Food Systems Modeling Learning Community

EFSNE Conference

Greenbelt, MD

December 11, 2015

Learning Community Formation

1. Formation of learning communities explicit in grant proposal

2. Kate Clancy and Kathy Ruhf identify regional and local modeling as ideal topic due to work Chris Peters was undertaking on food prints and the startup of the Scenario and Models team

3. In late 2013, Jeff O'Hara and Rich Pirog invited to form planning committee with Kate, Kathy, and Chris

4. Planning committee first met on January 3, 2014

Learning Community Formation

4. Early 2014: Identify purpose of LC, activities of LC, and participating modelers
   - LC institutionalized at PSU
   - Stage 1: Interdisciplinary presentations among modelers
   - Stage 2: Invite practitioners

5. March 31, 2014: planning committee sent invitations to modelers to participate in learning community

6. First teleconference of learning community was May 2014

7. First presentation by Chris Peters on July 9, 2014

MSU-UCS Meeting Description

- Meeting co-hosted by Michigan State University Center for Regional Food Systems and Union of Concerned Scientists on Jan. 31 and Feb. 1, 2013
- 12 economists/local food researchers attended workshop
- Follow-up webinar on May 20, 2013 with over 250 attendees to discuss meeting findings and outcomes

MSU-UCS Meeting Objectives

- Synthesize and translate findings of local food economic impact studies
- Identify “best practice” standards associating with undertaking studies
- Identify critical due diligence questions that commissioners of economic impact studies should ask
- Identify future research priorities

MSU-UCS Meeting Conclusions

- Improved data collection
- Studies on larger geographic scales than currently being conducted
- Identify other economic contribution of local foods besides counting jobs
- **Formation of a learning community of economists and local food researchers to review and critique the design, methods, and conclusions of studies**

Further Reading on MSU-UCS Meeting

Journal of Agriculture, Food Systems, and Community Development
ISSN: 2152-0801 online
www.AgDevJournal.com

RESEARCH COMMENTARIES: FOOD SYSTEMS RESEARCH PRIORITIES OVER THE NEXT 5 YEARS

Economic impacts of local food systems: Future research priorities

Jeffrey K. O'Hara,[a]* Union of Concerned Scientists

Rich Pirog,[b] Michigan State University Center for Regional Food Systems

Submitted May 31, 2013 / Published online July 12, 2013

Citation: O'Hara, J. K., & Pirog, R. (2013). Economic impacts of local food systems: Future research priorities. *Journal of Agriculture, Food Systems, and Community Development.* Advance online publication.
http://dx.doi.org/10.5304/jafscd.2013.034.003

