



CBTS, CAOE, and CCICADA Organize a Workshop on the Food Supply During COVID-19

The COVID-19 pandemic created significant increases in food insecurity across the U.S. at a time when the *farm-to-fork* food supply chain was stressed in many areas. Federal, state, and private efforts helped mitigate some of the most urgent needs, but food insecurity remains a significant health and national security issue.

U.S. food supply chains are generally resilient. However, some aspects are vulnerable to disruptions in inputs, labor availability, transportation, and the cascading impacts of misinformation, malicious efforts to compromise the perceived integrity of our food supply chains, or use of disruptions to leverage market gains in global markets.

These issues led three DHS university centers of excellence (COEs), [CBTS](#) led by Texas A&M University, [CAOE](#) led by Arizona State University, and [CCICADA](#) led by Rutgers University, to organize a virtual workshop on the Food Supply During COVID-19. Held on August 27, 2020, the workshop was organized around two panels: “Hunger Relief” and “Food Supply Chain Vulnerabilities.”

The Hunger Relief panel reflected on lessons learned in the past six months and identified significant issues that need to be examined for the current pandemic and preparation for future disruptions.

The Food Supply Chain Vulnerabilities panel identified critical vulnerabilities in our food supply chains that warrant greater attention, highlighting those vulnerabilities that may have broader social and national security impacts.

The workshop was part of the [DHS University Centers of Excellence COVID-19 Supply Chain Initiative](#).

UNPRECEDENTED CHALLENGES IN FEEDING AMERICANS



Long lines of cars awaited food aid at the San Antonio Food Bank.

Image credit: Wikimedia commons, US Department of Agriculture

The impact of the pandemic on food insecurity in the U.S. has been dramatic. As Blake Thompson, Chief Supply Chain Officer of Feeding America, pointed out:

- Feeding America saw a decrease of 70% in its volunteers.
- At the same time, it saw a 46% increase in number of Americans who are food insecure, rising from an estimated 37 million people to an estimated 54 million people. And, from an estimated 1/9 Americans at risk to be food insecure to 1/6.
- An estimated 18 million children are now food insecure. From an estimated 1/7 American children at risk to be food insecure to 1/4.
- The estimated demand for charitable food through June 2021 is 17 billion pounds (beyond all current government programs in support of food insecurity). Feeding America estimates they will be able to fill 7 billion pounds of this gap with their acquired food supplies (which include public and private sector accessible food supplies).

CHALLENGES FOR FOOD CHARITIES

In addition to dealing with unprecedented demand and fewer volunteers, food distribution charities face other challenges. Blake Thompson mentioned:

- The need for new procedures to distribute food with social distancing measures
- The large increase in perishable food among the food supplies available for distribution and the associated need to maintain freshness

Katie Nye, Statewide Field Director for the Texas Hunger Initiative, described others:

- The difficulty in finding shelf-stable food items
- Competition with other distributors and purchasers
- The dramatic increase in online purchasing leading to delays in delivery
- The complexity of locating people in remote rural areas where delivery addresses are difficult to locate (sometimes in Native American communities they are only defined by latitude and longitude).

Kevin King, Deputy Commissioner at the New York State Department of Agriculture and Markets, described the situation in New York State in April 2020:

- Federal and local aid packages were significant but not connecting with local producers.
 - The second and third coronavirus stimulus packages included over \$48 million in administrative and commodity funding for NY food banks.
 - NYC committed \$25 million for metropolitan-based emergency food providers.
- There were lots of resources to support feeding, yet we had:
 - Milk dumping at dairy farms
 - Produce from last year's harvest was still in cold storage with nowhere to go



Feeding America estimates that the pandemic has led to a 46% increase in number of Americans who are food insecure, from an estimated 37 million people to an estimated 54 million people.
Image credit: Feeding America, with permission of Blake Thompson

- The Long Island fishing fleet was idled
- Farms and food producers were without markets

OVERCOMING THE CHALLENGES

The panelists said that there is more than enough food to feed the 54 million Americans who are food insecure if the challenges can be overcome.

