

Urban and Peri-Urban Food System Mapping

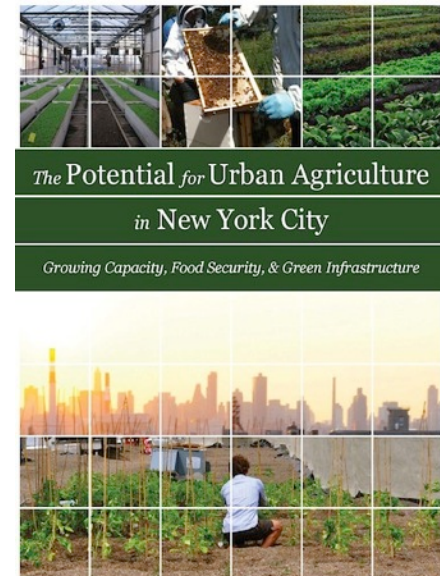
Michael Conard

Houman Saberi

Amanda (Behrens) Buczynski

Primary Research Objective

- To quantify the contribution of urban food production in the six focus cities.
 - Baltimore
 - New York City
 - Philadelphia
 - Pittsburg
 - Syracuse
 - Charleston, WV
- Replicate the UDL's NYC Methodology



Secondary Research Objective

- To look beyond the urban footprint to surrounding peri-urban areas
- To define and quantify the peri-urban contribution in a consistent manner across all six EFSNE cities

Peri-Urban Literature Review

The term “peri-urban area”, cannot be easily defined or delimited through unambiguous criteria.

It is a name given to the grey area which is neither entirely urban nor purely rural in the traditional sense.

Important to locate the peri-urban on a continuum from urban-peri-urban-rural (U/PU/R).

Linked system, constituting an uneven multidimensional continuum.

Many researchers note that peri-urban is a combination of static and dynamic forces

(laquinta and Drescher, 2000; OECD, 1979; Allen, 2003; Mattingly, 1999; Adell, 1999)

Peri-Urban Methodology

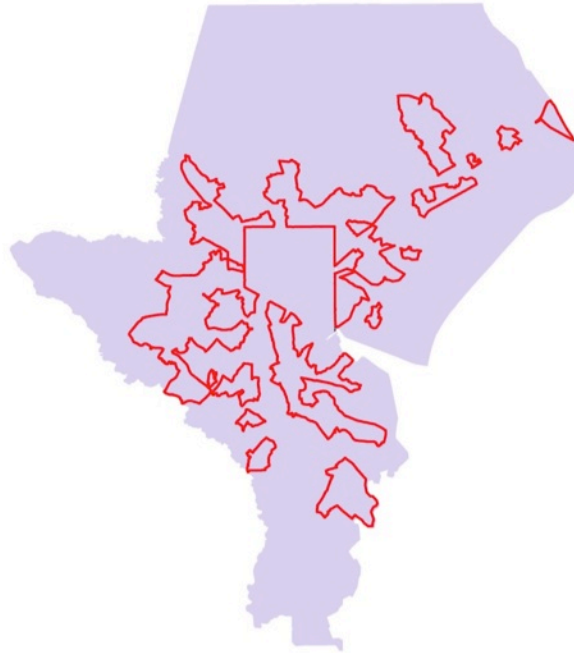
- Defined our study area
- Identified datasets with static or dynamic characteristics
- Mapped datasets over study area to create peri-urban zones
- Developed machine-learning algorithm to create new datasets
- Used zones to analyze food systems and land use within 6 EFSNE cities