USDA AMS Resource: www.localfoodeconomics.com

eXtension
Economic Impacts of Local and Regional Food Systems

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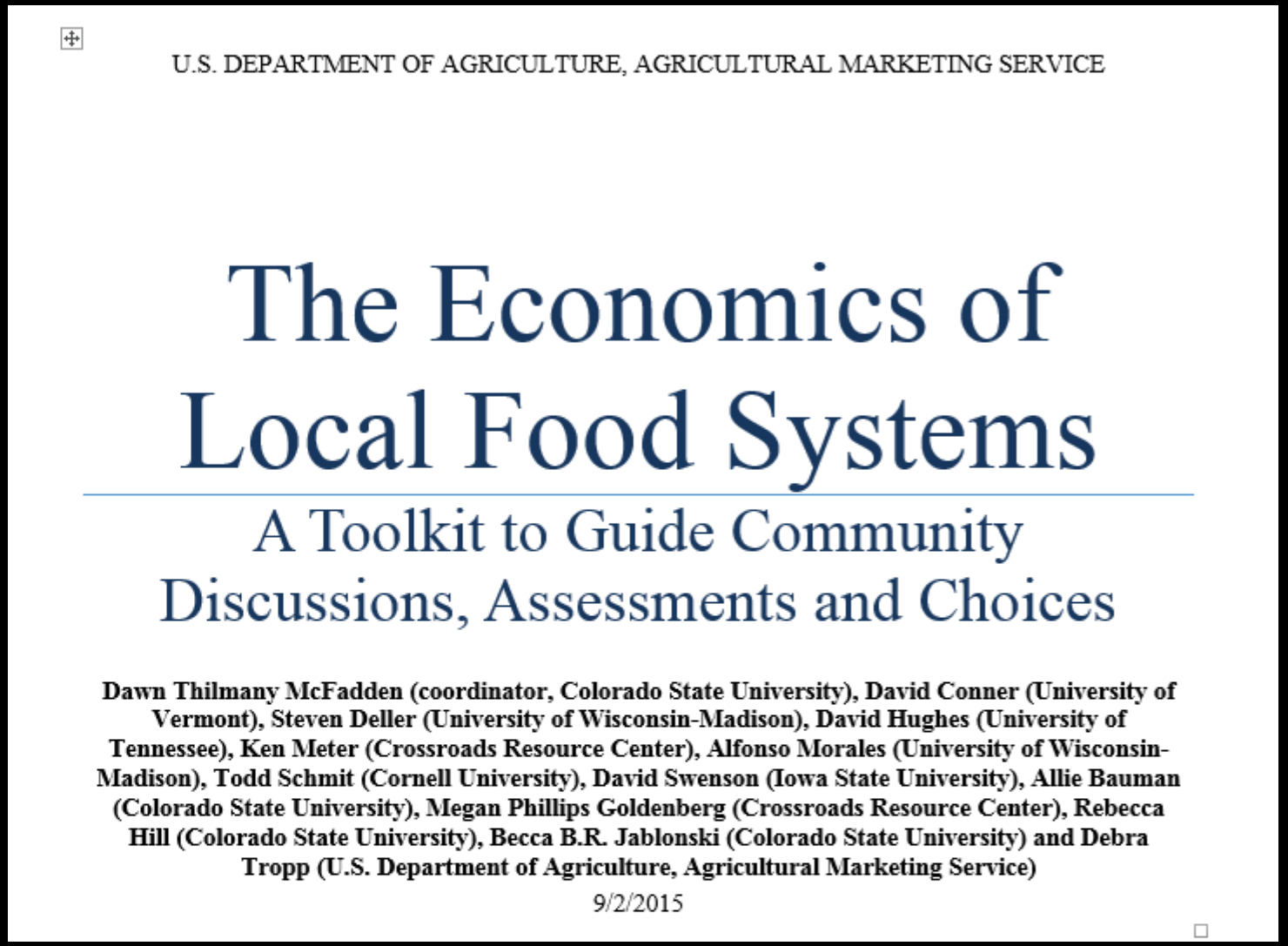
A Toolkit to Help Your Community Understand the Economic Impacts of Your Local Food System Initiatives

Who We Are

In 2014, the U.S. Department of Agriculture Agricultural Marketing Service convened a team of regional economists and food system

The Toolkit is made up of seven ***modules*** that can be grouped into two stages of food system planning, assessment and evaluation. The

Forthcoming: USDA AMS “Toolkit”



U.S. DEPARTMENT OF AGRICULTURE, AGRICULTURAL MARKETING SERVICE

The Economics of Local Food Systems

A Toolkit to Guide Community Discussions, Assessments and Choices

Dawn Thilmany McFadden (coordinator, Colorado State University), David Conner (University of Vermont), Steven Deller (University of Wisconsin-Madison), David Hughes (University of Tennessee), Ken Meter (Crossroads Resource Center), Alfonso Morales (University of Wisconsin-Madison), Todd Schmit (Cornell University), David Swenson (Iowa State University), Allie Bauman (Colorado State University), Megan Phillips Goldenberg (Crossroads Resource Center), Rebecca Hill (Colorado State University), Becca B.R. Jablonski (Colorado State University) and Debra Tropp (U.S. Department of Agriculture, Agricultural Marketing Service)

9/2/2015

Members of the Food System Modeling Learning Community

• Florence Becot	University of Vermont
• Kate Clancy	EFSNE
• David Conner	University of Vermont
• Gail Feenstra	UC Davis
• Miguel Gomez	Cornell University
• Michael Hamm	Michigan State University
• Shermain Hardesty	UC Davis
• Casey Hoy	Ohio State University
• David Hughes	Clemson University
• Becca Jablonski	Colorado State University
• Sophia Kotsiri	Purdue University
• Steve Miller	Michigan State University
• Jeff O'Hara	AMS/USDA
• Chris Peters	Tufts University
• Rich Pirog	Michigan State University
• Kathy Ruhf	NESAWG
• Dawn Thilmany	Colorado State University

EFSNE
Enhancing Food Security in the Northeast

Learning Community Presentations

1. Chris Peters – July 9, 2014

2. Becca Jablonski – September 17, 2014 – Evaluating the Economic Impacts of Policies Supporting Alternative Food Systems

