“Without a great food system transformation, the world will fail to deliver both on the United Nations Sustainable Development Goals and the Paris Climate Agreement.”

Rockström, J.; Edenhofer, O.; Gaertner, J.; DeClerck, F. (2020) Planet-proofing the global food system. Nature Food 1 p. 3–5 ISSN: 2662-1355
https://hdl.handle.net/10568/106652
The 3 flows of supply chain

- Suppliers
- Manufacturer/Product Maker
- Distributor
- Consumer

- Material
- Information
- Financial
Global food-miles account for nearly 20% of total food-systems emissions

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ENVIROMENTAL RESEARCH
INFRASTRUCTURE AND SUSTAINABILITY

LETTER

The carbon footprint of cold chain food flows in the United States

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Keywords: carbon footprint, cold chain, food flows, United States
Figure 5. Map of carbon emissions associated with cold chain food trucking in the United States in 2017. The carbon footprint of county-level cold chain food flows for (A) ‘meat’ and (B) ‘prepared foodstuffs’. The counties that have the highest carbon footprint inflow (red) and outflow (blue) are represented with bubbles, where the sizes of the bubbles are proportional to the carbon footprint.
Executive Order on Promoting Competition in the American Economy

JULY 09, 2021 • PRESIDENTIAL ACTIONS

• “reforming markets so that farmers can farm”
• “new, more, better, and fairer” markets
• “whole-of-government” approach
• defining / measuring competitive capacity at national & regional scales
Hotspot analysis of 2017 food flow model for US cold chain network by county for meat.

Map by Sumadhur Shakya, USDA-AMS-TSD & NIFA AFRI supported research
Hotspot analysis of 2017 food flow model for US cold chain network by county for prepared foods

Map by Sumadhur Shakya, USDA-AMS-TSD and NIFA AFRI supported research
Tonnage per 1,000 residents

- Highest
- High
- Medium
- Low
- Very Low

Study Area Counties

USDA-AMS-TSD funded research
...traditional wholesale distribution provides less than 0.1 pound per person per year of each of the six categories of produce to rural counties. More wealthy urban regions in Wisconsin had 19-37 pounds of these foods available in grocery stores.
“...distant corporate store headquarters are driving decisions that affect our community’s access to food.” – 2022 participant at the Wisconsin Health and Hunger Summit and rural food pantry volunteer
Baker’s, City Market, Dillons, Food 4 Less, Foods Co, Fred Meyer, Fry’s, Gerbes, Jay C Food Store, King Soopers, Kroger, Mariano’s, Metro Market, Pay-Less Super Markets, Pick’n Save, QFC, Ralphs, Ruler, and Smith’s Food and Drug

Albertsons, Safeway, Vons, Jewel-Osco, Shaw’s, Acme, Tom Thumb, Randalls, United Supermarkets, Pavilions, Star Market, Haggen, Carrs, Kings Food Markets, and Balducci’s Food Lovers Market
From online cart to plate: What Amazon’s retail domination means for the future of food

Carly Livingstone a *, and Irena Knezevic b
Carleton University

https://doi.org/10.5304/jafscd.2020.094.017
Democratizing data and models

Intelligent Cyberinfrastructure with Computational Learning in the Environment (ICICLE)

Smart Foodsheds Use Cases: IC-FOODS, UC Davis, Ohio State, Univ of Wisconsin
|                | Case Western Reserve University | IC FOODS | Indiana University | Iowa State University | Ohio Supercomputer Center | Ohio State University | Rensselaer Polytechnic Institute | San Diego Supercomputer Center | Texas Advanced Computing Center | University of California, Davis | University of California, San Diego | University of Delaware |
|----------------|---------------------------------|----------|-------------------|----------------------|--------------------------|-------------------------|-----------------------------|-------------------------------|-----------------------------|--------------------------------|--------------------------------|-----------------------------|-----------------------------|
| **ICICLE Project Partners** |                                |          |                   |                      |                          |                         |                             |                               |                             |                                |                                |                             |                             |

- CWRU
- IC FOODS
- University of Utah
- University of Wisconsin
- University of Delaware
Interoperable database management for the semantic web

1. **Subject - Predicate - Object** (Resource Description Framework - RDF)

2. **Ontology** - a related set of RDFs

3. **Foundry** - related ontologies
   - ex: OBO Foundry, Open Biological and Biomedical Ontology *Foundry*
   - Community development of interoperable ontologies for the biological sciences.
   - ex. FoodOn

4. **Ontological Knowledge Graphs (KGs) built from ontologies**

5. **Interactive Knowledge and Learning Environment (IKLE)**
   - querying knowledge graphs.
   - visualizing queried results from knowledge graphs
Measuring Network Resilience via Geospatial Knowledge Graph: a Case Study of the US Multi-Commodity Flow Network

Jimmeng Rao, Song Gao, Michelle Miller, Alfonso Morales

Figure 1: The ontology design of CFS-GeoKG.
REEDOO Food: Resource, Environment, Equity, Domain, and Organizational Ontologies for Food Systems Modeling

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An Interactive Knowledge and Learning Environment in Smart Foodsheds

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Resilience and Sustainability
WISCONSIN
TRIBAL ELDER FOOD BOX