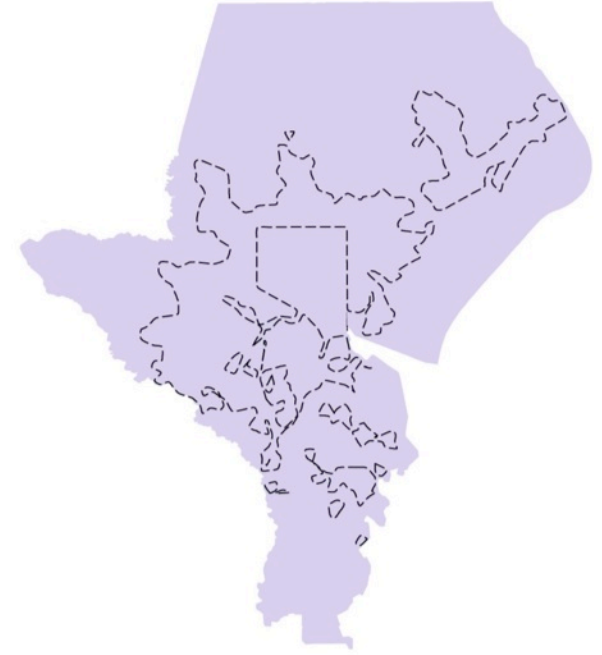
Outlining the Peri-Urban



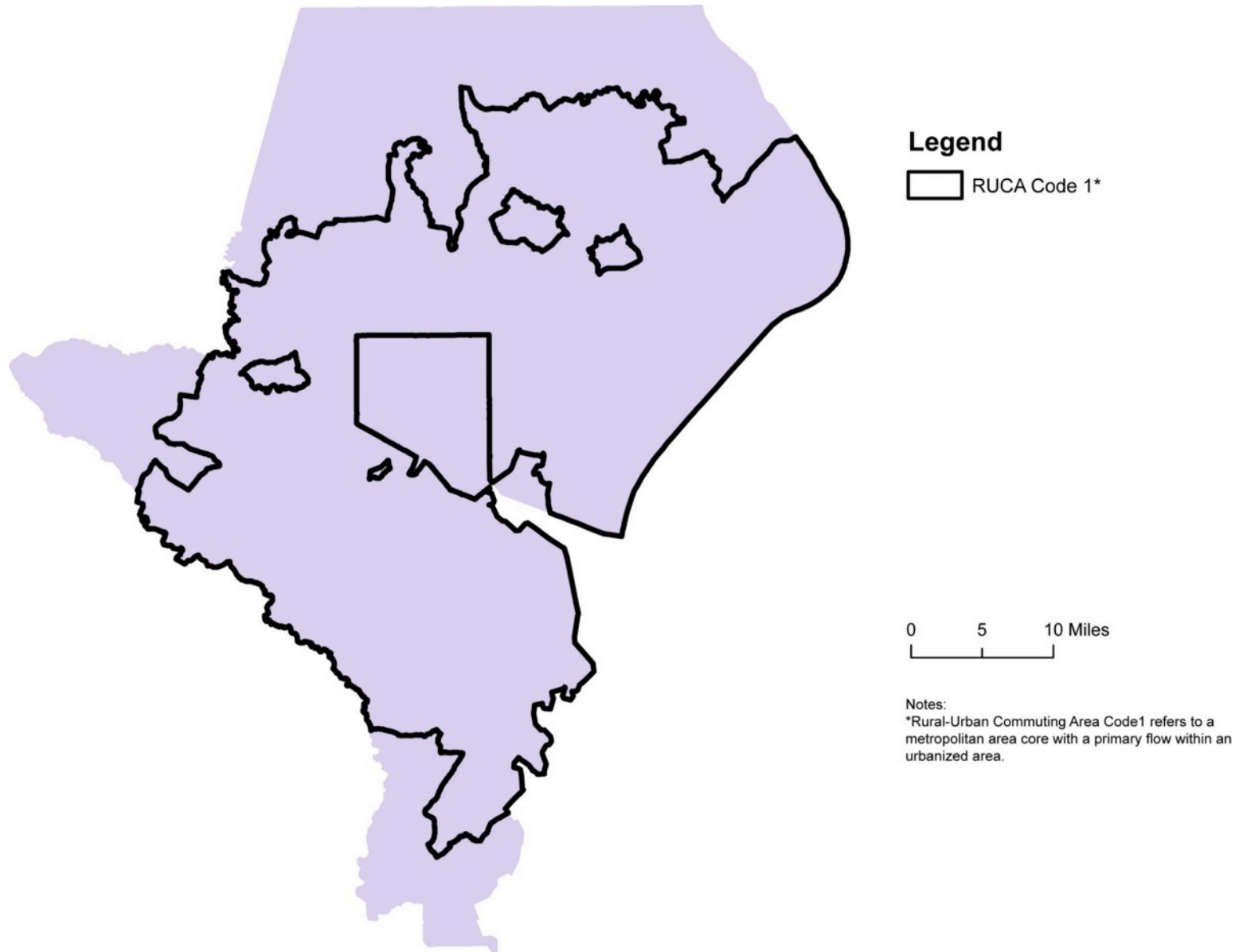
Commuting

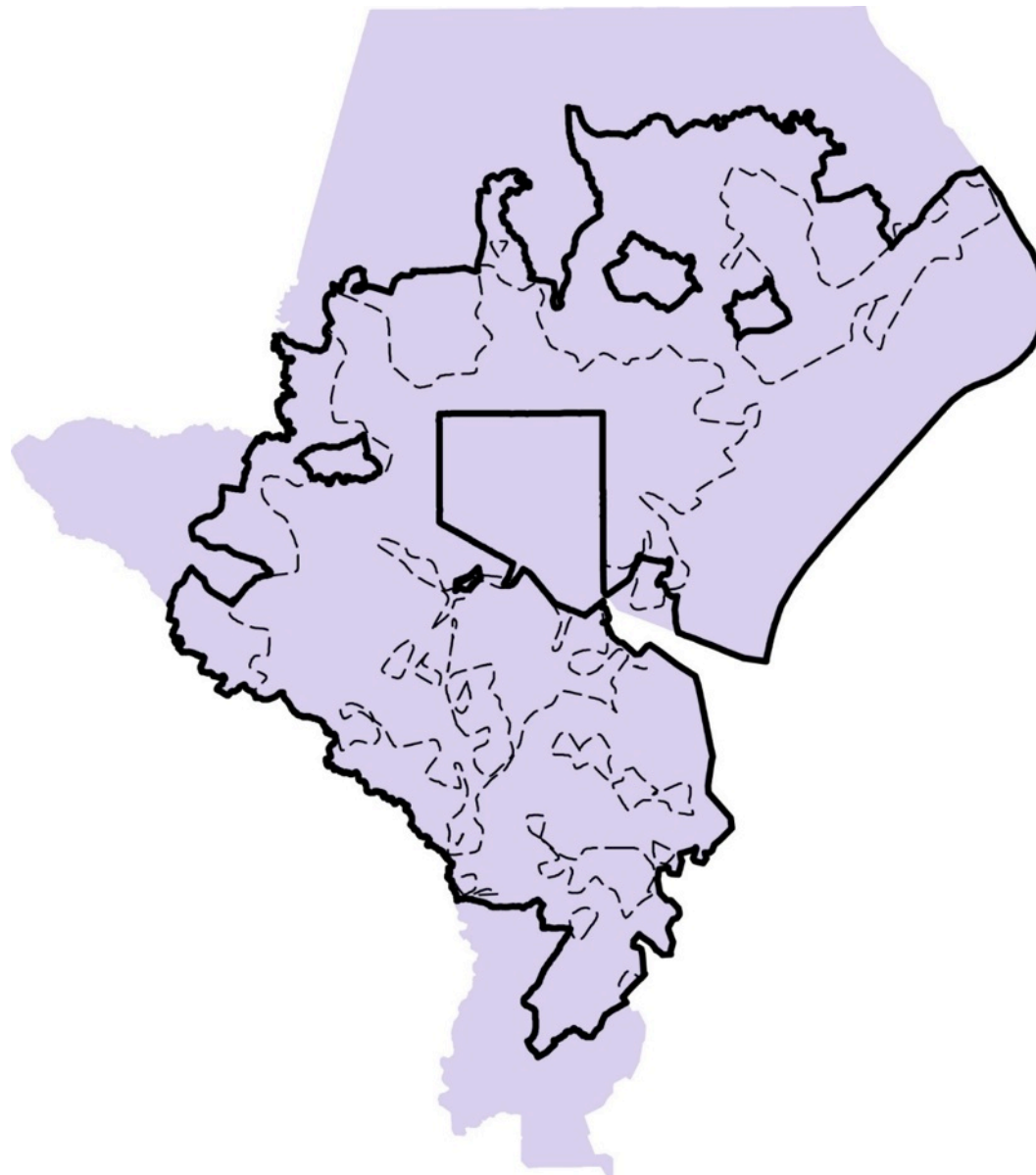


Zoning



Population Density





Legend

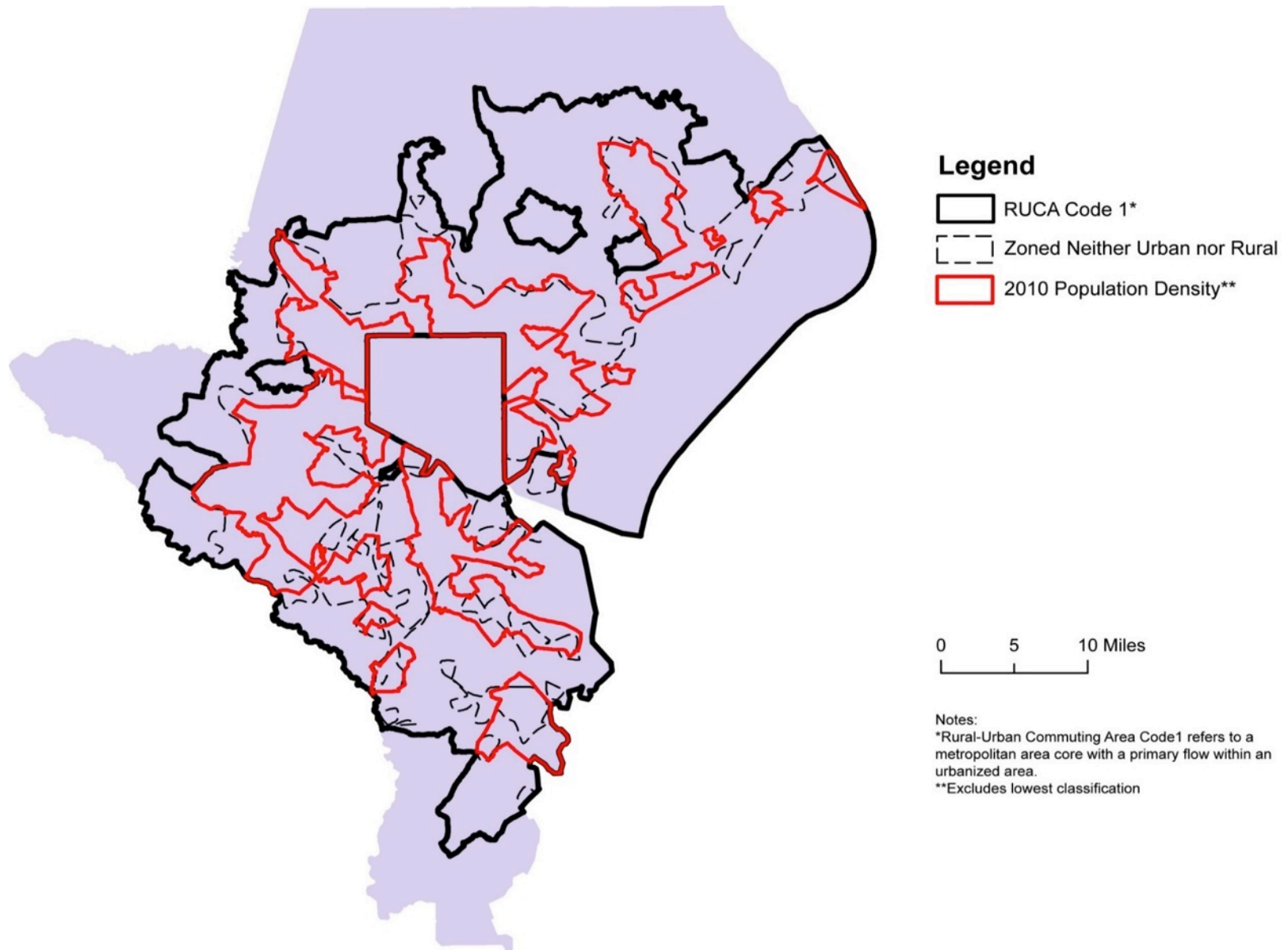
 RUCA Code 1*

 Zoned Neither Urban nor Rural

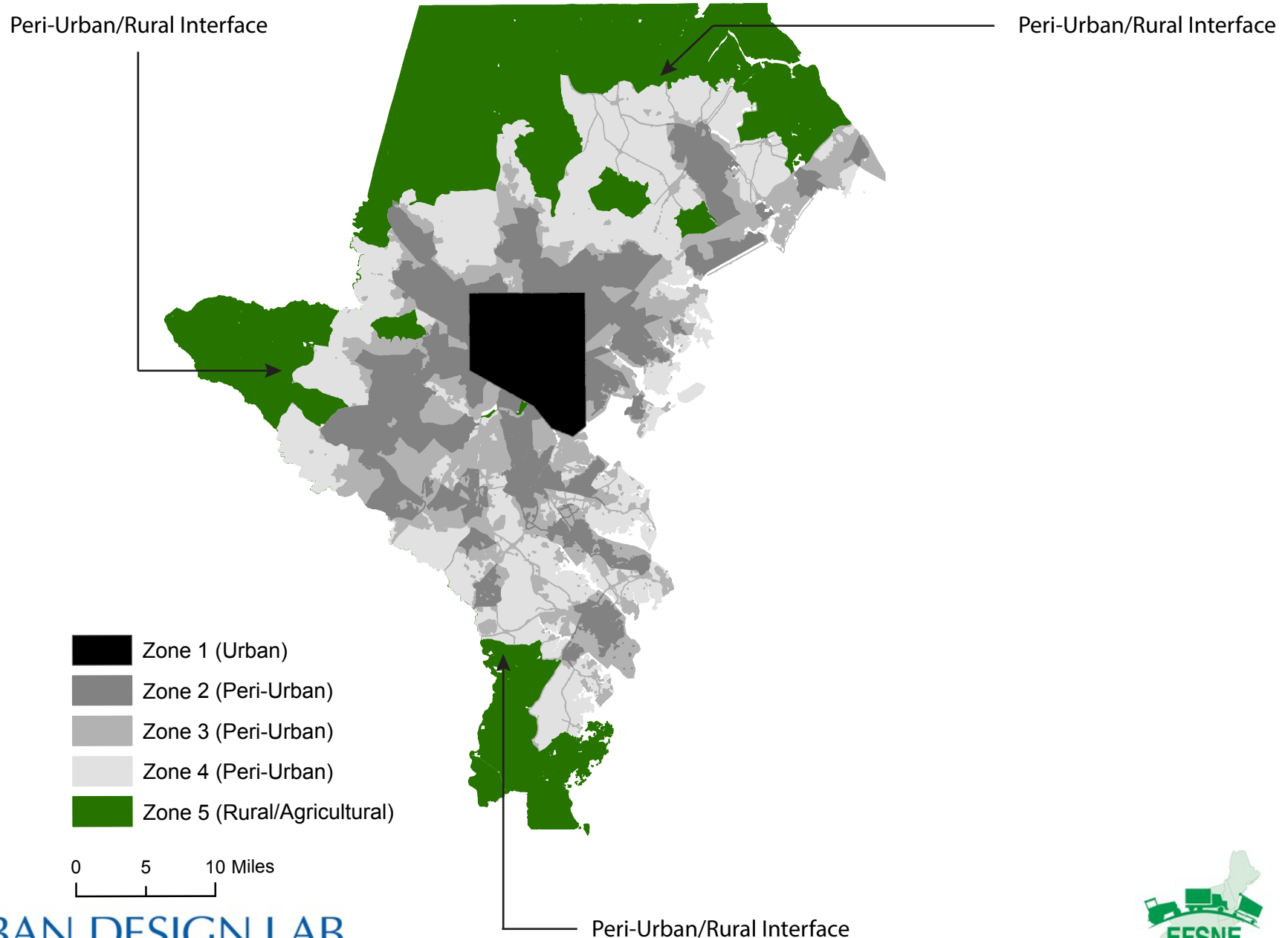
0 5 10 Miles

Notes:

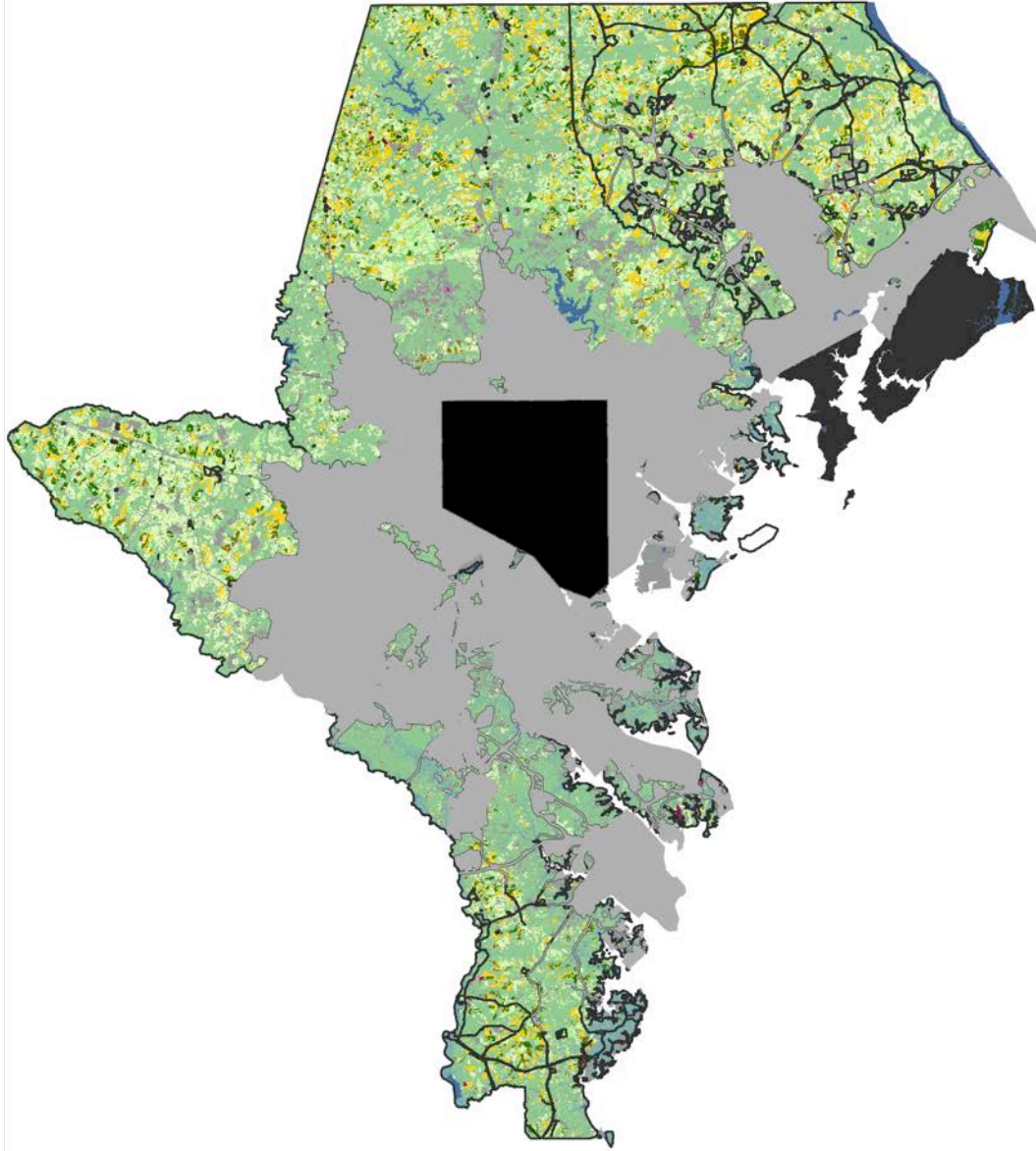
*Rural-Urban Commuting Area Code1 refers to a metropolitan area core with a primary flow within an urbanized area.