3. Steven R. Miller – December 3, 2014 – Valuing Michigan's Local Food System: A Replicable Model for Valuing Local Food

Learning Community Presentations

4. David Conner, David Hughes, Becca Jablonski, Dawn Thilmany – January 21, 2015 – Framing Different Phases of Assessing Economic Implications of Local and Regional Food Systems

5. Miguel Gomez– March 25, 2015 – Food Systems Modeling and New Ways to Think about Local: The Eastern Broccoli Project

6. Kate Clancy– June 10, 2015 – A Framework for Assessing Effects of the Food System

7. Casey Hoy – July 15, 2015 – Food Systems Modeling: An Approach with Ecological Roots

Food Systems Modeling and New Ways To Think About Local: The Eastern Broccoli Project*

- Miguel I. Gómez (Cornell University)
- Shadi Atallah (Purdue University)

- *FOOD SYSTEMS LEARNING*
- *COMMUNITY WEBINAR March 25, 2015*

•**Based on* Atallah, S.S., M.I. Gómez, T. Björkman. 2014. "Localization effects for a fresh vegetable product supply chain: Broccoli in the eastern United States." *Food Policy,* 49: 151–159.

Cornell University

Realizing opportunity

Attention in NYC

Attention in NYC

Economic Component

Goals –

- Would an Eastern broccoli be competitive?
- Would retailers/consumers accept Eastern broccoli?

Five Phases

- Assess cost-efficiency (harvest, pre- and post-harvest)
- Assess consumer willingness to buy and pay for new Eastern broccoli varieties
- Identify cost-minimizing supply chain structures

Three Scenarios of Acreage Increase in the East Coast

- Conservative: 15% increase
- Most likely: 30% increase
- High: 100% increase

- We employ the shadow prices on land to allocate increases in each supply location-season combination – the method is recursive

Optimal Broccoli Acreage Increase in Production Locations, by season

	Optimal Broccoli Acreage Increase (acres)			Fraction of total vegetable acreage (%) [a]
	Spring	Summer	Fall [b]	
		15% acreage increase scenario		
Florida [b]	0	0	0	0
New Jersey	0	48	0	0
Pennsylvania	0	1,684	0	3
Virginia	0	0	0	0
Total	0	1,733	0	2
		30% acreage increase scenario		
Florida	0	0	1,012	0
New Jersey	0	48	0	0
Pennsylvania	0	2,462	0	4
Virginia	0	0	0	0
Total	0	2,511	1,012	1
		100% acreage increase scenario		
Florida	2,810	0	2,857	2
New Jersey	0	397	0	1
Pennsylvania	0	3,501	0	6
Virginia	307	0	1,880	8
Total	3,117	3,899	4,736	3

THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

Food Systems Modeling, an Approach with Ecological Roots

Food Systems Modeling Learning Community
July 15, 2015

Casey Hoy
Kellogg Endowed Chair in Agricultural Ecosystems Management
Professor of Entomology
Ohio Agricultural Research and Development Center, Wooster, OH
hoy.1@osu.edu amp.osu.edu

Agroecosystem Health and Resilience:

