland surveys of food security and access during COVID-19. There may be opportunities to dig deeper on selected questions or to contribute to manuscripts.

1c-5.   CLF is conducting a national survey of food system workers during COVID-19. There may be opportunities to dig deeper into selected questions or contribute to manuscripts.

1c-6.   Explore potential effectiveness and tradeoffs of different strategies for supporting the safety, well-being and livelihoods of food workers during COVID-19.

1c-7.   Conduct an analysis of Reddit, Facebook, and/or Twiter postings related to COVID-19 and the food system (e.g., the perceived impacts on supply chains, the believed origins of the disease).

1c-8.   Gather information to support a case study of urban food system resilience following a crisis.

1c-9.   Perform a review of critical writings (such as those challenging the status quo, typical responses, or accepted ideas) from sociology, geography, history, anthropology, etc. related to food during COVID-19 and summarize perspectives that public health professionals and advocates should consider.

1d.   Food Systems and Climate Change

1d-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.

1d-2.   Assess the climate footprint and nutrition of meal kits, including packaging, transport, waste, etc.

1d-3.   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.

1d-4.   Update the Center's 2009 media analysis to document change in how food is covered in climate change media.

1e.   Seafood and Aquaculture

1e-1.   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?

1e-2.   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 to what extent is compliance with CSR being tracked?

1e-3.   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?

1e-4.   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.

1e-5.   Traceability is becoming a major issue for fisheries and aquaculture. What are the options for tracing seafood to its source; what have been the experiences so far; and what are the opportunities?

1e-6.   Contribute to a case study related to seafood waste.

1e-7.   What are consumer preferences for seafood and what do consumer expenditures at the retail level look like? The CLF could mentor this project and has ongoing research in this area.

1e-8.   Regenerative aquaculture can be highly efficient and benefit ecosystems, coastal communities and public health. What forms is this taking in high, middle and low-income countries? What is working; what is not working; and and what should be replicated or further researched?

1f.   Wasted Food

1f-1.   Evaluate the impacts of one of the many new food waste interventions, such as stores selling near-date foods at discount or food recovery/gleaning projects. Alternatively, design an evaluation template that can be used across projects to yield consistent/comparable results.

1f-2.   Perform research into food product grading processes and standards, and related opportunities to reduce food losses.

1f-3.   Perform analyses to support a research project involving modeling of an area's food donation system.

1f-4.   People are advised to buy more produce and enticed 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 the Center to study this dilemma and ways to address it.

1f-5.   How are consumers using frozen foods as a strategy to reduce food spoilage and waste?

1f-6.   Help analyze data on consumer seafood waste.

1f-7.   Contribute to research on food donation processes.

1f-8.   Explore wasted food in context of COVID-19 at various levels of the food supply chain and among consumers. This exploration could include identifying interventions to address wasted food.

1g.   Food Systems Policy

1g-1.   Conduct case-study assessments to investigate how state policies that protect farmworkers were developed and are currently implemented.

1g-2.   Conduct a media review of reporting on sustainable and regenerative agriculture programs in the United States.

1g-3.   Track immigrant labor across the supply chain for one product (e.g., orange juice in Chicago, bacon in Wisconsin) and how this labor has contributed to producing, processing, and distributimg the product.

1g-4.   Assess the economic impact and food waste impact of undocumented immigrant deportations via changes in the agricultural labor market.

1g-5.   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 could include literature reviews and analyses of various elements of the food system and their influence on and relationship with national security.

1g-6.   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.

1g-7.   Conduct a literature review on the impact of increasing wages on food insecurity, public health and diet, and, in particular, the quality of life of food chain workers. How does increasing wages impact the food supply chain?

1g-8.   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 areas with poor food access, public procurement of regional, sustainable, fairly, or humanely produced food; increasing access to land for sustainable agriculture; etc.

1g-9.   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.

1g-10. 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.

1g-11. 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 Food Policy Council (FPC) community. Topics could include public purchasing of regionally, sustainably, fairly and humanely produced food; expansion of 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 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 included. Where possible, take the resources that are on the resource library and decide categorically which topics could warrant an issue brief.

1g-12. 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 among members with contrasting viewpoints? What strategies have food policy councils used to reach consensus?

1g-13. 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, as well as possible interviews and listserv inquiries. It might include reviewing the status of FPCs in other countries.

1g-14. 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 differences in the network by regions and rural/urban areas.

1g-15. Research how food policy councils promote and support civic governance and how they are integrating racial equity into their structure, policy and program work. 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?

1g-16. Examine where and how online SNAP has been implemented across the US during the COVID-19 pandemic and trends in participation.

1g-17. Review and examine how local and state governments are collecting, communicating (visuals, maps, dashboards), and using food systems data to guide recommendations and policies during COVID-19.

1g-18. 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.

1g-19. Analyze the growth of marijuana legalization and how that is influencing urban agriculture policies.

1g-20. The CLF has compiled a dataset of 425 local urban agriculture policies from the 40 most populous US cities. Analyze these policies, with a focus on a particular topic. Examples of topics include soil safety, marijuana growing, and public land access.

1h.   Food Systems Education

1h-1. Research urban agriculture education in Baltimore City. The research could involve interviews with stakeholders about the programs they offer, the populations they reach (e.g., public school students), and ways to strengthen partnerships with the Center. This idea could be adapted for a practicum.