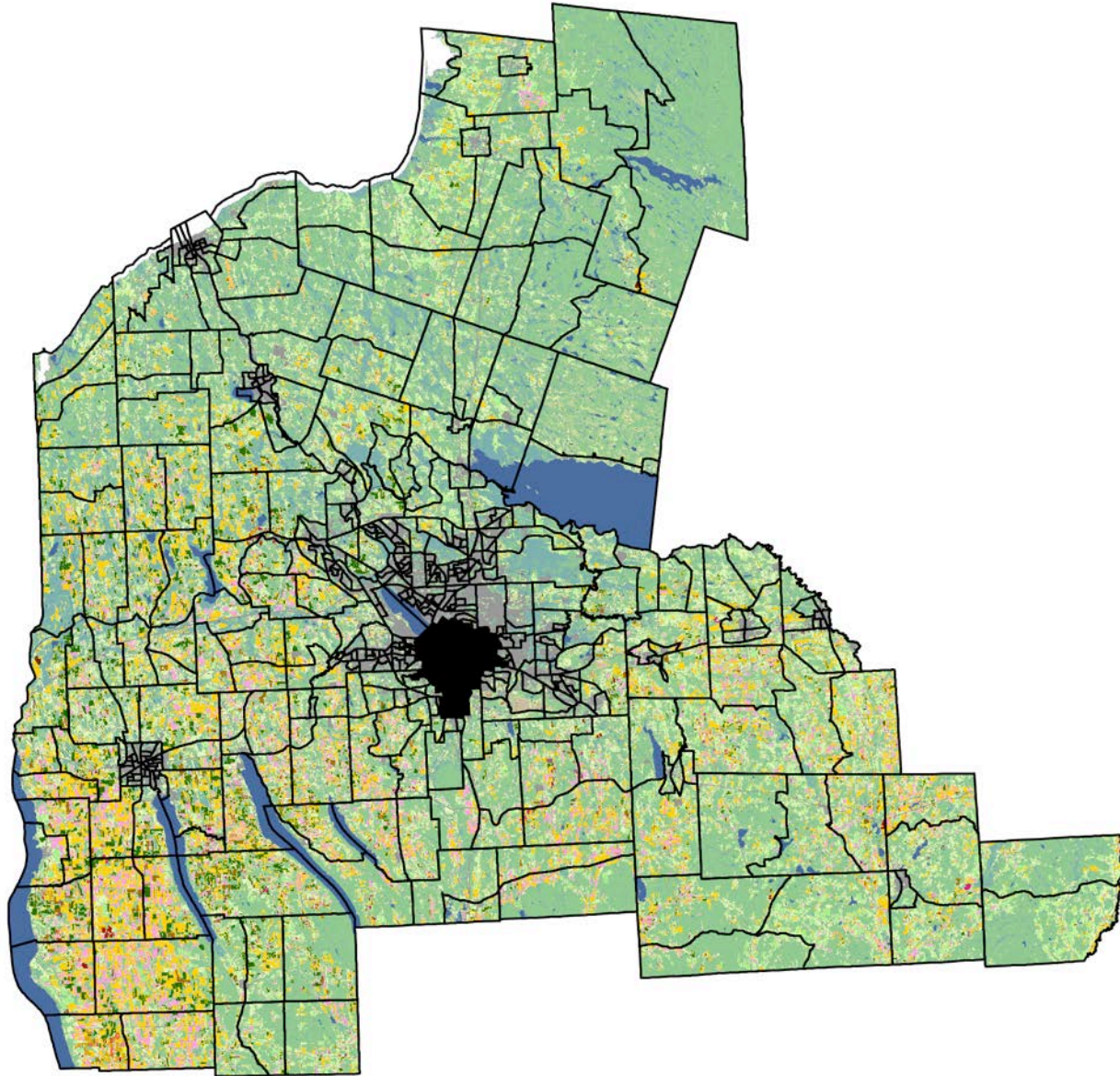


ENHANCING FOOD SECURITY IN THE NORTHEAST WITH REGIONAL FOOD SYSTEMS: CONFERENCE



MACHINE-LEARNING ALGORITHM





```

NY_State_NLCD_ML_CLEANED.py -- Locked

dataFileName = workingDirectory + "NYCSyraTrainBG_TXT_ML.txt"

from sklearn import preprocessing
from sklearn import svm

import numpy as np
import random
import time

print time.localtime()
start = time.time()

random.seed(0)

with open(dataFileName, 'r') as f:
    data = f.read()
    entries = data.splitlines()
    entries.pop(0)

    featureData = []
    targetData = []

    random.shuffle(entries)

    for entry in entries:
        data = entry.split(',')

        #Target data= Ag_0Y_1N; feature data = land class
        try:
            featureData.append([data[3], data[4], data[5], data[6], data[7], data[8],
                                data[9], data[10], data[11], data[12], data[13], data[14], data[15], data[16]])
            targetData.append(data[2])
        except:
            continue

X = np.asarray(featureData, dtype='float')
y = np.asarray(targetData, dtype='float')

num = int(len(targetData) * .7)

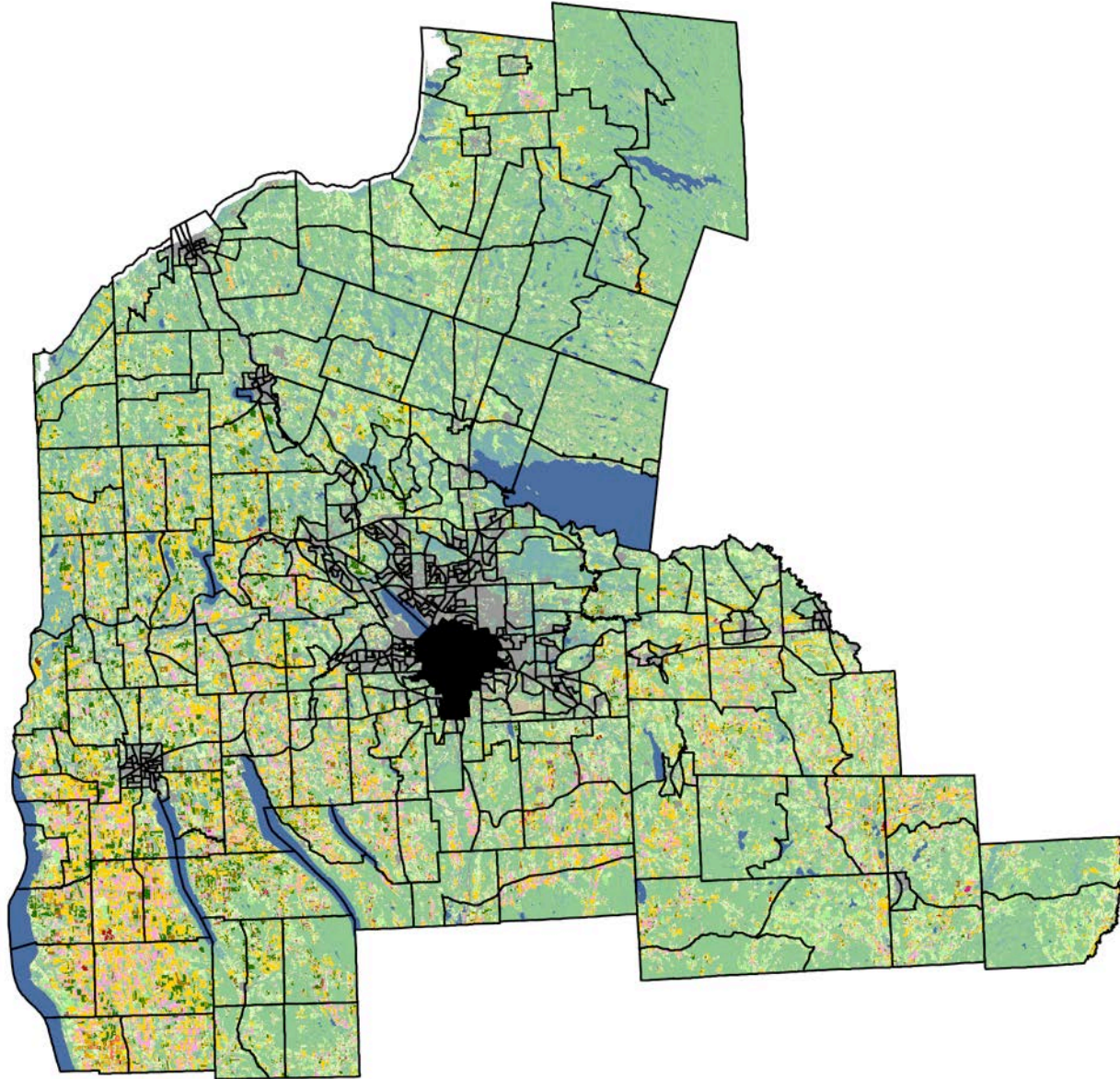
X_train = X[:num]
X_val = X[num:]

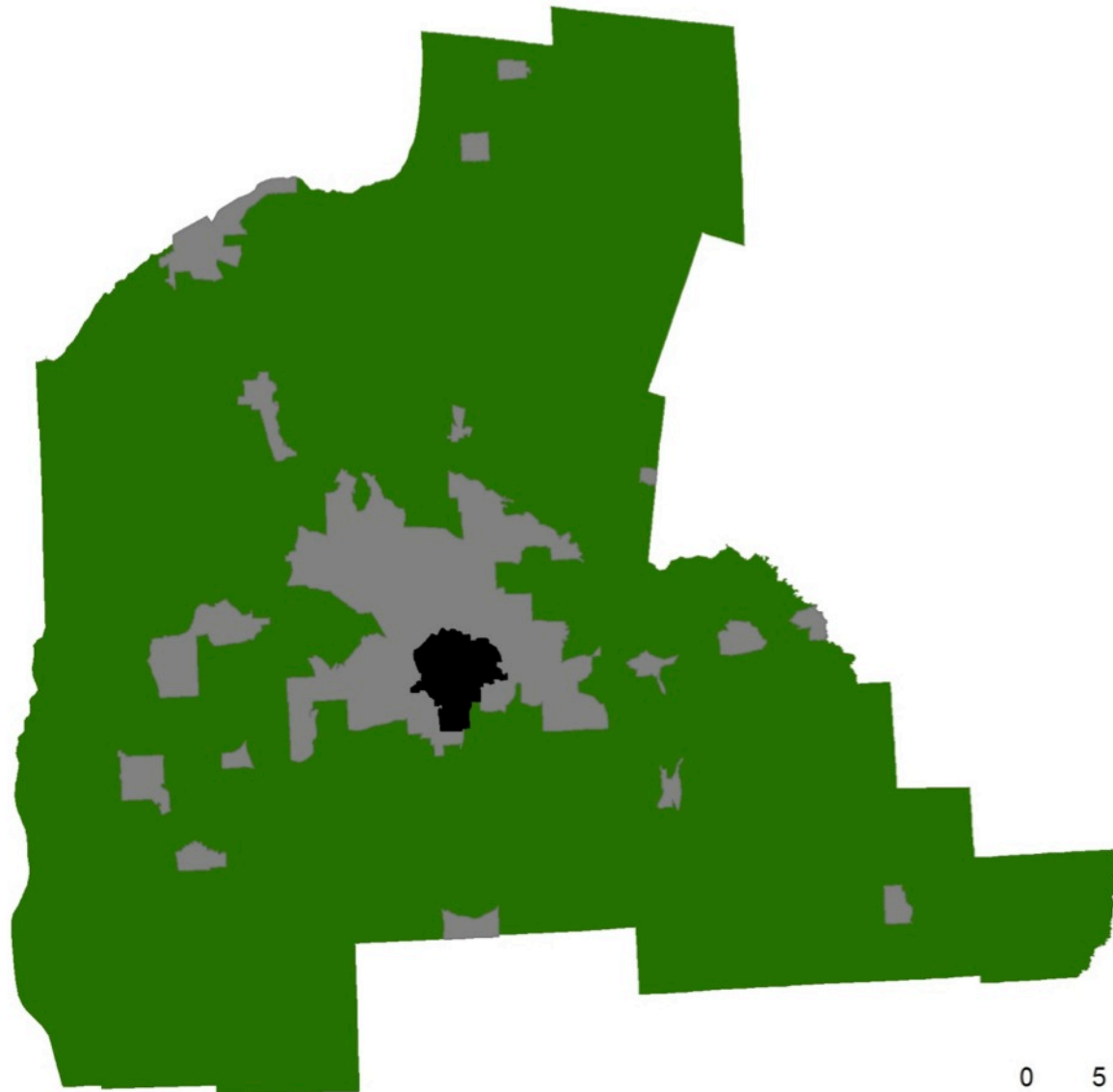
y_train = y[:num]
y_val = y[num:]

#mean 0, variance 1
scaler = preprocessing.StandardScaler().fit(X_train)
X_train_scaled = scaler.transform(X_train)

'''

```

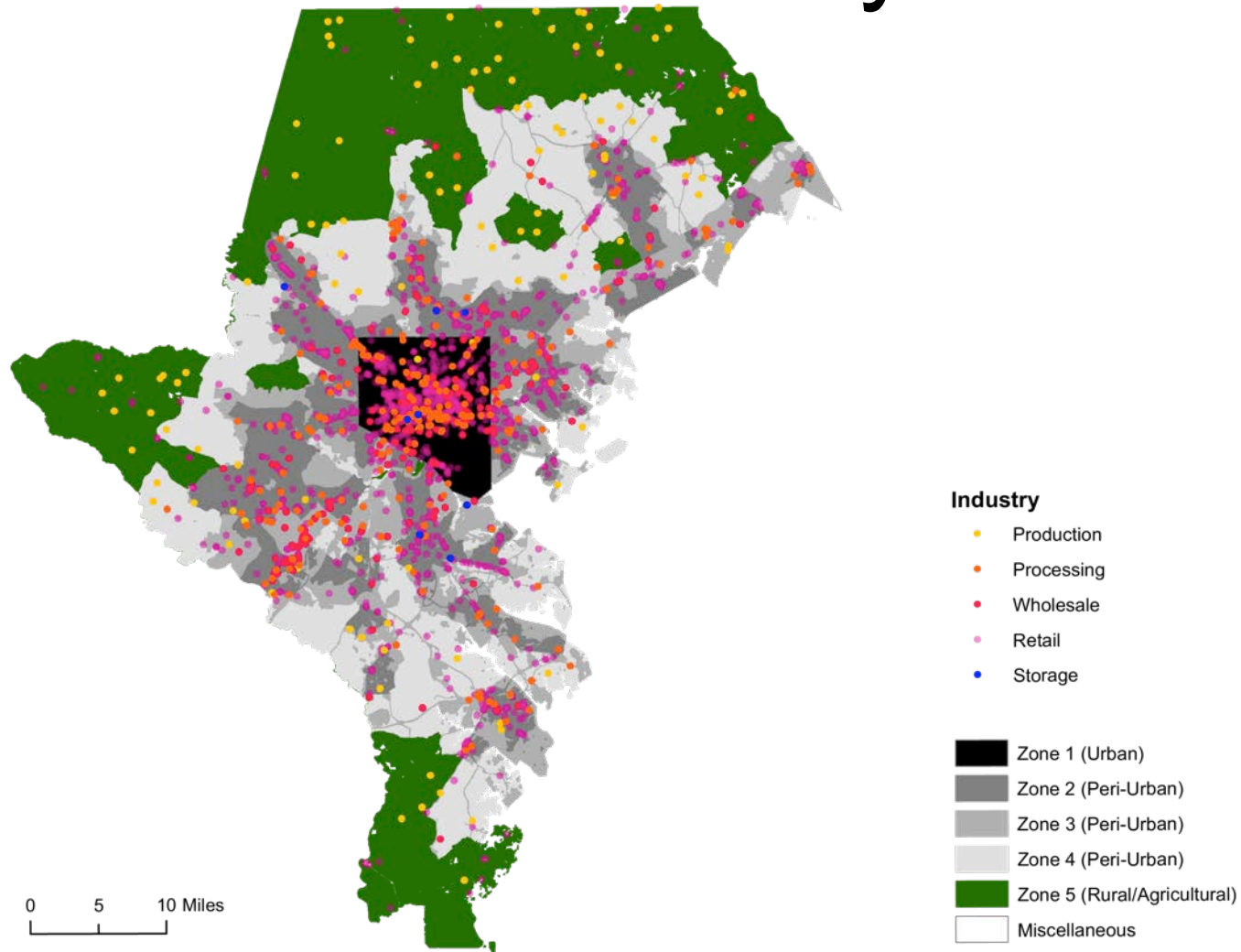





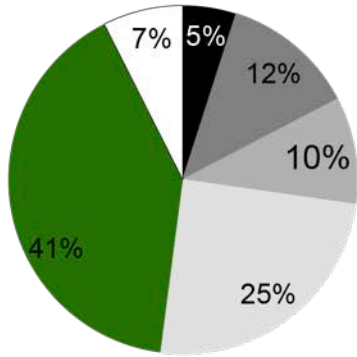
0 5 10 Miles

FOOD SYSTEMS RESULTS

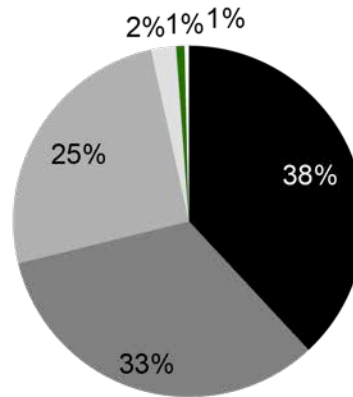
Baltimore Food Systems



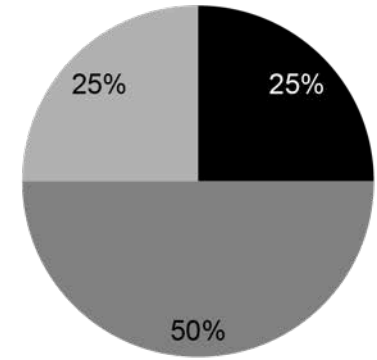
ENHANCING FOOD SECURITY IN THE NORTHEAST WITH REGIONAL FOOD SYSTEMS: CONFERENCE



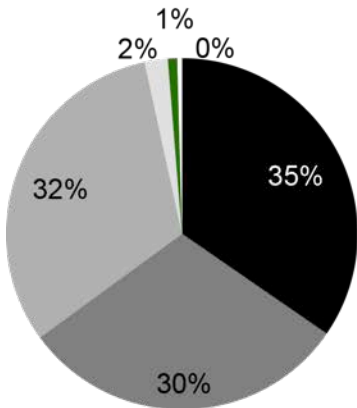
Production



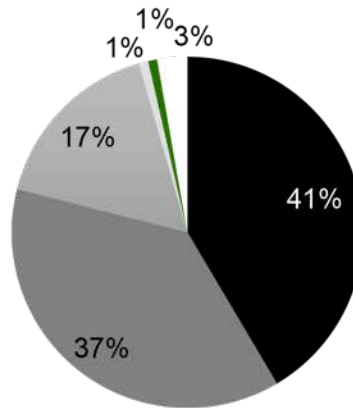
Processing



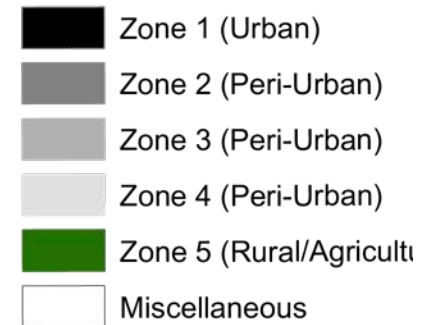
Storage



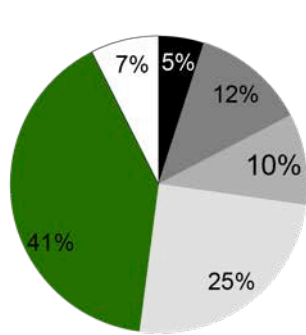
Wholesale



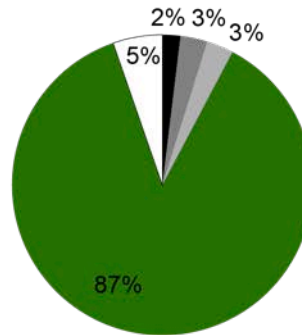
Retail



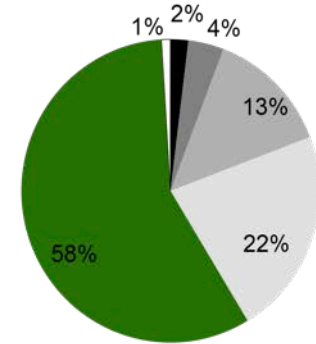
Production



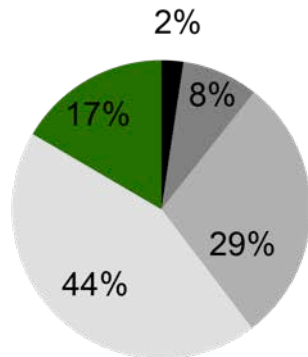
Baltimore



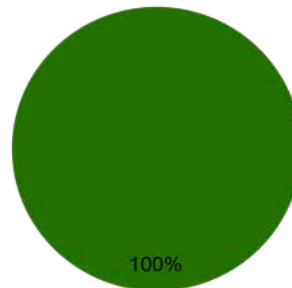
Syracuse



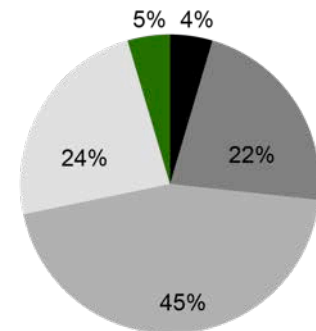
Pittsburgh



Philadelphia

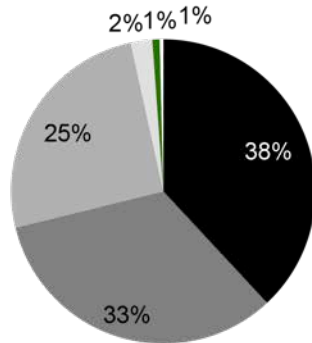


Charleston

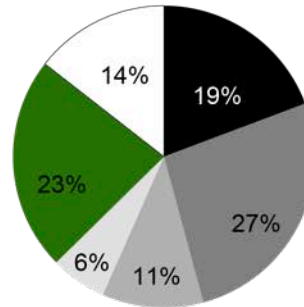


New York City

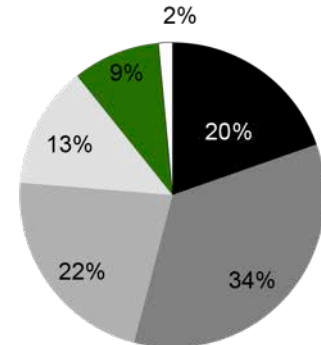
Processing



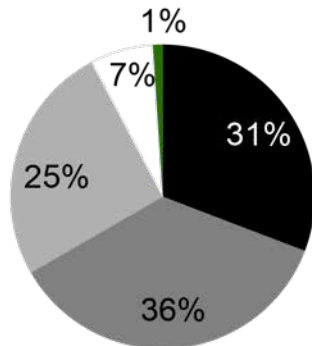
Baltimore



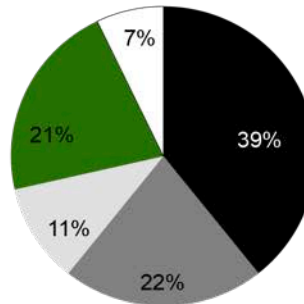
Syracuse



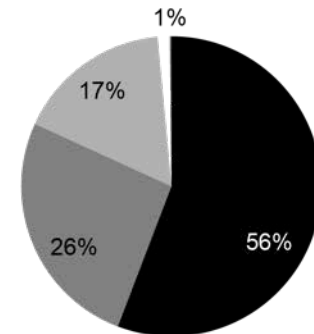
Pittsburgh



Philadelphia

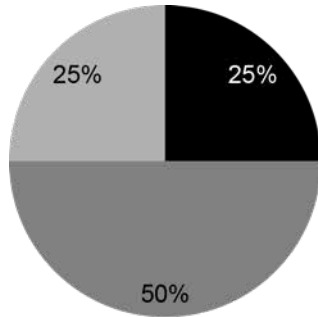


Charleston

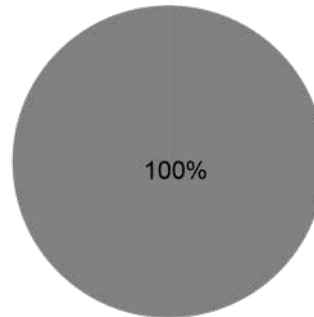


New York City

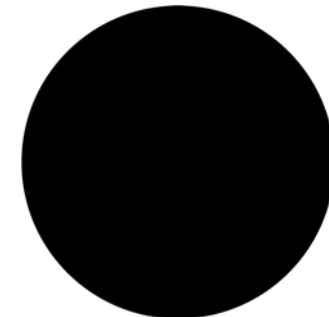
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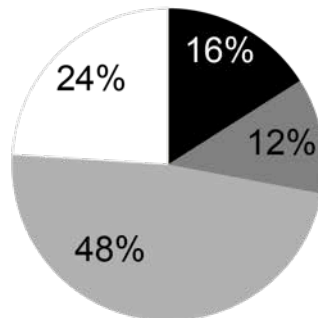
Baltimore