Soils

Topography

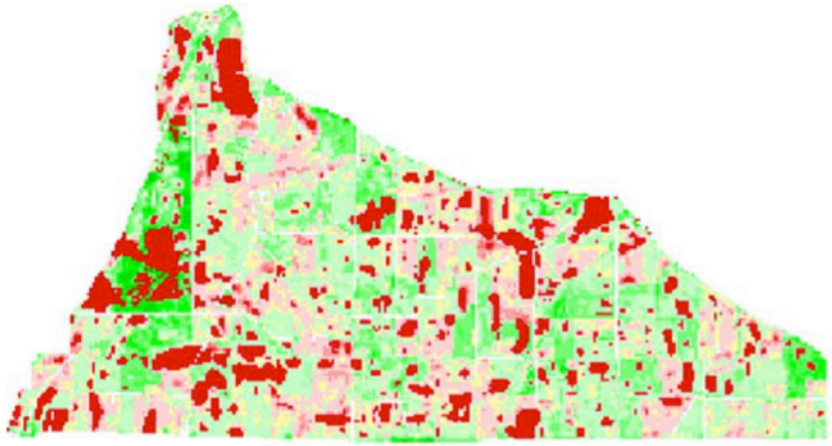
Biodiversity

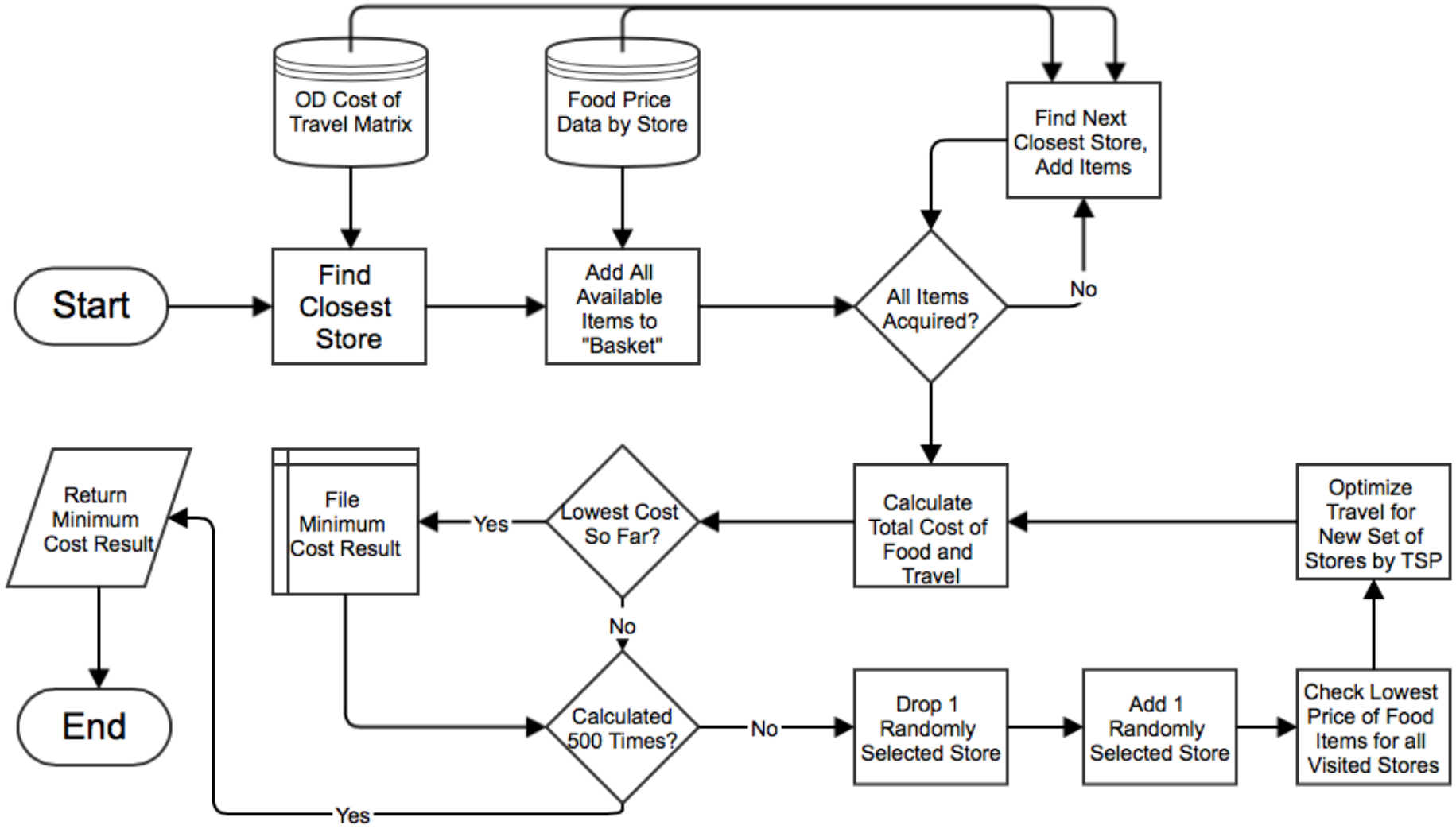
Farm Economics

Land Economics

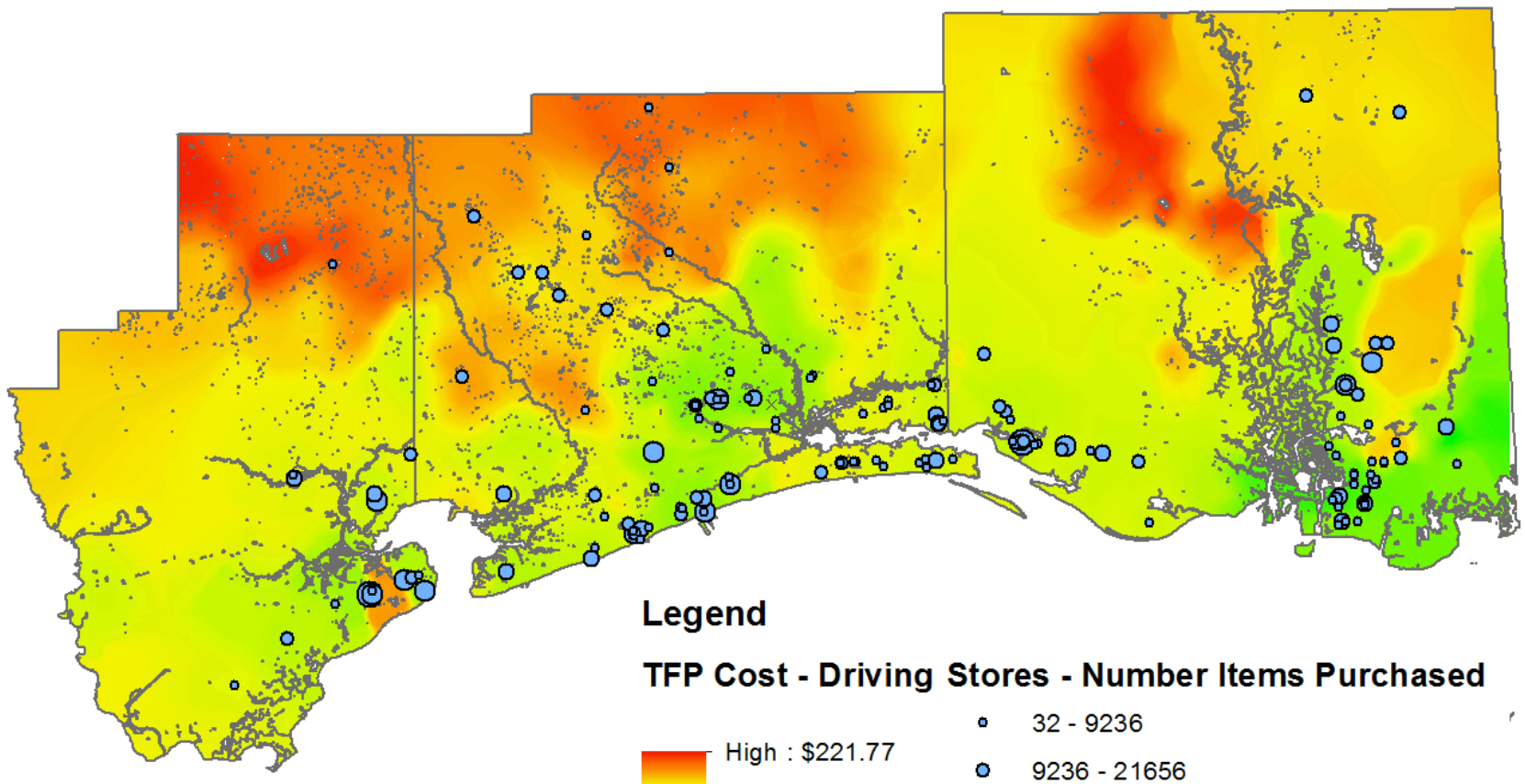
Social Organization

Self Organization
Innovation




OD Cost of Travel Matrix
Food Price Data by Store
Find Next Closest Store, Add Items
Start
Find Closest Store
Add All Available Items to "Basket"
All Items Acquired?
No
Return Minimum Cost Result
File Minimum Cost Result
Yes
Lowest Cost So Far?
Calculate Total Cost of Food and Travel
Optimize Travel for New Set of Stores by TSP
No
End
Calculated 500 Times?
No
Drop 1 Randomly Selected Store
Add 1 Randomly Selected Store
Check Lowest Price of Food Items for all Visited Stores
Yes

