# foodsystemABM

The FFAR-ABModel was created to allow us to address scenarios relevant to Colorado and the Denver Public Schools under the Good Food Purchasing Program. Four commodities were selected for inclusion in the model, potatoes, beef, peaches, and wheat. Selected scenarios are specific for each commodity. For potatoes: Baseline scenario: DPS purchases fresh fries from distributor for all potato product needs, nothing from CO growers is purchased. CO Fresh scenario: DPS purchases conventional russets for all potato product needs. Short fresh supply chain: DPS purchases conventional russets directly from shippers. Small potato scenario: DPS purchases small conventional russet potatoes from shippers. Specialty processed product: DPS purchases a specialty product made from purple potatoes that are processed at a CO facility. For beef: Baseline scenario: DPS purchases conventional culled ground beef neither born, raised, nor processed in a specific state. American Grassfed Alliance (AGA) scenario: DPS purchases culled ground beef with AGA certification. Colorado source identified (CSI) scenario: DPS purchases culled ground beef with CSI certification. Animal Welfare Approved (AWA) scenario: DPS purchases culled ground beef with AWA certification. For peaches: Baseline scenario: DPS does not purchase peaches in the baseline. Peaches go through wholesale and alternative market channels. CO Fresh scenario: DPS purchases fresh local peaches. Individually quick frozen (IQF) scenario: A portion of culled peaches are processed by an IQF facility. DPS purchases IQF peach product. For wheat: Baseline scenario: DPS purchases flour and sliced bread milled from conventional hard red winter wheat. Organic scenario: DPS purchases flour and sliced bread milled from organic hard red winter wheat. White whole wheat scenario: DPS purchases flour and sliced bread milled from conventional Snowmass wheat.

## Goals of the Project

In 2017, Colorado State University and the City and County of Denver received a $1M grant from the Foundation for Food and Agricultural Researcher’s (FFAR) inaugural round of the Tipping Points program. The goal of the grant was to provide Denver with data and a co-created model to better understand tradeoffs associated with their proposed municipal food procurement policies (in other words, tradeoffs associated with preferential food purchasing decisions and incentives). The project leveraged >$5.9M in on-going food system programming throughout the state of Colorado, and built off recommendations from both the 2017 Denver Food Vision (facilitated by the Mayor-appointed Denver Sustainable Food Policy Council and signed by the Mayor), the Colorado Blueprint for Food and Agriculture (facilitated by the Governor-appointed Food Systems Advisory Council), and ongoing work of the Colorado Food Policy Network (an umbrella network for local food policy councils, task forces, coalitions, and farm to school networks across Colorado). When the COVID-19 pandemic hit, FFAR provided an additional $100k in funding to integrate new data collection and research into the project scope.

The project included four primary objectives, to: 1) integrate available primary and secondary data to depict the status of Denver’s food system, its interactions with provisioning producers, and to characterize the behavior of four agent-types (producers, processors, retailers, and consumers), 2) build an integrated and, dynamic computational model of the current food system that links the diet quality, food security, environmental, and overall socio-economic condition components, 3) develop targeted intervention scenarios (‘shocks’) based on the procurement policies being considered by Denver under the Good Food Purchasing Program, and 4) engage stakeholders throughout the process through the establishment of the Good Food Purchasing Program coalition and an annual Colorado Food Summit convening.

To our knowledge, this is the first research project in the U.S. to conduct a rigorous multi-disciplinary evaluation of tradeoffs associated with scenarios of public food procurement. The scenarios were selected based on how Denver was considering implementation of the Good Food Purchasing Program (GFPP). The Center for Good Food Purchasing’s GFPP is the most widely implemented program in the U.S. to provide public institutions with a set of tools, technical support, and verification systems to assist institutions implement their values-based food procurement strategy.

## Data and Code

To enable replication of our work:

* [Overview, Design Concepts, and Details for the FFAR-ABModel](https://github.com/CSU-Local-and-Regional-Food-Systems/foodsystemABM/blob/main/FFAR_ABM_Full_ODD_Nov_2022.docx) provides a full description of the model.
* Input files and code required to run our scenarios may be downloaded at: [Model and model input/output files](https://www.dropbox.com/sh/ltchf4n4ye7yd7v/AAAo8lu8oHLHVspBMxN2Vw_ya?dl=0)

## Authors

Becca B.R. Jablonski, Randall Boone, Erin Love, Allison Bauman, Laura Bellows, Stefanie Berganini, Alessandro Bonanno, Michael Carolan, Rebecca Cleary, Olaf David, Jasmine Dillon, Kevin Jablonski, Andrew S. Jones, Pratyoosh Kashyap, Morgan McCloskey, Jason Quinn, Elizabeth P. Ryan, Meagan Schipanski, Francesco Serafin, Hailey Summers, Dawn Thilmany, Javier Antonanzas, Mark Uchanski

## License

This project is licensed under the Creative Commons Attribution 4.0 International license - see LICENSE.txt file for details.

## Acknowledgements

The research reported was supported by Colorado State University’s Office of the Vice President for Research Catalyst for Innovative Partnerships Program, the Foundation for Food and Agriculture Research, the Colorado Potato Administrative Committee, the Colorado Agricultural Experiment Station, and RTI International. The content is solely the responsibility of the authors and does not necessarily represent the official views of these organizations.