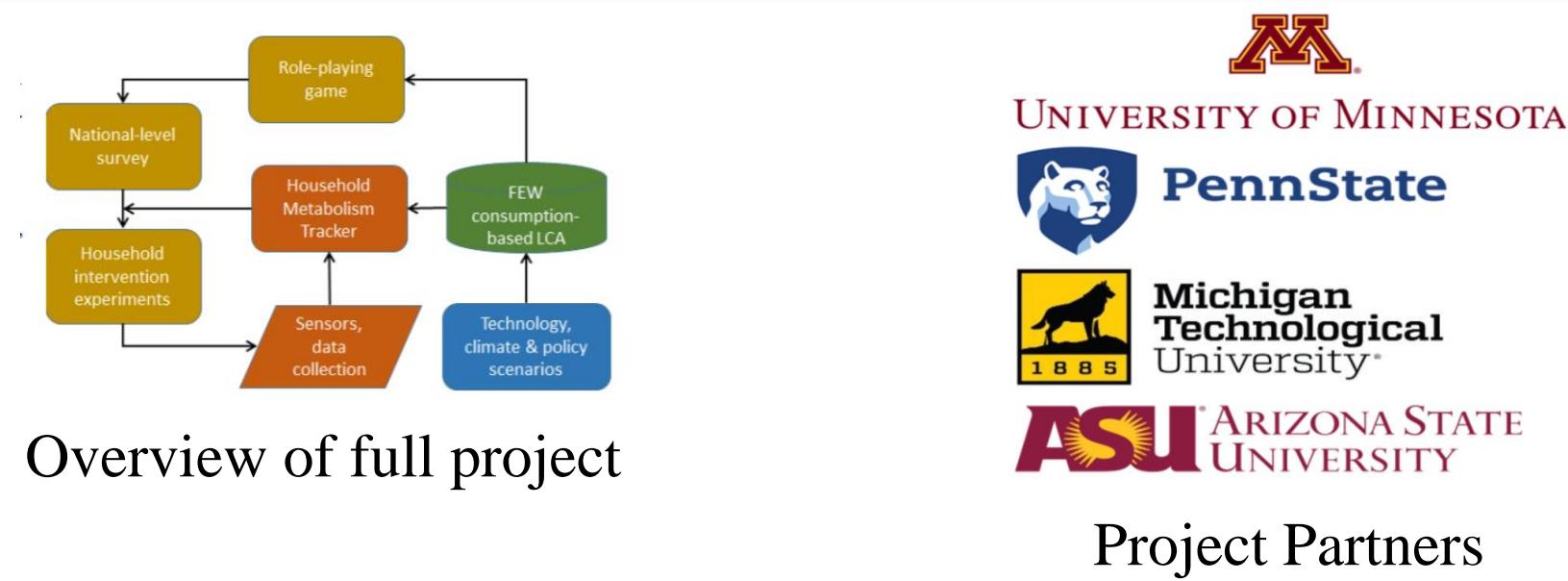




by Parker Herrera, Prasiddha Sudhakar, Tyra Aversa, Danielle Heaney, Holly Berman, Dr. Cara Cuite, and Dr. Rachael Shwom