Syracuse

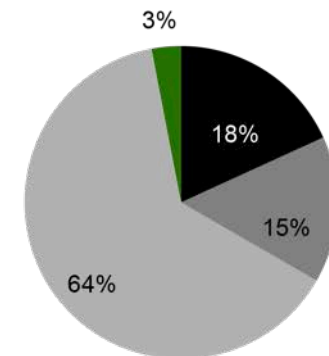


Pittsburgh



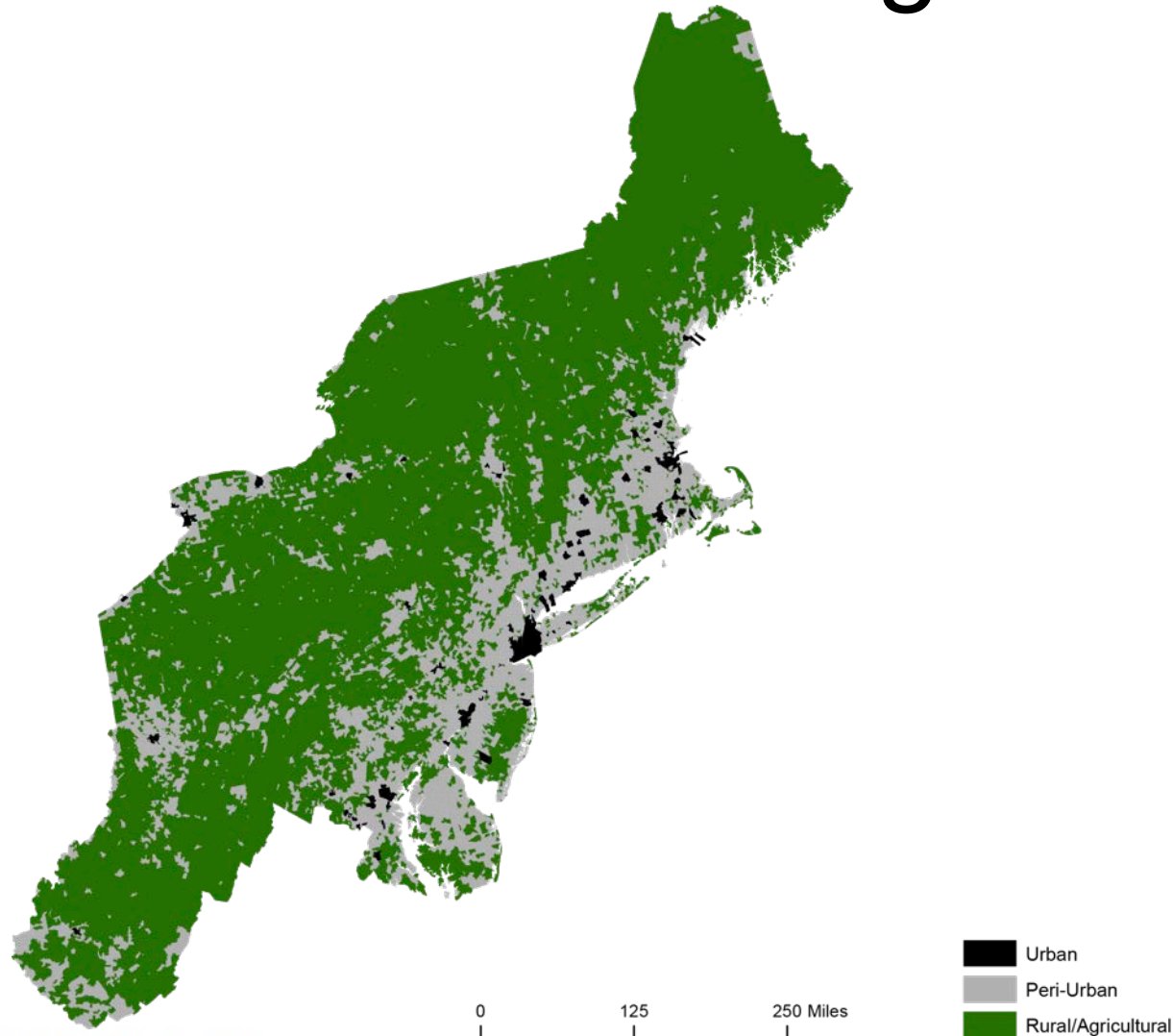
Philadelphia

Charleston

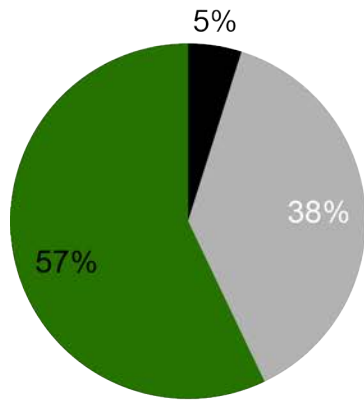


New York City

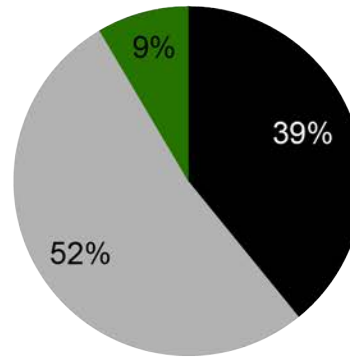
12 State NE Region



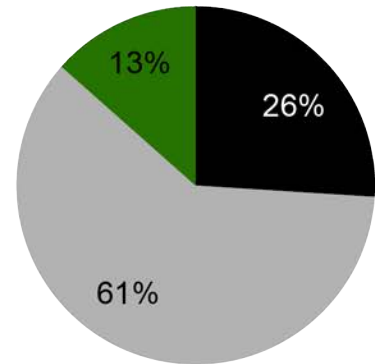
ENHANCING FOOD SECURITY IN THE NORTHEAST WITH REGIONAL FOOD SYSTEMS: CONFERENCE



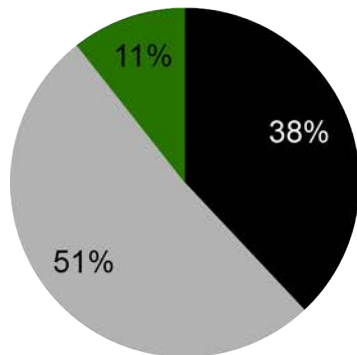
Production



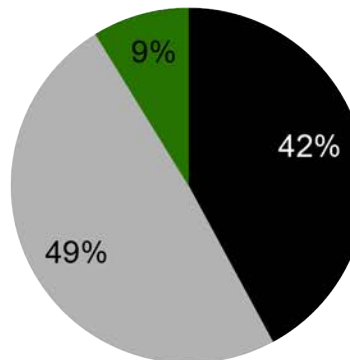
Processing



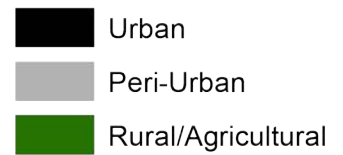
Storage



Wholesale



Retail



LAND USE AND YIELDS RESULTS

Calculating Yield Placeholder

Crop Yields (lbs/sq ft)			
Apples	Peaches	Broccoli	Milk
0.6	0.22	0.069	0.125
Beef	Bread	Cabbage	Potatoes
0.0009	0.09	0.95	0.68

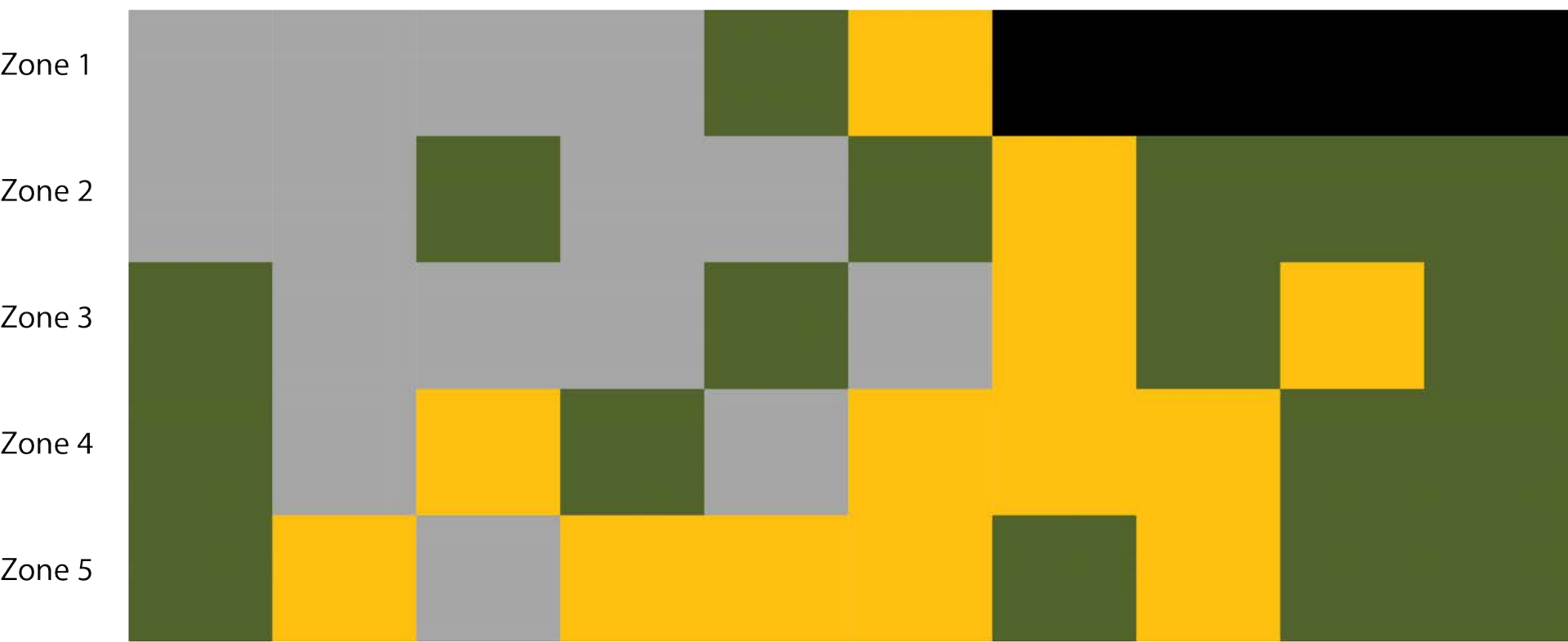
ORIGINAL											
	Dev High	Dev Mid	Dev Low	Dev Open	Deciduous Forest	Grass/Pasture	Shrubland	Woody Wetlands	Rice	winter wheat/soybeans	
Yield Placeholder	0.0000	0.2000	0.5000	0.8000	0.0000	1.0000	0.0000	0.0000	0.5000	0.7500	
Apples	0.00	0.16	0.40	0.63	0.00	0.79	0.00	0.00	0.40	0.59	
Peaches	0.00	0.08	0.21	0.34	0.00	0.42	0.00	0.00	0.21	0.32	
Broccoli	0.00	0.0003	0.0007	0.0010	0.0000	0.0013	0.0000	0.0000	0.0007	0.0010	
Milk	0.00	0.13	0.34	0.54	0.00	0.67	0.00	0.00	0.34	0.50	
Cabbage	0.00	0.14	0.35	0.5520	0.00	0.69	0.00	0.00	0.3450	0.5175	
Potatoes	0.00	0.17	0.42	0.6720	0.00	0.84	0.00	0.00	0.4200	0.6300	
Beef	0.00	0.0009	0.0024	0.0038	0.0000	0.0047	0.0000	0.0000	0.0024	0.0035	
Bread	0.00	0.02	0.06	0.10	0.00	0.12	0.00	0.00	0.06	0.09	
	Soybeans	Corn	Barren	Alfalfa	Open Water	Other Hay/Non Al	Mixed Forest	Evergreen	Fallow/Idle Cropland	Herbaceous wetlands	
Yield Placeholder	0.5000	0.5000	0.0000	1.0000	0.0000	1.0000	0.0000	0.0000	1.0000	0.0000	
Apples	0.40	0.40	0.00	0.79	0.00	0.79	0.00	0.00	0.79	0.00	
Peaches	0.21	0.21	0.00	0.42	0.00	0.42	0.00	0.00	0.42	0.00	
Broccoli	0.0007	0.0007	0.0000	0.0013	0.0000	0.0013	0.0000	0.0000	0.0013	0.00	
Milk	0.34	0.34	0.00	0.67	0.00	0.67	0.00	0.00	0.67	0.00	
Cabbage	0.35	0.35	0.00	0.69	0.00	0.69	0.00	0.00	0.69	0.00	
Potatoes	0.42	0.42	0.00	0.84	0.00	0.84	0.00	0.00	0.84	0.00	
Beef	0.0024	0.0024	0.0000	0.0047	0.0000	0.0047	0.0000	0.0000	0.0047	0.00	
Bread	0.06	0.06	0.00	0.12	0.00	0.12	0.00	0.00	0.12	0.00	