Kevin King described the Nourish New York Initiative, through the NY State Department of Health (DOH), to overcome these challenges:

- Emergency funds to 10 foodbanks with suballocations to another 37 emergency feeding organizations.
- Administered by NYS DOH emergency contracts to foodbanks
- Funds required to be spent on NY state products through:
 - Direct purchase
 - Food drive-through event with a local producer
 - Voucher program for dairy products

This enabled NY state to end the dumping of dairy products by May.

As King, Thompson, and Nye said, most of the solutions developed to the challenges to food security have been low tech:

- Use of cars and trucks to make deliveries
- Use of Amazon and Uber to deliver to seniors at home
- Pick-up lockers at grocery stores
- Shipping food to schools for redistribution in areas where addresses are difficult to locate
- Building on relationships – food is a relationship business



Most of the solutions developed to the challenges to food security have been low tech. Here members of the Georgia State Defense Force pack boxes at a food bank.
Image credit: Wikimedia commons, Georgia National Guard, [Food Bank](#)

THE FOUR PILLARS OF FOOD SECURITY

Will Martin, Senior Research Fellow, International Food Policy Research Institute (IFPRI), described the effect of the pandemic on the four pillars of food security:

- Availability
 - Production disruption has occurred in some labor-intensive industries (though not so much in field crops, where there is natural social distancing in the fields)
 - Movement of workers was disrupted
 - Demand patterns have changed with the closing of restaurants and consumer reluctance
- Access

- The economic downturn resulting from COVID led to a sharp decline in household income worldwide
- Especially serious in developing countries
- Utilization
 - Health problems have reduced the ability to utilize food
 - A reduction in dietary diversity has made people more vulnerable to illnesses
- Stability
 - Even when food supplies are adequate, instabilities arise from trade policies and export bans and quotas
 - It is important to keep food supplies moving through things like green lanes during a lockdown

He argued that COVID-19 has highlighted the need for regular assessments of vulnerability to food insecurity and that well-functioning borders are important for maintaining a diversity of food supply and minimizing food price shocks.

FOOD AND AGRICULTURE ISSUES AFFECT MANY OTHER SECTORS OF CRITICAL INFRASTRUCTURE IMPORTANT FOR OUR NATIONAL SECURITY AND NATIONAL PUBLIC HEALTH AND SAFETY

There are 16 critical infrastructure sectors whose assets, systems, and networks, whether physical or virtual, are considered so vital to the United States that their incapacitation or destruction would have a debilitating effect on security, national economic security, national public health or safety, or any combination thereof. Presidential Policy Directive 21 (PPD-21): Critical Infrastructure Security and Resilience advances a national policy to strengthen and maintain secure, functioning, and resilient critical infrastructure.

Food and Agriculture is one of those sectors. Yet, as Michelle Colby, Chief of the National Security Division in US Department of Agriculture's Office of Homeland Security, and LeeAnne Jackson of the U.S. Food and Drug Administration's Center for Food Safety and Applied Nutrition pointed out, this sector is intertwined with many of the others.

- The Critical Manufacturing Sector includes manufacturing of farm equipment; food processing equipment; packaging (e.g. cans and paperboard); and modes of transportation (e.g. trucks, trains, vessels that carry food)
- The Financial Services Sector is involved with processing of payments for food
- The Energy Sector is involved with electricity and gas used in producing food
- The Chemical Sector deals with the cleaning and disinfectants, plastics, and ethanol - CO₂ production relevant to food and agriculture
- The Healthcare and Public Health Sector deals with community mitigation approaches for workforce health
- The Transportation Systems Sector deals with aviation, highway and motor carrier, maritime transportation, pipeline systems, freight rail—all relevant to food and agriculture

Colby and Jackson said that the Government Coordinating Council, co-chaired by USDA and HHS/FDA, collaborates with the Sector Coordinating Council (a self-organized, self-run, and

self-governed body representing the food and agriculture industry) to aid in cross-sector collaborations to seek rapid solutions to urgent issues, such as how to prioritize PPE, cloth face coverings, disinfectants, and sanitation supplies.