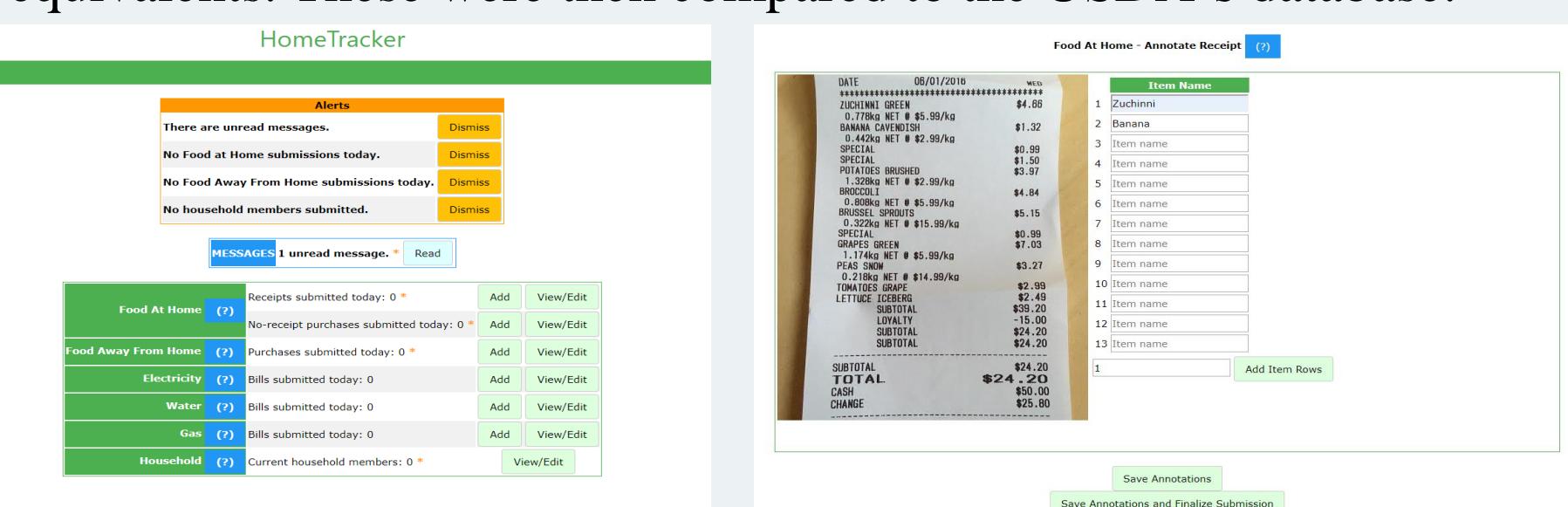
Abstract

This poster focuses on the development of a household intervention-driven software called HomeTracker, that provides feedback to users about their food, energy, and water consumption. We conducted a pilot test (N=20) of the HomeTracker's usability and to identify potential problems prior to use in a larger study the following year. The poster reports on the methods used to categorize and analyze pilot study data on impacts of food purchases. The United States Environmentally Extended Input Output (USEEIO) modeling framework can then be used to convert food purchasing data to greenhouse gas equivalents. This is useful since, based on consumption data, the HomeTracker can provide the individual with intervention messages that contain impacts relating to their habits. These messages aim to reduce consumption of greenhouse gas (GHG) intensive food, water, and energy to hopefully reduce consumption patterns which promote climate change.



Methods

The HomeTracker is a software developed by MTU's computer science team allowing participants to enter their purchases and upload receipts. The purchases were then coded to different categories. The pilot study ran from February 22 to March 11, 2019. There was a convenience sample of 20 participants,. There were 18 participants who completed the study consisting of entering all food purchase data for the two-week period. Participants were to take pictures of their receipts to upload onto the HomeTracker and then identify each food purchase. The USEEIO database was then used to categorize and convert purchases to greenhouse gas equivalents. These were then compared to the USDA's database.



Category Comparison

USDA Categories	USEEIO Categories	USEEIO -> USDA
10 Grains	Fresh vegetables, melons, and potatoes	20
20 Vegetables	Fresh fruits	30
30 Fruits	Mushrooms	20
40 Milk, Yogurt, and Cheese	Flours and malts	10
50 Meats and Beans	Refined vegetable, olive, and seed oils	70
60 Prepared Meals	Breakfast cereals	10
70 Oils, Dressings, and other Table Fats	Sugar, candy, and chocolate	72
71 Beverages	Frozen food	60
72 Desserts and Snacks	Canned, brined, preserved food	*
73 Vitamins, Baby Food, and Formula	Cheese (except cottage cheese)	40
99 Not Coded	Dry, condensed, and evaporated dairy	40
	Fluid dairy and dairy substitutes	40
	Ice cream and frozen desserts	40
	Packaged poultry	50
	Packaged meat (except poultry)	50
	Seafood	50
	Bread and other baked goods	10
	Cookies, crackers, pastas, and tortillas	10
	Snack foods	72
	Coffee and tea	71
	Seasonings and dressings	70
	All other foods	*
	Soft drinks, bottled water, and ice	71
	Beer	71
	Wine	71
	Spirits	71
	Non Food Item	99

Categories with * indicate the USEEIO category did not have a good match with a USDA category and the purchases are coded on a case basis.

Many categories from USEEIO database could be easily recoded using the USDA database. The USDA simplifies many of their codes, placing all dairy into one category for example. USEEIO separates dairy into cheese; dry, condensed, and evaporated dairy; fruit dairy and dairy substitutes; and ice cream and frozen desserts. The same is true for meats.