ENHANCING FOOD SECURITY IN THE NORTHEAST WITH REGIONAL FOOD SYSTEMS: CONFERENCE

	Total Area (sq ft)	ORIGINAL								
		CPL Yields (lb/ha)								
		1	2	3	4	5	6	7	8	9
		Dev Low	Dev Open	Dev Mid	Dev High	Deciduous Forest	Grass/Pasture			
Zone 1	3,167,806.16	978,436	823,436	542,409	426,249	358,437	38,750	0		
Apples		293,531	395,249	65,100	-	-	23,250			
Peaches		107,628	144,925	23,870	-	-	8,525			
Broccoli		33,756	45,454	7,486	-	-	2,674			
Milk		61,152	82,344	13,562	-	-	4,844			
Cabbage		464,757	625,811	105,075	-	-	36,812			
Potatoes		332,668	447,949	73,780	-	-	26,350			
Beef		421	567	93	-	-	33			
Bread		44,030	59,287	9,765	-	-	3,487			
Zone 2	8,308,923,069.62	2,800,565,424	2,480,324,414	1,491,503,892	1,074,913,163	286,071,393	177,115,398	142,270,340	21,293,082	18,239,337
Apples		780,169,627	1,190,555,719	-	128,989,580	-	-	85,362,204	-	-
Peaches		286,062,197	436,537,097	-	47,296,179	-	-	31,299,475	-	-
Broccoli		89,719,507	136,913,908	-	14,833,802	-	-	9,816,653	-	-
Milk		162,535,339	248,032,441	-	26,872,829	-	-	17,783,793	-	-
Cabbage		1,235,268,376	1,885,046,555	-	204,233,501	-	-	135,156,823	-	-
Potatoes		884,192,344	1,349,296,481	-	146,188,190	-	-	96,743,832	-	-
Beef		1,118,243	1,706,463	-	184,885	-	-	122,352	-	-
Bread		117,025,444	178,583,358	-	19,348,437	-	-	12,804,351	-	-
Zone 3	6,984,876,967.72	1,887,934,974	1,835,138,705	1,245,736,888	727,045,422	494,565,261	305,407,514	299,052,527	81,888,274	63,210,811
Apples		-	880,866,358	375,121,066	87,245,451	-	-	179,431,516	-	18,963,243
Peaches		-	322,984,334	136,813,058	31,989,999	-	-	65,791,556	-	6,953,189
Broccoli		-	101,299,629	42,908,923	10,033,227	-	-	20,634,634	-	2,180,773
Milk		-	183,513,820	77,733,555	18,176,136	-	-	37,381,566	-	3,950,676
Cabbage		-	1,394,705,036	590,775,022	138,138,630	-	-	284,099,901	-	30,025,135
Potatoes		-	998,315,183	422,870,542	98,478,177	-	-	203,355,718	-	21,491,676
Beef		-	1,262,575	534,807	125,052	-	-	257,185	-	27,181
Bread		-	132,125,951	55,968,160	13,086,818	-	-	26,914,727	-	2,844,486
Zone 4	12,280,053,877.34	5,930,724,076	2,024,712,513	1,789,732,983	1,040,851,981	408,345,683	402,311,383	255,817,301	164,638,733	152,790,944
Apples		-	971,862,006	1,073,839,790	-	122,504,005	120,693,415	153,490,381	49,391,820	-
Peaches		-	356,349,402	393,741,256	-	44,918,135	44,254,252	56,279,806	18,110,261	-
Broccoli		-	111,794,131	123,491,576	-	14,087,961	13,479,743	17,681,394	5,680,036	-
Milk		-	202,471,251	223,716,623	-	25,521,668	25,144,461	33,977,163	10,789,921	-
Cabbage		-	1,338,781,510	1,700,246,334	-	193,964,675	191,097,907	243,026,436	78,203,398	-
Potatoes		-	1,101,443,607	1,217,018,428	-	138,837,872	136,785,870	173,955,765	55,977,169	-
Beef		-	1,393,002	1,539,170	-	175,589	172,994	220,003	70,795	-
Bread		-	145,779,301	161,075,968	-	18,375,601	18,104,012	23,083,557	7,408,743	-
Zone 5	16,322,222,980.49	7,409,421,319	3,852,445,483	1,517,689,152	1,435,885,066	632,665,985	556,758,886	516,720,929	316,674,054	145,467,209
Apples		-	2,311,465,690	728,490,793	430,766,420	379,603,991	167,027,666	-	190,004,432	-
Peaches		-	847,538,686	267,113,291	157,947,687	139,187,397	65,243,478	-	69,668,292	-
Broccoli		-	265,819,014	83,776,441	49,538,138	43,654,229	19,708,182	-	21,850,510	-
Milk		-	481,556,185	151,768,915	89,743,004	79,083,748	34,797,430	-	39,584,257	-
Cabbage		-	3,659,827,008	1,153,443,756	682,045,831	601,036,485	264,460,471	-	300,840,351	-
Potatoes		-	2,619,665,648	825,622,899	488,201,542	430,215,590	189,298,023	-	215,538,357	-
Beef		-	3,313,107	1,044,170	617,432	544,096	239,406	-	272,340	-
Bread		-	346,720,453	109,273,619	64,614,363	56,940,289	25,054,150	-	28,500,665	-

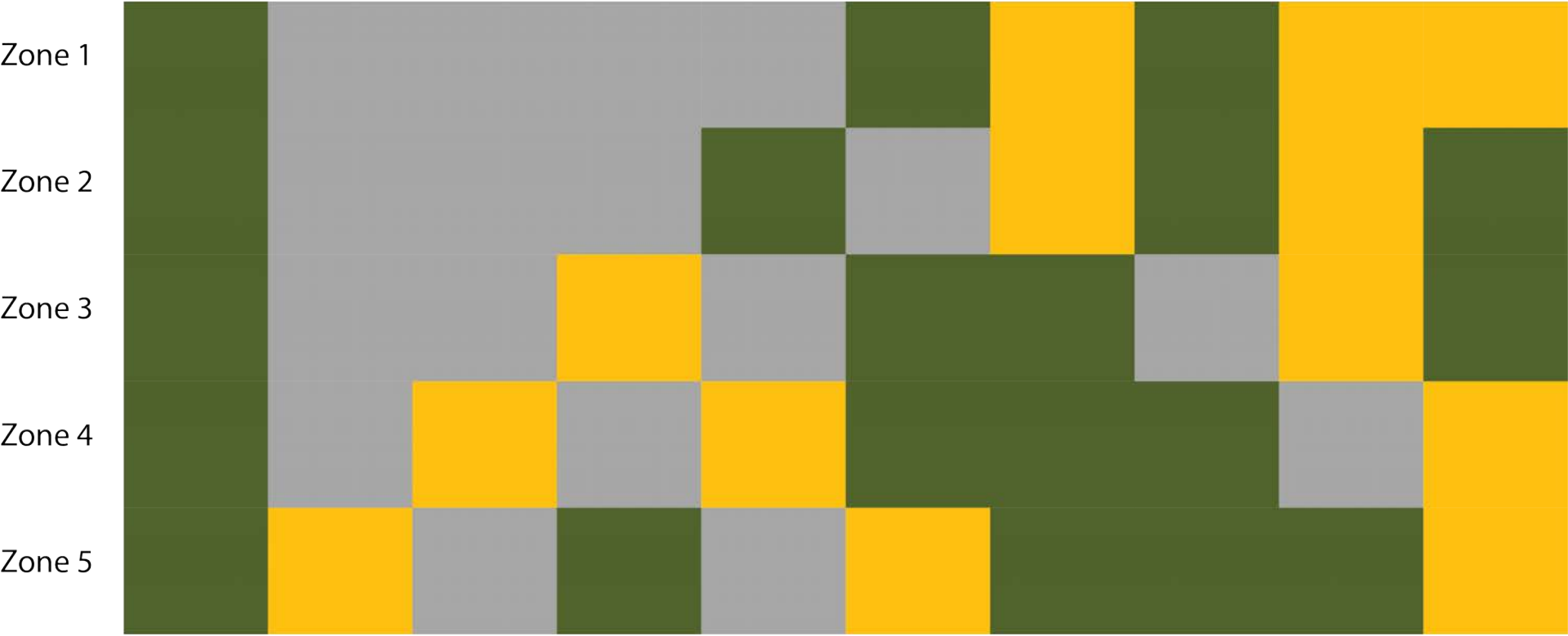


BALTIMORE

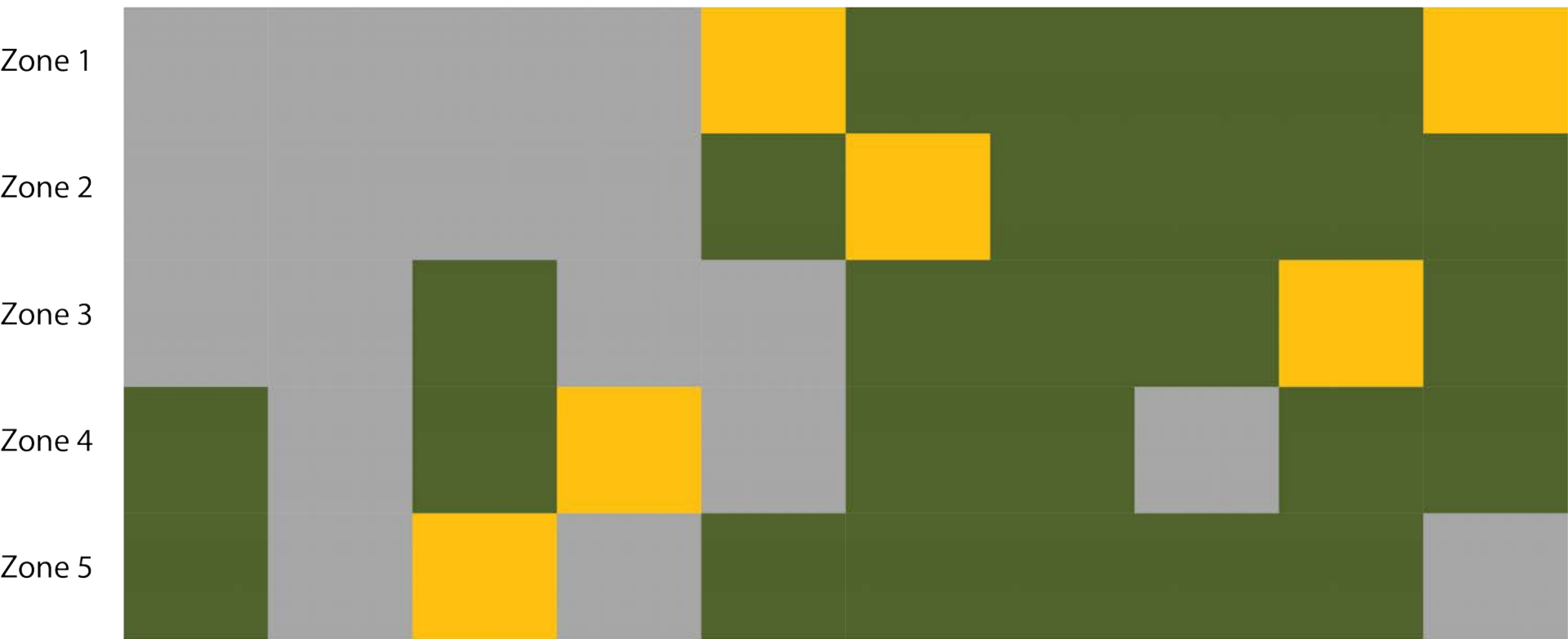


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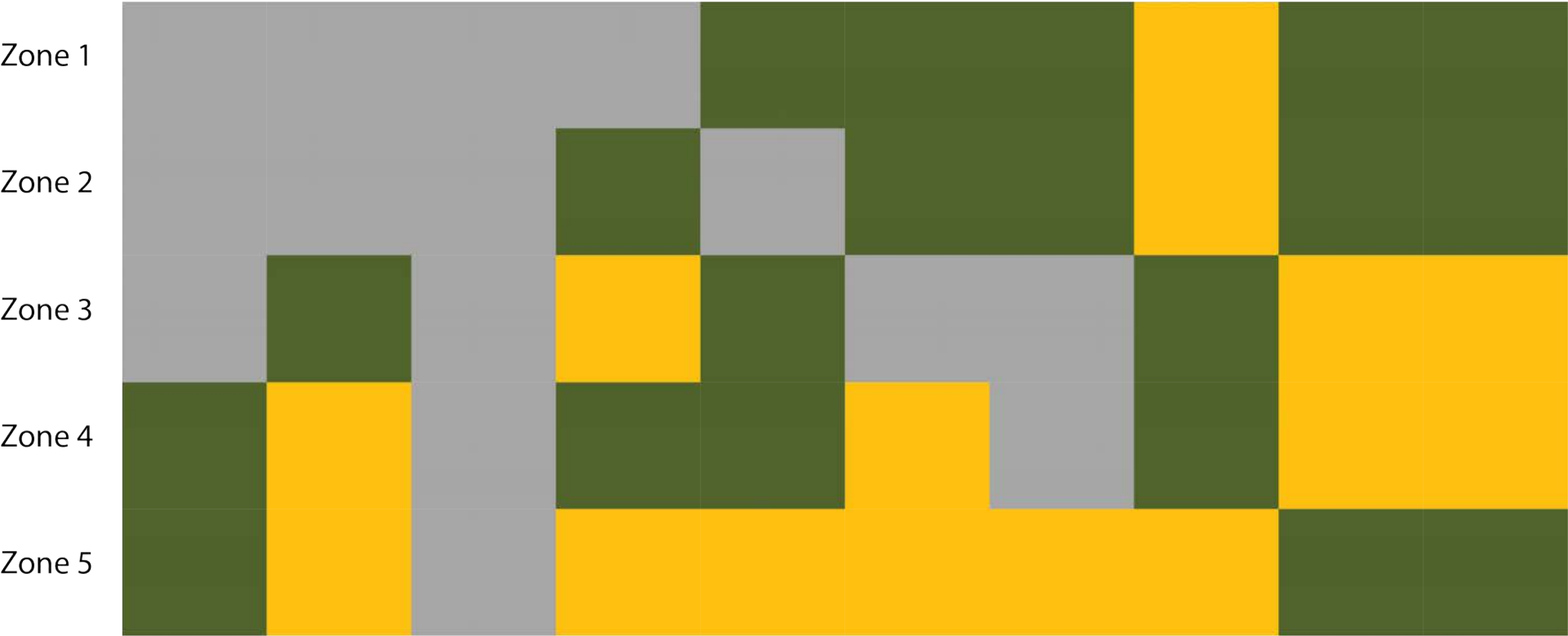
CHARLESTON