1h-2. Conduct a literature review and landscape assessment of youth education using aquaponics.

1h-3. Engage in activities related to the CLF's high school curriculum, **FoodSpan**. Examples include performing a literature review about food systems education for high school students, assessing what other people and organizations are doing, surveying teachers, developing activities for a specific lesson plan, or conducting outreach to raise awareness of FoodSpan. The activities could involve public health practice or be more research-oriented.

2. Additional Food System Research and Project Ideas

These research and project ideas could advance the science, policy and practice of food systems and provide valuable learning opportunities for students. The Center for a Livable Future is not currently involved in these projects and unable to provide mentorship for students pursuing them. Please speak with your academic advisor if you would like to pursue an idea from this list. While we are unable to provide mentorship, we are interested in your completed project.

2a. Healthy and Sustainable Diets, Food Access and Behavior Change

2a-1. Many older adults and immigrants in Baltimore and other cities have experience with gardening and farming in their childhoods. Examine current interest among these populations in getting engaged in gardening activities or garden education.

2a-2. Research the undergirding philosophies of soup kitchens and food pantries to see how many of them are religiously motivated. For those that are, what theology undergirds the actions of their organization?

2a-3. Discuss whether there are "obesogens" in the environment and/or food system that should be banned on a precautionary basis, based on existing evidence.

2a-4. 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.

2a-5. 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.

2a-6. Examine trust of the food system among different demographic groups.

2a-7. Assess the level of awareness among youth regarding food system issues—for example, industrial food animal production (IFAP); agricultural chemical use; links among public health, social justice and the environment; health implications of food processing; and inequitable access to healthy, culturally appropriate food.

2a-8. Perform a literature review to assess the impact of high meat consumption and western dietary patterns on the microbiome and gut heatlh.

2b. Food Supply Chains, Occupational Health and Agriculture

2b-1. 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—and it may require ethnography and other social science methodologies.

2b-2. Examine facilitators and barriers for farmers transitioning to more sustainable methods.

2b-3. Discuss "ecosystem services"—that is, 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.

2b-4. Develop a review paper on animal agriculture contributions to foodborne illness and discuss relevant policy or technical options.

2b-5.   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?

2b-6.   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.

2b-7.   Develop case studies of successful policies or covenants between competing users of freshwater—for instance, between agriculture and municipalities.

2b-8.   Develop alternative scenarios for different agricultural systems in Maryland, and analyze the varied environmental and public health impacts associated with each scenario.

2b-9.   Analyze agriculture on the Eastern Shore of Maryland. In particular, conduct an economic impact analysis of the poultry industry leaving the area.

2b-10. Perform a historical analysis of different forms of food production that have evolved on the Eastern Shore, such as vegetable production, seafood industries, forestry, and poultry.

2b-11. 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.

2b-12. Choose one processed food and research its ingredients in terms of one or more of: the food's sources, chemistry, water use, pesticide use, etc. Calculate the water or energy it took to produce the food item and get it to the store.

2b-13. 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.

2b-14. Develop a case study looking at ethanol impact on chemical use, land use, and food costs. What is the impact in Maryland and on the Chesapeake Bay?

2b-15. Conduct qualitative interviews with farmers to learn about their needs for compost from off-farm sources.

2c.   Seafood and Aquaculture

2c-1.   How do aquaculture production systems, ranging from open-ocean to closed system aquaculture, compare regarding public health risks to communities and employees? Topic examples include water quality, veterinary drug use, and pollution generated.

2c-2.   Is there a relationship among aquaculture production methods, increased sustainability, and reduced threats to environmental/occupational public health?

2c-3.   Do the environmental public health risks from industrial aquaculture affect minority populations or groups with few resources differently than others (i.e., environmental justice)?

2c-4.   What are the impacts of climate change on production of (and demand for) aquaculture? Are the impacts differential by aquaculture methods?

2c-5.   What aquaculture production trends are occurring globally, in the US, and/or regionally (e.g., in the Chesapeake Bay watershed)? Are sustainable methods gaining ground?

2c-6.   What policy changes (at any level) are needed to increase use of sustainable aquaculture methods? What barriers need to be addressed?

2c-7.   How do food safety risks differ between various seafood sourcing, aquaculture production methods, and species consumed?

2c-8.   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?

2c-9.   How do different labeling schemes and/or communication materials impact consumers' seafood choices?

2c-10. Are messages comparing consumption of land animals and sea animals regarding nutritional value, sustainability, and food safety effective in changing dietary choices?

2c-11. How do different production methods affect food security and employment in surrounding communities and regions (i.e. the Chesapeake Bay watershed)? How many jobs are created using different aquaculture production methods?

2c-12. What is the status of vaccine development for aquaculture species. Are there any relevant policies and regulations that are pending?

2c-13. Assess newly implemented oyster aquaculture regulations in Maryland. Are policies modifying production and harvest practices?

2d.   Food Systems Policy

2d-1.   Create a map of the "political terrain" of Chesapeake Bay Watershed regulation, legislation, and advocacy. Questons to answer include, who are the key players, what are their roles, and how are the two related?

2d-2.   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, people in rural areas, and elected officials—to understand appropriate messages for food policy councils to engage the surrounding community and key stakeholders in their efforts.

For more information, please contact

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