Purchase Comparison

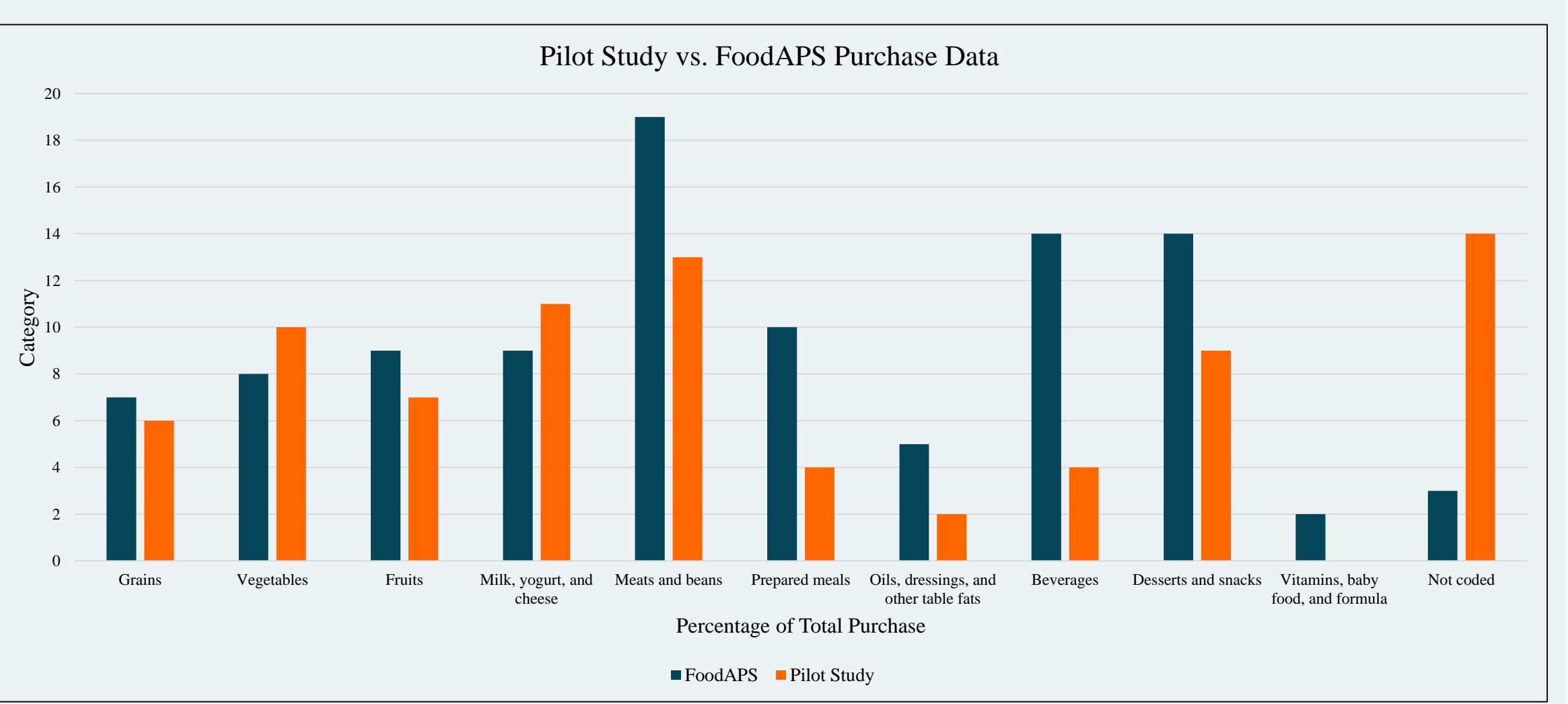
The two highest contributors to climate change in food consumption are meats and dairy products and will be focused on for analysis.

From the pilot study data, it was found that 13% of all expenditures away from home and at home consisted of meat products like packaged meat, poultry, and seafood.

11% of expenditures consisted of dairy such as cheese, ice cream and frozen desserts, and fluid dairy or dairy substitutes.

The FoodAPS survey reported that 19% of all purchases were meats and 9% of all purchases were dairy.

In the FoodAPS survey, the meat purchase percentage was 1.46 times greater than in the pilot study. The dairy purchase percentage was nearly the same.



Methodology for Comparison

The USDA's FoodAPS survey used a nationally representative sample of 4826 homes of different income levels. The survey data was collected from April 2012 to January 2013. Like the pilot study, information on food purchases at-home and away-from-home was collected as well as household demographics. The FoodAPS survey had households track their food purchases for one week while the pilot study used a two-week period for collection.

Percent expenditures were calculated by dividing the cost for each category by the total cost of all purchased food. It was used to compare the pilot study data to the FoodAPS survey.

Discussion

The pilot study sample protocol leads to similar purchase results as the USDA's FoodAPS survey results in dairy consumption. The one large difference between the pilot study and the FoodAPS survey is the meat consumption. The USDA sample found a 146% increase in meat consumption than in the pilot study. This can be due to the pilot study using a convenience sample instead of a representative sample and the networks used favored less meat consumption.

The USDA had many fewer categories than the USEEIO database had. They coded many dairy products and meats into a categories while USEEIO had three different categories for different meats because life cycle impacts of those meats are very different. One category that was missed in the pilot study was Vitamins, Baby Food, and Formula. USEEIO places these kinds of foods into the "All other foods" category.

Food purchase data is useful since the HomeTracker can convert dollars to greenhouse gas equivalents. Based on the foods consumed, different amounts of greenhouse gases are produced and can be quantified through USEEIO's conversion. The greenhouse gas equivalents can be used to develop interventions to reduce high-energy behaviors to lower climate change impacts.

Acknowledgements

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