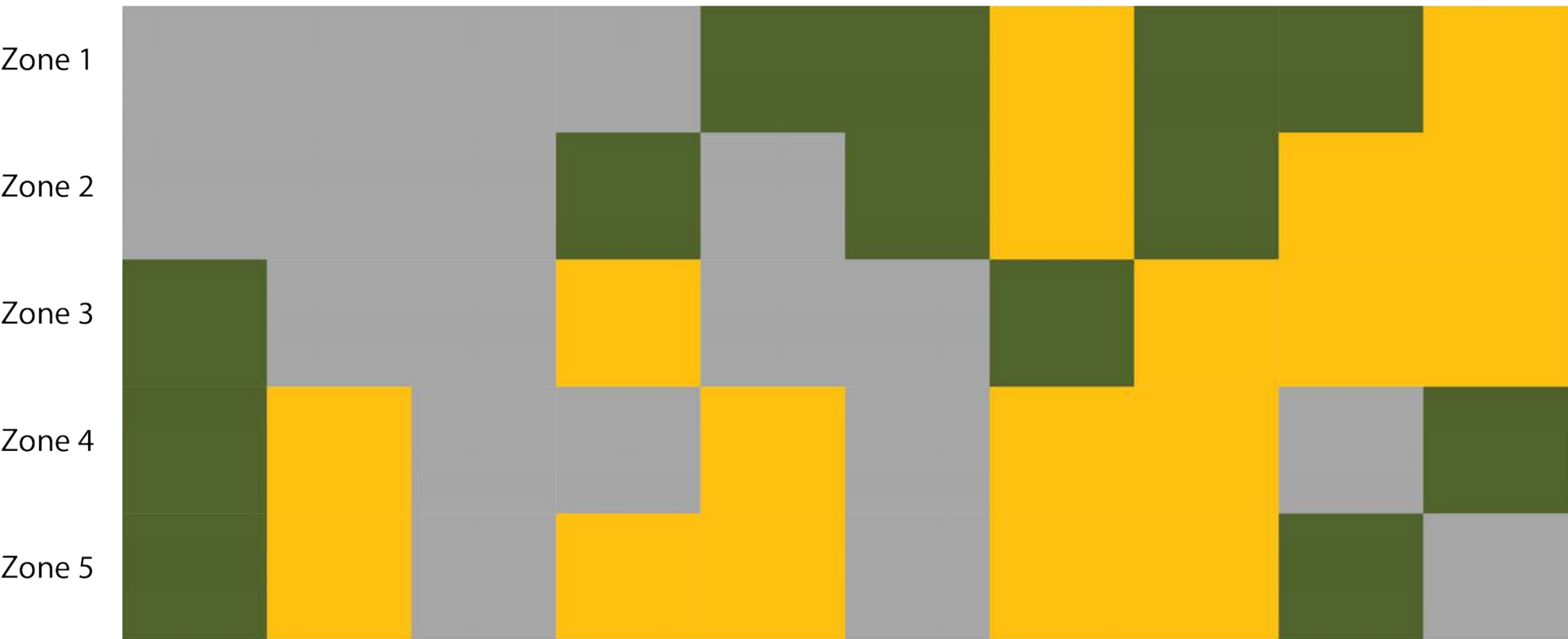
NEW YORK CITY



PHILADELPHIA



PITTSBURGH



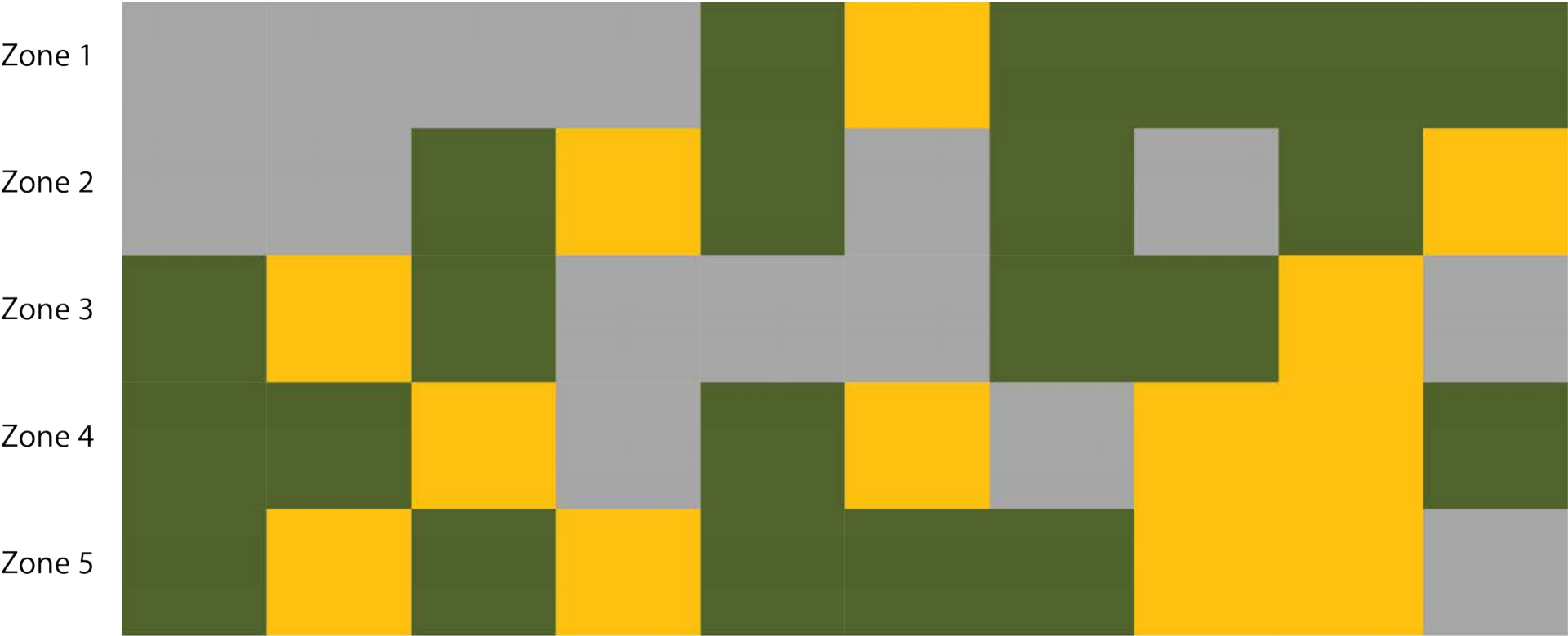
Developed Under Production No Production

URBAN DESIGN LAB

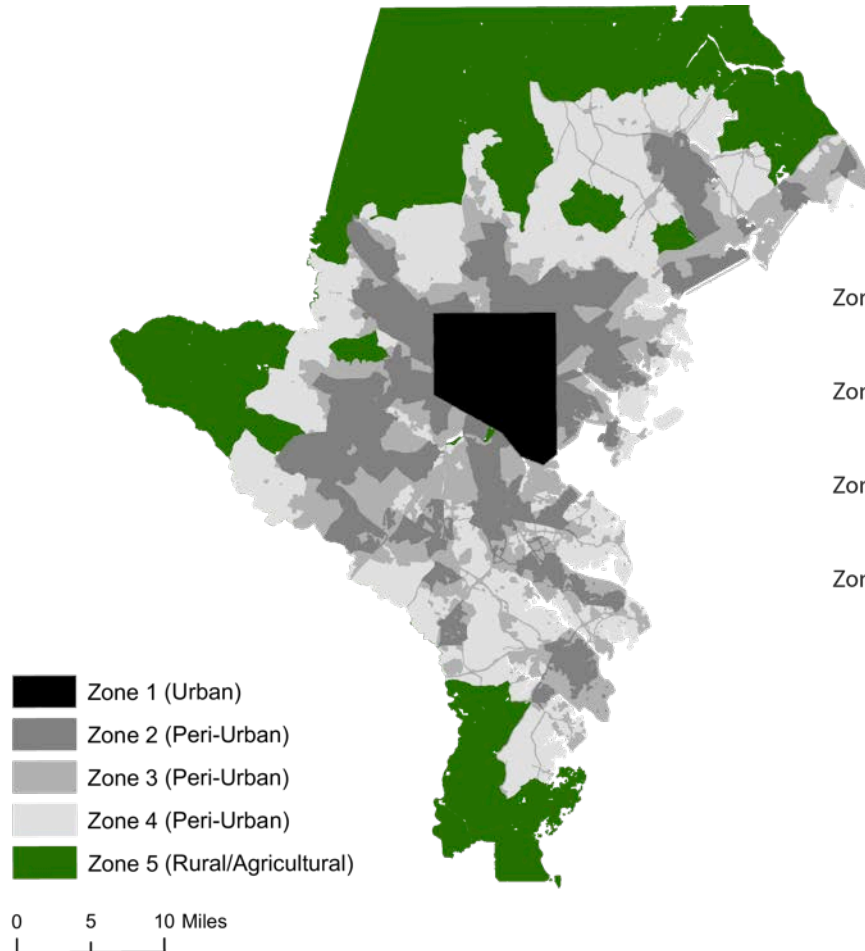
THE EARTH INSTITUTE COLUMBIA UNIVERSITY



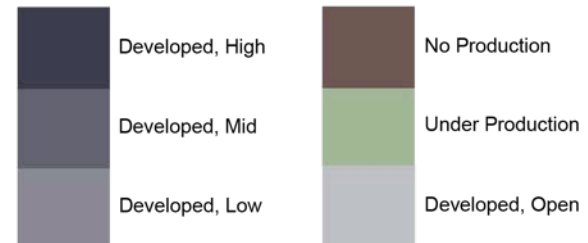
SYRACUSE



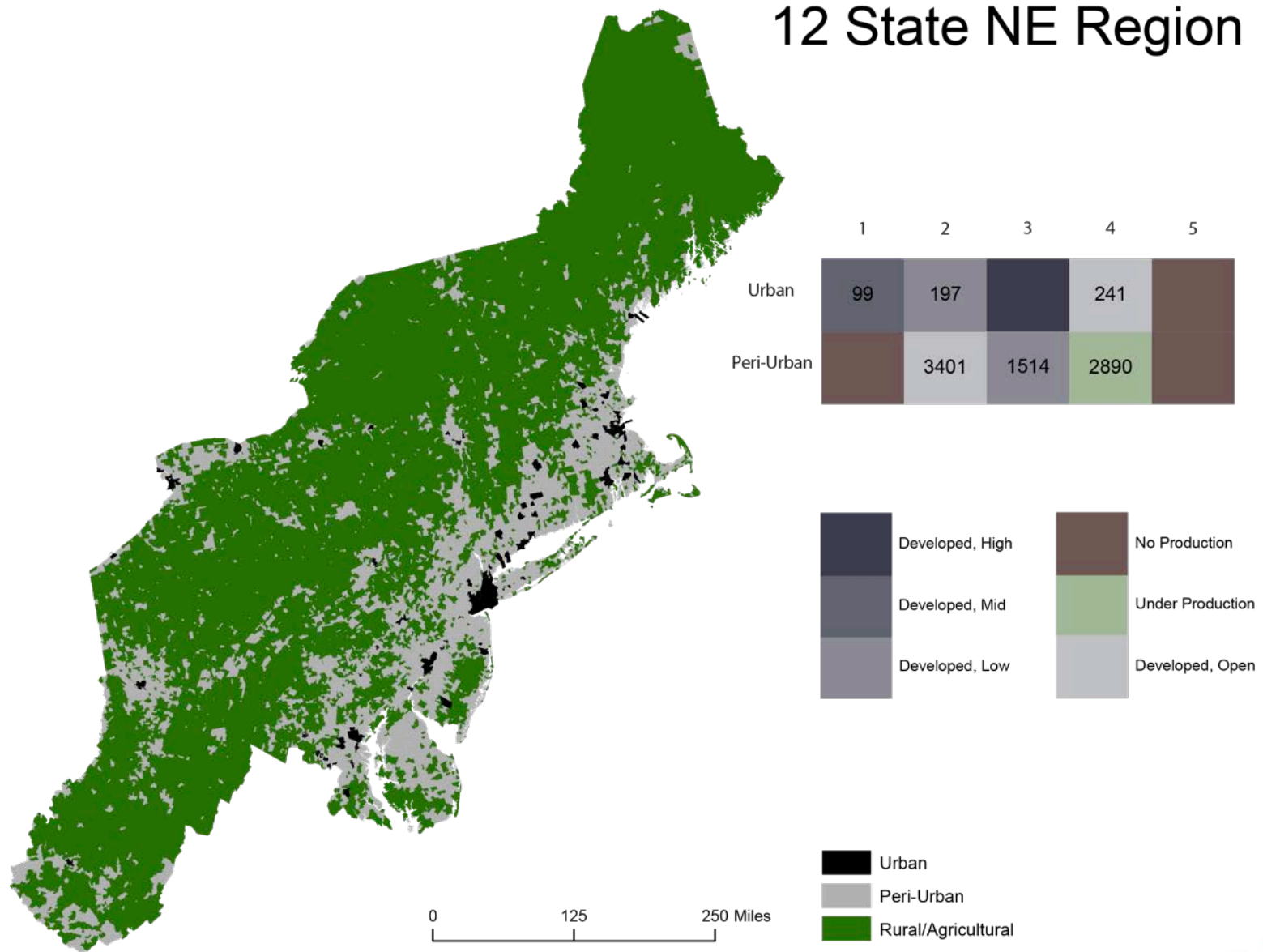
Baltimore Land Use



	1	2	3	4	5
Zone 1	14	19	3		
Zone 2	36	54		6	
Zone 3		40	17	4	
Zone 4		44	49		4



12 State NE Region



Acreage by Zone (1,000 acres)

	Baltimore	Charleston	New York City	Philadelphia	Pittsburgh	Syracuse	12 State Region
Zone 1	60	21	189	91	36	16	1,633
Zone 2	190	38	308	349	133	84	28,243
Zone 3	160	99	901	650	380	52	
Zone 4	281	370	457	1,041	596	47	
Zone 5	374	803	130	373	1,276	1,829	100,014
Total	1,068	1,331	1,985	2,505	2,421	2,029	129,891

Potential Market Basket Crop Yields (1,000 tons)

	Baltimore	Charleston	New York City	Philadelphia	Pittsburgh	Syracuse	12 State Region
Zone 1	36	7	40	32	13	6	537
Zone 2	96	13	126	176	60	37	7,805
Zone 3	61	15	400	294	153	19	
Zone 4	97	48	135	329	214	13	
Total	290	83	701	831	440	75	8,342

- Observations and Opportunities
 - Potential Magnitude of Contribution
 - Quantity of Food Systems Located in the Zone
 - This unrecognized system generates limited Management and/or Coordinated Efforts
 - Others?
- Challenges
 - Land Use Consistency across Municipalities
 - Private Sector Food Flow Data
 - Others?
- Interim Questions about the Project Methodology?
- How do we better understand, inform and manage this system and capability?
 - Case Study
 - Center for a Livable Future's Maryland Food System Mapping Project.