Thrifty Food Plan Cost - Driving



Legend

TFP Cost - Driving

High : $221.77

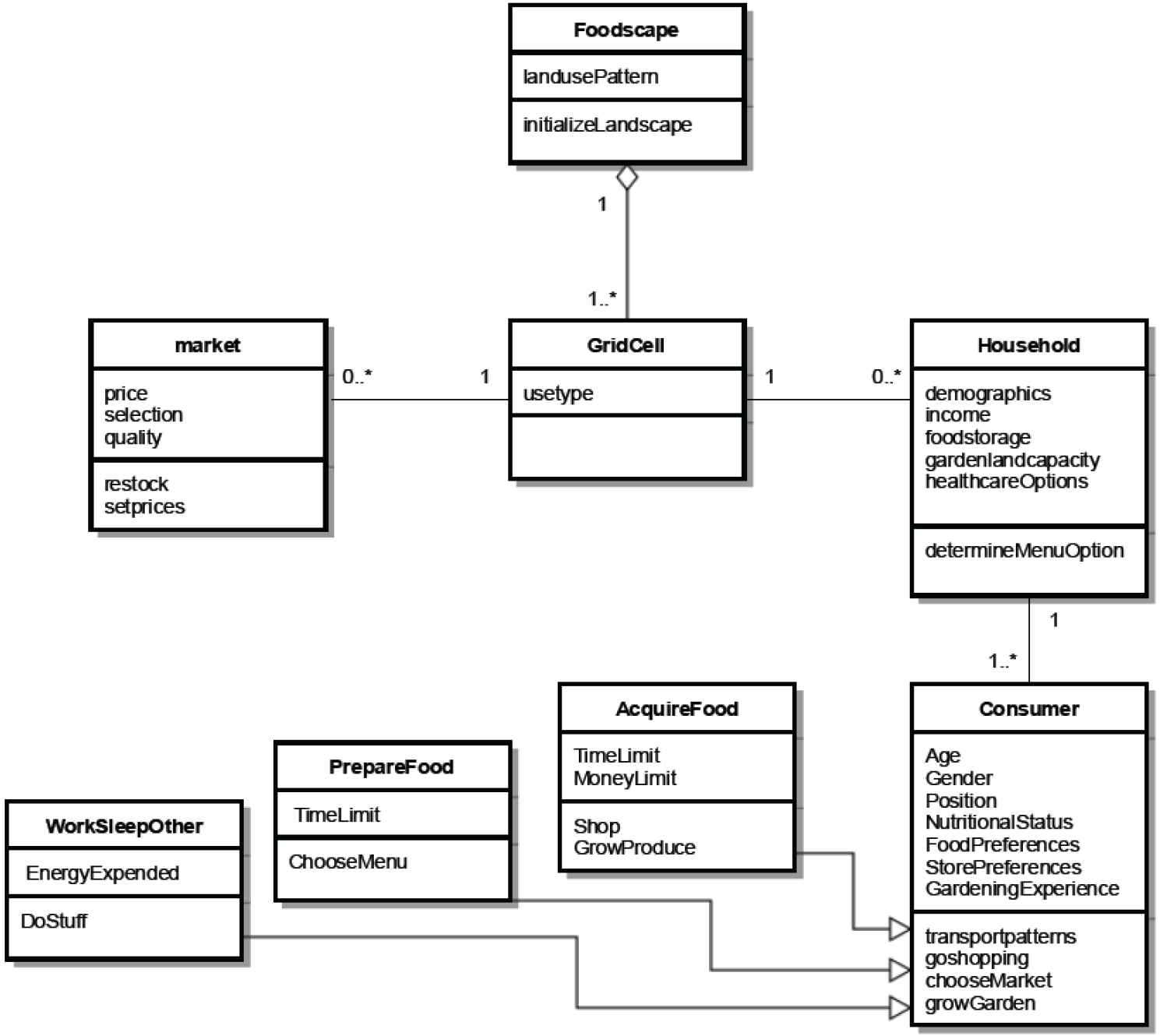
Low : $111.06

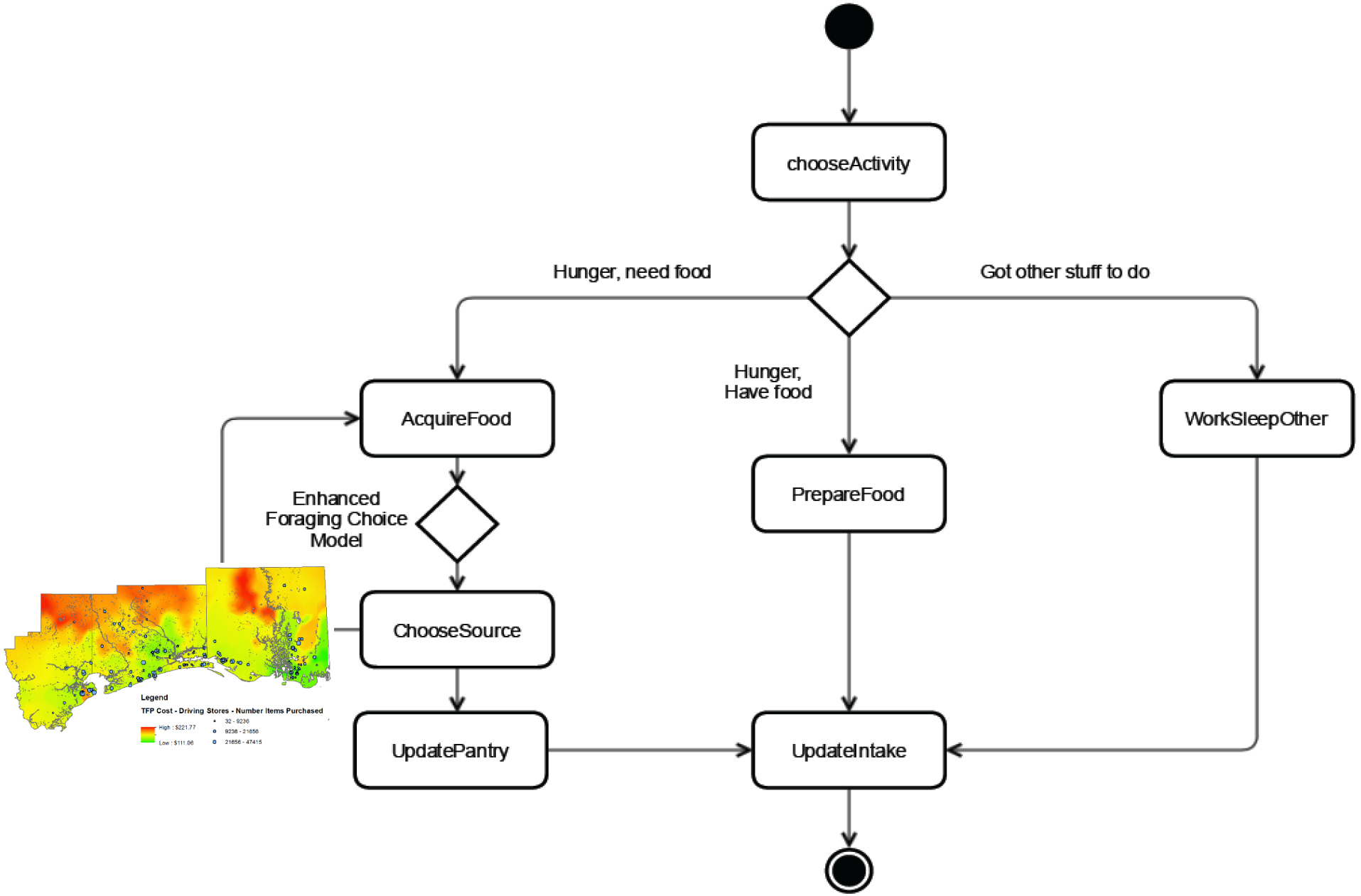
Stores - Number Items Purchased

- 32 - 9236
- 9236 - 21656
- 21656 - 47415
- 47415 - 139436
- 139436 - 335211

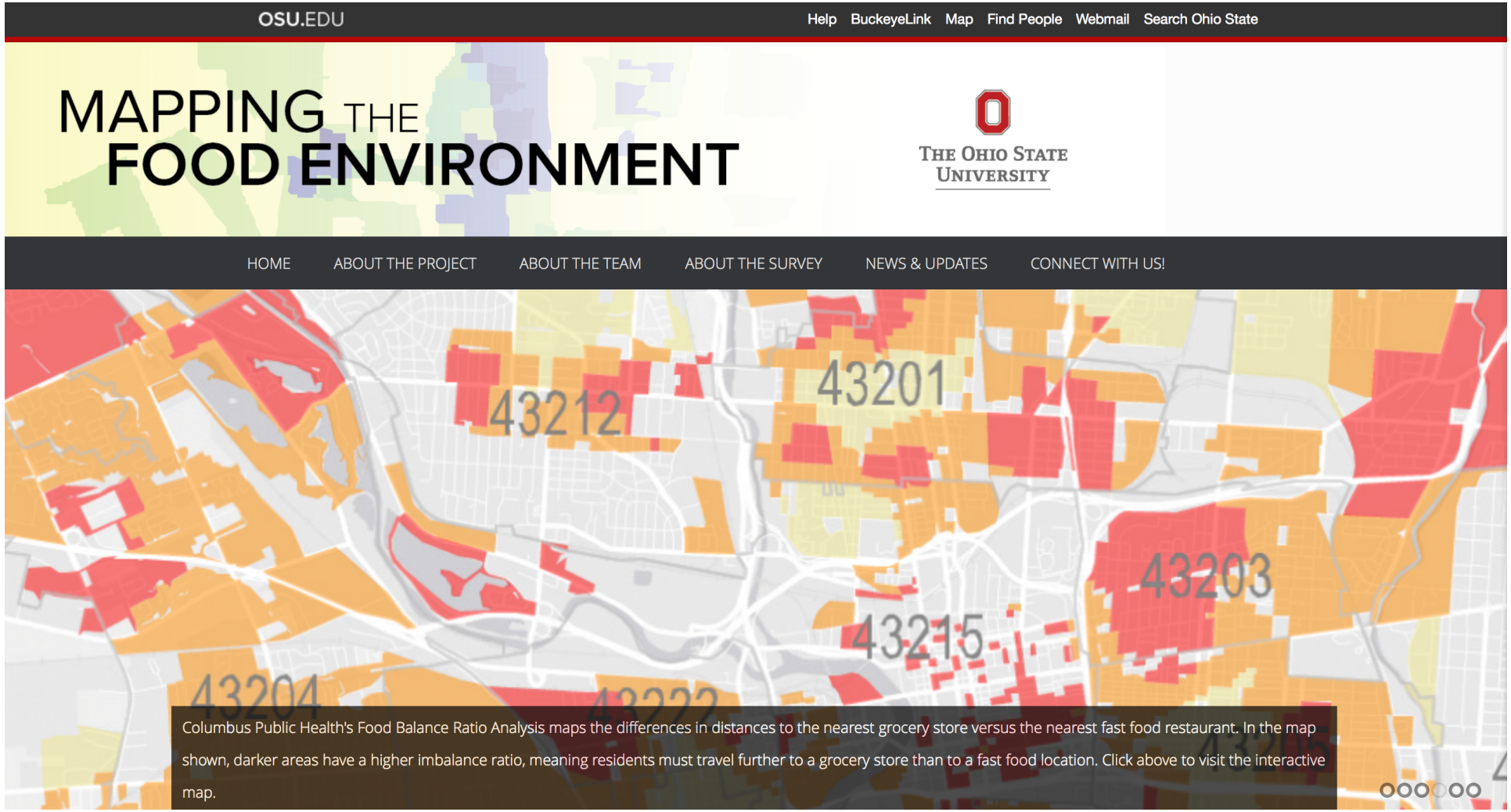
0 5 10 20 Miles

AMP Agroecosystems Management Program


Foodscape
landusePattern
initializeLandscape
1
1..*
market
price
selection
quality
restock
setprices
0..*
1
GridCell
usetype
1
0..*
Household
demographics
income
foodstorage
gardenlandcapacity
healthcareOptions
determineMenuOption
1
1..*
AcquireFood
TimeLimit
MoneyLimit
Shop
GrowProduce
PrepareFood
TimeLimit
ChooseMenu
WorkSleepOther
EnergyExpended
DoStuff
Consumer
Age
Gender
Position
NutritionalStatus
FoodPreferences
StorePreferences
GardeningExperience
transportpatterns
goshopping
chooseMarket
growGarden


chooseActivity
Hunger, need food
Got other stuff to do
Hunger,
Have food
AcquireFood
WorkSleepOther
Enhanced
Foraging Choice
Model
PrepareFood
ChooseSource
Legend
TFP Cost - Driving Stores - Number Items Purchased
High : $221.77
Low : $111.06
32 - 9236
9256 - 21656
21656 - 47415
UpdatePantry
UpdateIntake

http://foodmapping.osu.edu



Open Discussion

- How to share models with non-academics?
- How to bring practitioners into the learning community?