HUMAN THREATS TO THE SUPPLY CHAIN SHOULD BE CONSIDERED ALONG WITH NATURAL DISASTERS

Nation-states and non-state actors (e.g., terrorist groups) can exacerbate the effect of a natural disaster, either during the disaster or through advance planning that makes supply chains vulnerable. This was the observation of Jeremy Jackson, founder of Anneal Initiative, Inc., an analysis and strategic planning business.

For example, China is currently exerting dangerous levels of control over critical supply chains. China's dominance of rare earth metal production, for instance, may foretell significant future impact on other supply chains critical to food and agriculture, such as the fertilizer markets.

Jackson urged us to consider human threats to supply chain resilience along with natural outbreaks, to:

- Understand adversaries' philosophies, goals, strategies, Tactics, Techniques and Procedures, etc.
- Look for case studies that can demonstrate approach and processes
- Perform predictive analysis that identifies supply chain threats earlier

EMPLOYEE HEALTH WAS IDENTIFIED AS A CRITICAL ISSUE FOR THE FOOD INDUSTRY DURING THE 2004-2005 PANDEMIC PLANNING

COVID-19 has demonstrated a variety of vulnerabilities in the food supply infrastructure, many of which are of broader concern than just during a pandemic. John Hoffman, Senior Research Fellow at the [FPDI](#) COE led by University of Minnesota, mentioned some of these.

According to Hoffman, employee health was identified as a critical issue for the Food Infrastructure during the 2004-5 Pandemic Planning. COVID-19 validated this issue. We have seen that:

- Work environments often require high density of skilled workers working in close proximity
- The labor base often has high percentage of immigrants as this is frequently an American work force entry job for immigrants
- Workforce public health training and implementation has language, cultural, family/social challenges



According to John Hoffman, employee health was identified as a critical issue for food infrastructure during the 2004-05 pandemic planning. Work environments such as in meat packing plants that require high density of workers have been an issue with COVID.
Image credit: Wikimedia commons, GAO.

THE POOR STATE OF MOST CYBER DEFENSE POSTURE ACROSS THE FOOD INDUSTRY CREATES SIGNIFICANT STRATEGIC RISK TO THE NATION

Cyber-based systems are ubiquitous in the food sector. As Hoffman pointed out, the cost to the sector is unknown because few firms will share actual cyber attack impacts; yet, the available data show that the food sector is in the top 3-4 targeted sectors each year. Cyber threats to the food sector have grown during the pandemic, from processors to transportation to distribution. The sophistication of attackers and the poor state of cyber defense in the food industry creates a significant strategic risk to the U.S.

FOOD PACKAGING WAS NOT SEEN AS A CRITICAL STRATEGIC RESOURCE UNTIL COVID-19

Hoffman also talked about all the ways in which food packaging has arisen as an issue during the pandemic:

- COVID-19 impact on the global system has demonstrated the problems associated with the availability and agility of packaging suppliers to include our dependence upon foreign suppliers
- The need to surge retail food production and curtail food service supply systems resulted in packaging supply shortages as suppliers had difficulty responding
- This was exacerbated by disruptions in maritime transportation systems, closing of ports, and labor shortages in port facilities.
- Shortages in aluminum packaging as materials and production diversion to other critical response products further aggravated the shortages.
- Limited production capacity for HDPE plastic pellets impacted the shifts in production from food service channels to food retail

Until COVID-19, food packaging was not seen as a critical strategic resource.



John Hoffman said that food packaging was not seen as a critical strategic resource until COVID-19

Image credit: Wikimedia commons, US Department of Agriculture, Peggy Greb

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For more information on all of the COEs: <https://www.dhs.gov/science-and-technology/centers-excellence>. The COEs are funded by the [Office of University Programs](#) in DHS' Science and Technology Directorate.