CLF's Maryland Food System Map Project

Amanda (Behrens) Buczynski

www.jhsph.edu/clf | www.mdfoodsystemmap.org



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Center for a Livable Future Programs

Food Production and Public Health

- Industrial Food Animal Production Project
- Teaching the Food System Curriculum
- Aquaponics Project



Food Communities and Public Health

- Baltimore Food & Faith Project
- Meatless Mondays
- Food Policy Networks
- Community Food Assessments
- *Maryland Food System Map Project*

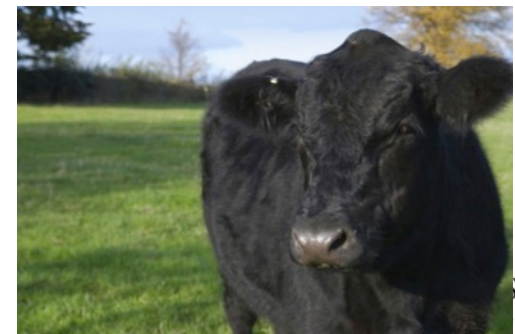
Food System Sustainability and Public Health

- Food Waste Research

Food System Policy Program

- Engage Public Health in the Farm Bill

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MARYLAND FOOD SYSTEM MAP

A PROJECT OF JOHNS HOPKINS CENTER FOR A LIVABLE FUTURE

LAUNCH MAP



- Goals:
 - Data/Map Repository: To develop and collect food systems data in Maryland
 - Network Facilitator: To connect audiences to data, and to each other
 - Capacity Building: To increase capacity within partner organizations to conduct food systems work by providing tools and information
- Data layers span many topics across the food system, and allow users to look interact with data across categories – and better understand the context of their work

Data Categories:

- ★ Agriculture, Land Conservation, Environmental Indicators
- ★ Processing and Distribution
- ★ Food Retail – food stores, restaurants, farmers markets
- ★ Nutrition Assistance – SNAP and WIC usage
 - We have a particular focus on Access to Healthy Food
- ★ Farm-to-Institution – K-12, Universities, Hospitals
- ★ Demographics, Health

LAUNCH MAP

A PROJECT OF JOHNS HOPKINS CENTER FOR A LIVABLE FUTURE



B'more Farm and Food Map

Baltimore

[Read more](#)

B'more Farm and Food Map

Read more

[Visit our interactive map, which showcases data on Maryland's food system from farm to plate, and make your](#)

Google™ Custom Search

Search

Tweets

MD Food System Map 5h
@MDfoodmap
RT @MDH2E: Already
committed to the #Foodand
Tweets to @MDfoodmap

How do you grow vegetables in cover cropped fields without tilling them in, a practice that can damage the soil profile? This field day explores this conundrum, with a host of cover crop experts sharing their research and a tour of Larriland Farm, home to one of the regions' top pick-your-own fruit and

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LAUNCH
MAP

➤ ABOUT THE MAP

➤ **DOWNLOAD
MAPS**

SPECIAL PROJECTS

[Glossary & Download Data](#)



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MARYLAND FOOD SYSTEM MAP

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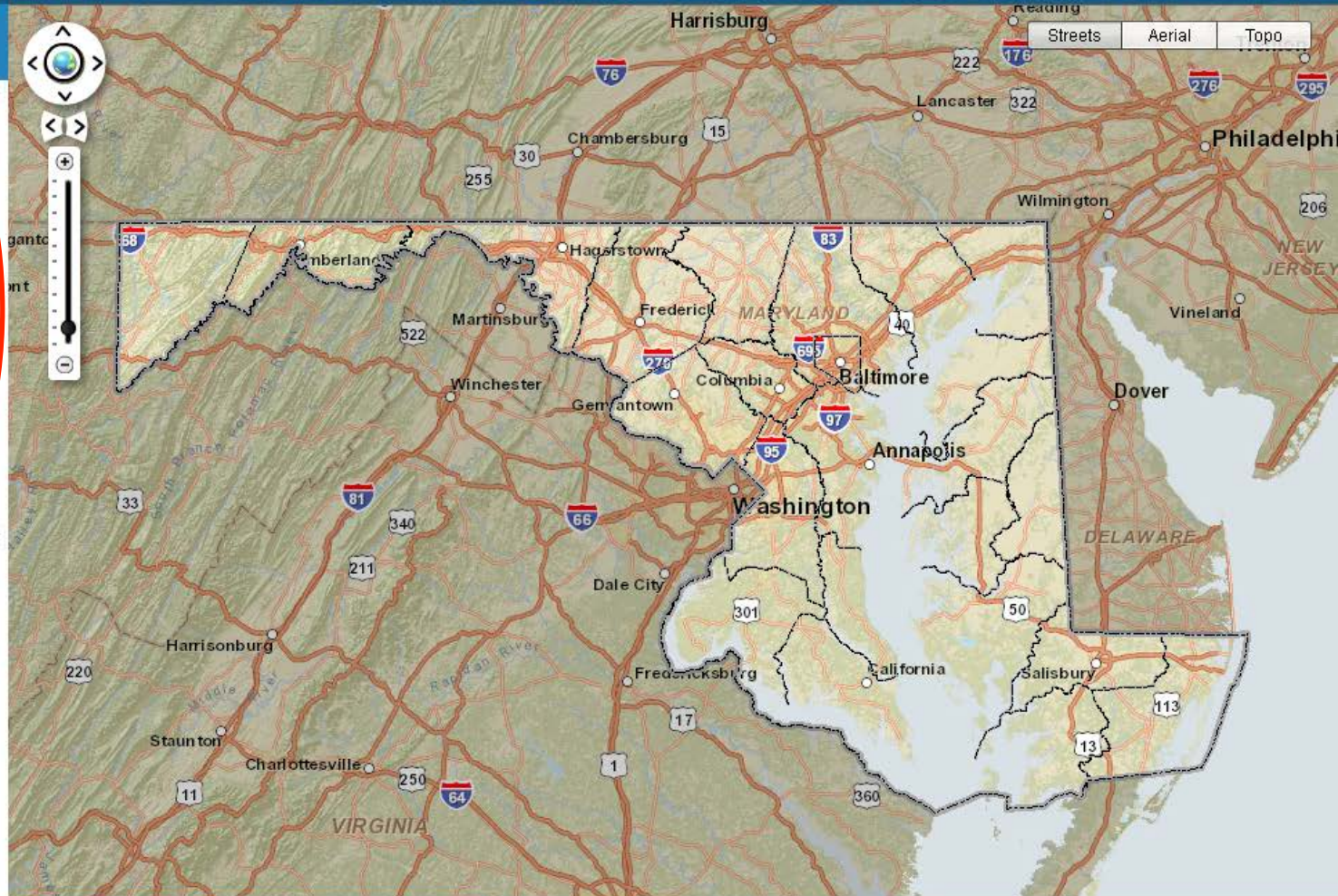


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BLOOMBERG
SCHOOL of PUBLIC HEALTH

TOOLS

DRAW PRINT CLEAR

- ▶ AGRICULTURE
- ▶ AQUACULTURE
- ▶ LAND CONSERVATION
- ▶ PROCESSING AND DISTRIBUTION
- ▶ FOOD RETAIL
- ▶ INSTITUTIONS
- ▶ NUTRITION ASSISTANCE
- ▶ HEALTH
- ▶ ENVIRONMENTAL INDICATORS
- ▶ DEMOGRAPHICS
- ▶ POINTS OF INTEREST



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Data Sourcing

- Majority from public sources, work with state departments and county/city departments as partners, to acquire and maintain data
- Some from national databases, such as the Census of Agriculture and American Community Survey
- About 1/3 collected in-house, where public sources do not exist or are inadequate
 - Examples: farms "that sell locally" list, processing and distribution, institutional food purchasing, community kitchens, etc.

Census of Ag (number of orchards) & “Farms Selling Locally”

TOOLS:
DRAW PRINT CLEAR

▼ AGRICULTURE

Farms Selling Locally

- ☐ All Farms
- ☐ Certified Organic Farms
- ☒ Farms that sell at Farmers ...
- ☐ Farms that sell through CSAs
- ☐ Dairy Farms
- ☐ Livestock and Poultry Farms
- ☐ Urban Farms

Large-Scale Livestock Farms

- ☐ Broiler Chicken CAFOs/MAF...
- ☐ Dairy Cattle CAFOs
- ☐ Hog CAFOs

Prime Farmland

- ☐ Prime Farmland

Plant Hardiness

- ☐ None
- ☐ Plant Hardiness Zones

Results

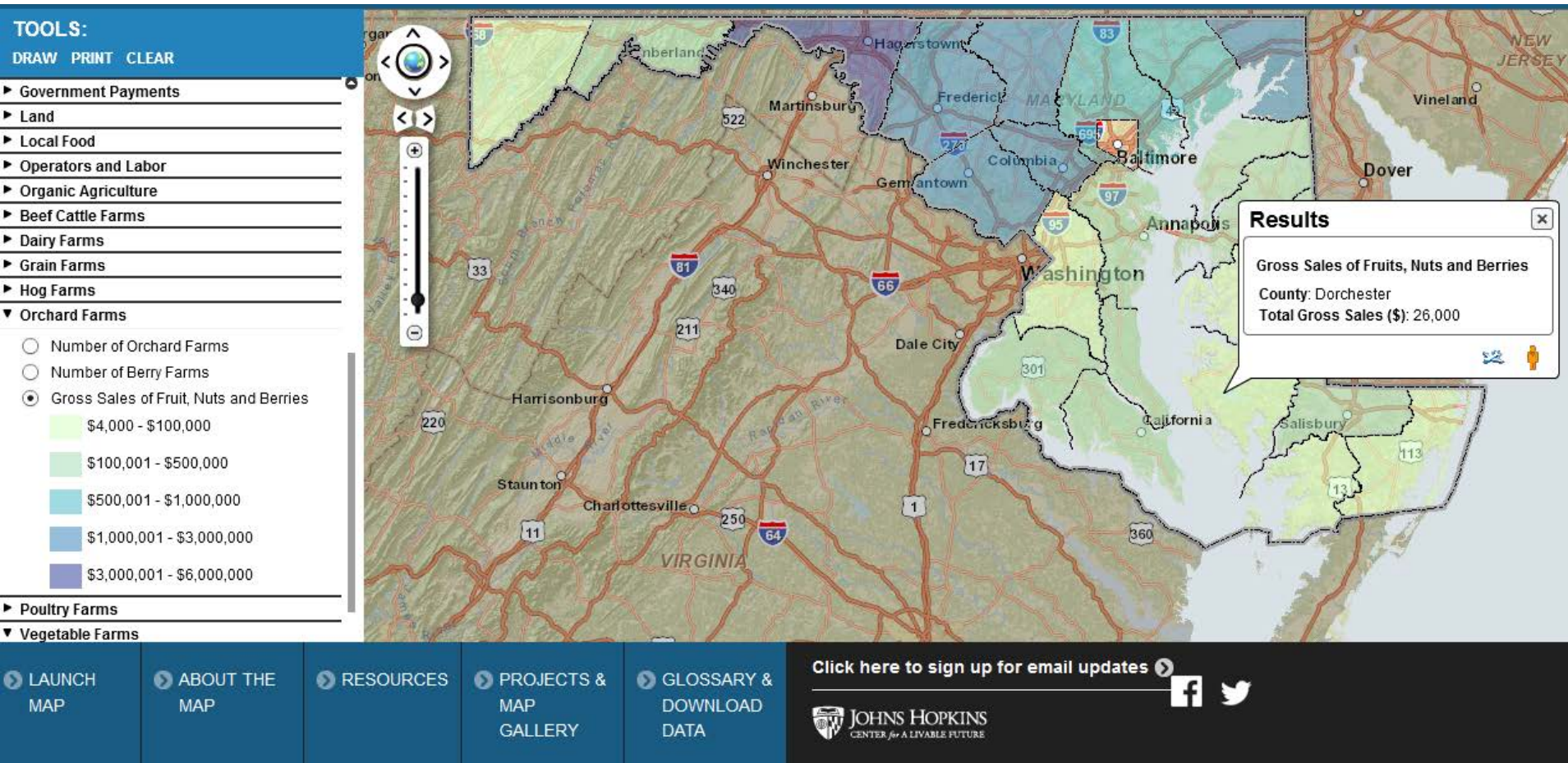
Farmers Market Farms

Name: HERBAL INNOVATIONS
Address: 234 HIDDEN MEADOW LANE
City: SWANTON
Zip: 21561
County: GARRETT
Certified Organic:
Fruits:
Vegetables:
Herbs: YES
Dairy:
Eggs:
Beef:
Poultry:
Hog:
Other Animals:
Other Products:
Farm Stand or Pick Your Own:
Community Supported Agriculture:
Farmers Market: YES
Wholesale:
Agritourism:

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Census of Agriculture: Economics - Sales by Product



Processing & Distribution: Local Food Distribution Facilities

TOOLS:
DRAW PRINT CLEAR

▼ PROCESSING AND DISTRIBUTION

Food Processors

- ☐ All Processors
- ☐ Cannery Processors
- ☐ Dairy Processors
- ☐ Egg Processors
- ☐ Meat Processors
- ☐ On Farm Processors
- ☐ Seafood Processors

Distribution & Storage Facilities

- ☐ All Facilities
- ☐ Dairy Facilities
- ☐ Egg Facilities
- ☐ Fruit & Vegetable Facilities
- ☒ Local Food Facilities
- ☐ Meat Facilities
- ☐ Seafood Facilities

Animal Slaughter Facilities

- ☐ All Slaughter Facilities
- ☒ None
- ☐ Pork Slaughter Facilities
- ☐ Beef Slaughter Facilities
- ☐ Chicken Slaughter Facilities

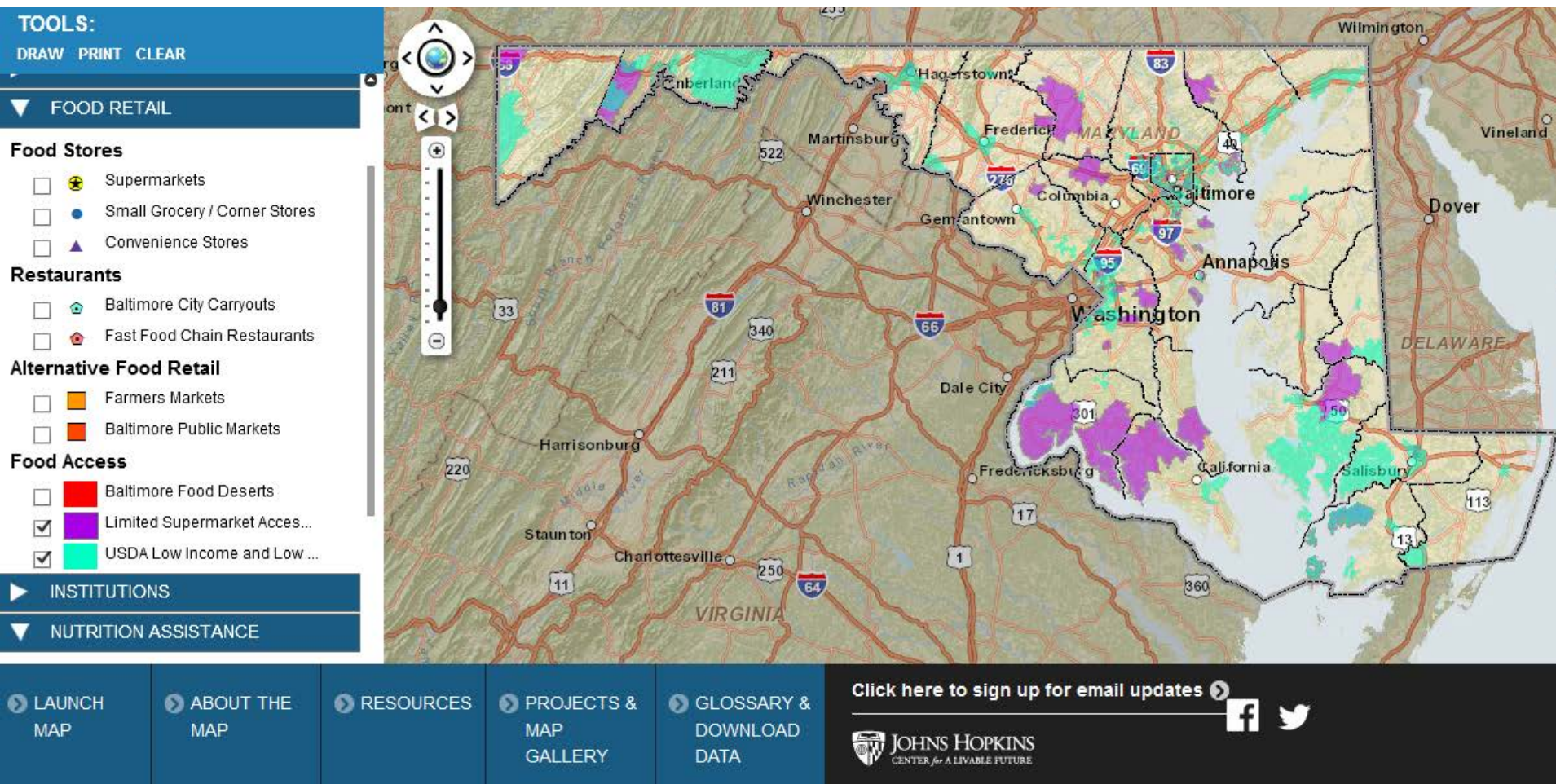
► FOOD RETAIL
► INSTITUTIONS

Results

Distribution and Storage - Uses Local Prod...

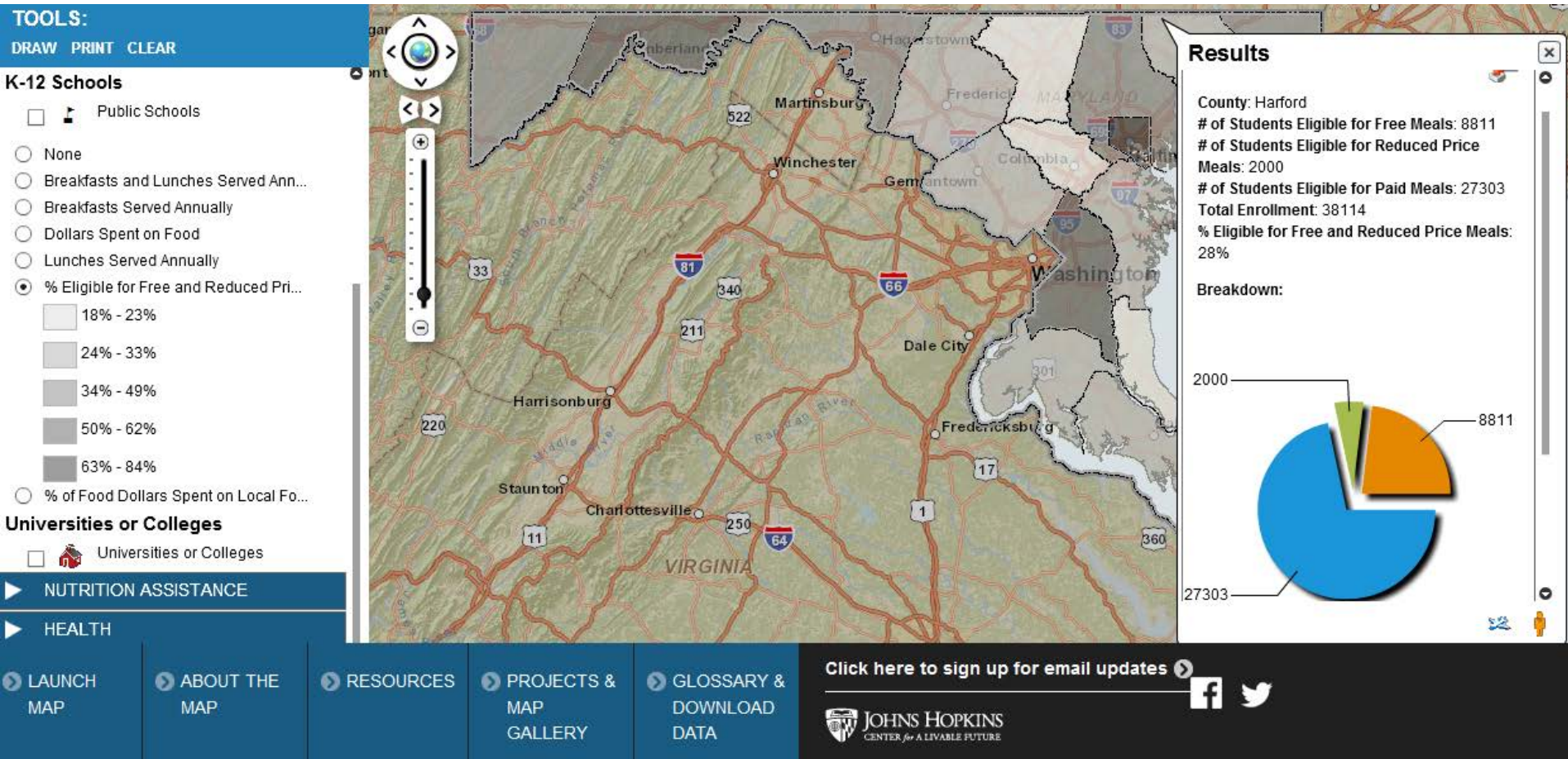
Name: SLICE OF HEAVEN
Subtype: PRODUCER MOBILE FARMER'S MARKET UNIT
Address: 12929 SAINT PAUL RD
City: CLEAR SPRING
Zip: 21722
Specialty: LIVESTOCK FARM
Sources Locally: YES
Natural: YES
Organic:
Vegan:
Kosher:
Ethnic:
Fruit and Vegetables:
Meat and Poultry: YES
Seafood:
Egg: YES
Dairy Products:
Other Groceries: YES
Baked Goods:
Packaged Frozen Foods:
Candy Desserts and Snacks:
Non Alcoholic Beverages:

Food Retail, Food Access: “Food Deserts.” Two Methods of Analysis



Institutions:

% Eligible for Free and Reduced Price Meals



Special Projects & Map Gallery

MARYLAND FOOD SYSTEM MAP

A PROJECT OF JOHNS HOPKINS CENTER FOR A LIVABLE FUTURE

LAUNCH MAP ▶

ts that are an extension of the work we do through our ma
specific geographic food system analyses for partner organ
v you will find [Special Projects](#) (briefs, reports, data sum
covered here, please feel free to [contact us](#) and let us kn



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Special Projects



Maryland Grown



Farm-to-Institution



Baltimore Food Access
Map and Report



County Profiles



Food: An Atlas

Interactive Maps



B'More Farm & Food Map



Nutrition Assistance Map



Urban Soil Safety Map



Voices of Food Insecurity
Story Map



Baltimore Food History
Map

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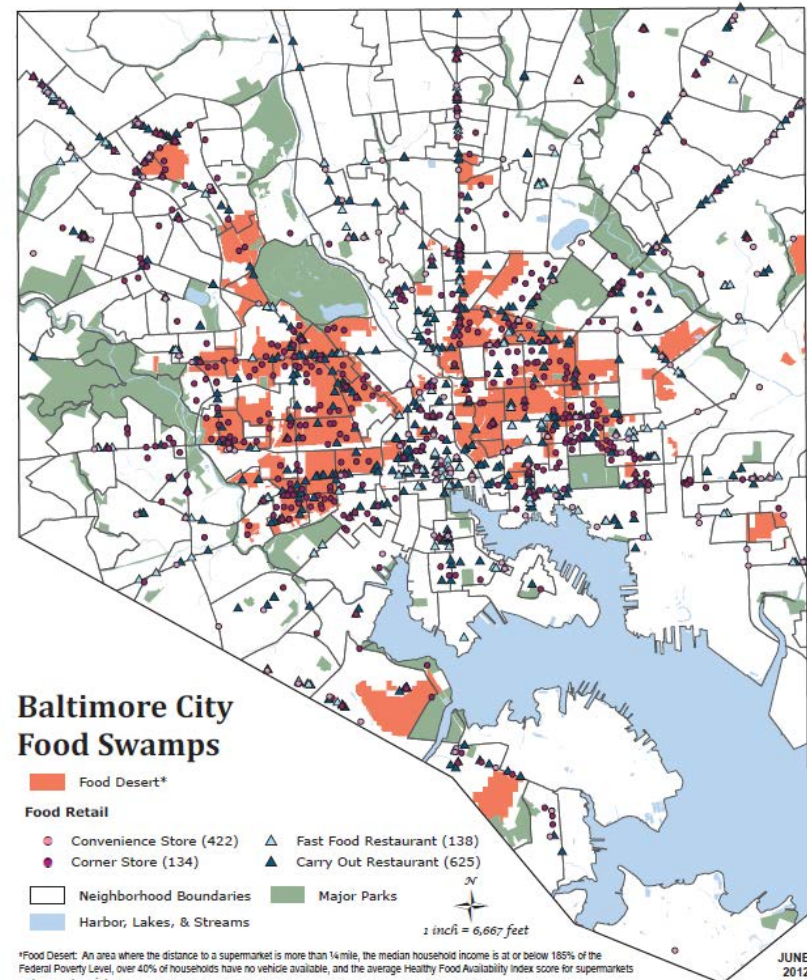
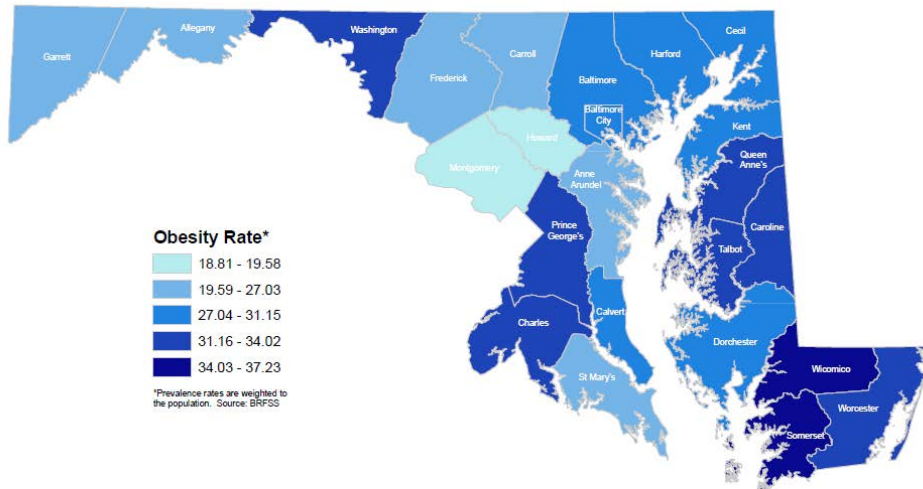
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PDF Maps

Maryland Obesity Rates, 2012



Story Map: B'more Farm and Food Map

B'more Farm and Food Map PART OF THE MARYLAND FOOD SYSTEM MAP PROJECT



LAUNCH MD FOOD
SYSTEM MAP

Farms

Restaurants

Markets

About



1 Big City Farms



2 Boone Street Farm



3 Cherry Hill Urban Garden



4 Cylburn Aquaponics Project



5 Five Seeds Farm



6 Baltimore Free Farm - Ash Street Garden



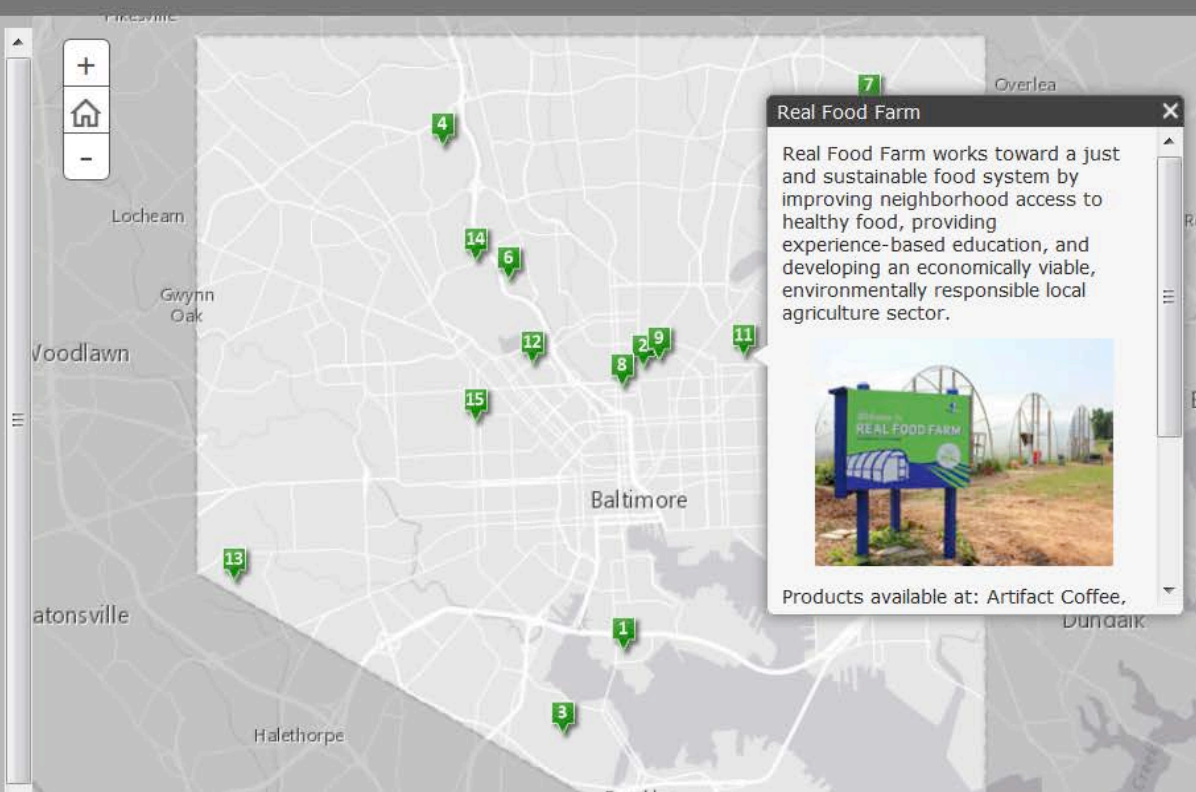
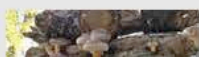
7 Hamilton Crop Circle



8 Hidden Harvest Farm



9 Oak Hill Honey



County Profiles:

Statistics at your fingertips

MARYLAND FOOD SYSTEM MAP

A PROJECT OF JOHNS HOPKINS CENTER FOR A LIVABLE FUTURE

LAUNCH MAP



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County Profiles: Food & Agriculture County-Specific Data



Statistics at your fingertips! Downloadable below, from our website, these food and agriculture county profiles summarize all of the data layers in our map. They provide a quick reference guide, allow you to compare counties to each other, and give state totals and averages. We hope you find these useful! We have the growing number of local Food Councils in mind when we created these, but we feel they will be useful for councils, policymakers and food system entrepreneurs alike.

And as always, we welcome your feedback. These profiles are available in PDF versions for download from our "Special Projects" tab on our website. You may view them all in one file, or separately by county. As we continue to add data to our website, we will periodically update these profiles to include all new data sets.

Maryland ([all counties](#))

[Allegany](#) | [Anne Arundel](#) | [Baltimore](#) | [Baltimore City](#) | [Calvert](#) | [Caroline](#) | [Carroll](#) | [Cecil](#) | [Charles](#) | [Dorchester](#) | [Frederick](#) | [Garrett](#) | [Harford](#) | [Howard](#) | [Kent](#) | [Montgomery](#) | [Prince George's](#) | [Queen Anne's](#) | [Saint Mary's](#) | [Somerset](#) | [Talbot](#) | [Washington](#) | [Wicomico](#) | [Worcester](#)

County Profiles – example

Prince George's County, MD



Food Systems Profile

These county profiles present the data compiled by the Maryland Food System Map Project, at the Johns Hopkins Center for a Livable Future. They are intended to be used for education, research, policy development, and community organizing purposes. For more information go to: www.mdfoodsystemmap.org.



Maryland
Food
System
Map



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Demographics

DEMOGRAPHICS	Prince George's	Maryland	% of MD Total	County Ranking
Population, 2011*	871,233	5,828,289	14.95%	2
Population Change, 2000-2010*	7.7%	9.0%		17
Number of Households, 2011*	302,091	2,128,377	14.19%	3
Population Density (People / Square Mile), 2010*	1,788.77	594.77		3
Non-Hispanic, 2007-11 ACS Five-Year Estimate*	85.5%	92.1%		23
▪ White Alone	15.4%	55.2%		24
▪ Black or African American Alone	63.6%	29.0%		1
Hispanic (any race), 2007-11 ACS Five-Year Estimate*	14.5%	7.9%		2
Median Household Income, 2010*	\$73,447	72,419		11
Households Below 185% of Federal Poverty Level, 2011 ^{a,1}	4.27%	10.47%		13
Unemployment, August 2013 ⁴	6.8%	6.7%		12
Self-Sufficiency Standard (2 Adults, 2 School-Age Children), 2012 ^{a,2}	\$63,574	(U)		10

Health Statistics

HEALTH STATISTICS	Prince George's	Maryland	% of MD Total	County Ranking
Overall Mortality / 100,000 Population (Age-Adjusted) ¹	747.8	732.50		13
Heart Disease Mortality / 100,000 Population (Age-Adjusted) ¹	145.2	181.6		23
Diabetes Mortality / 100,000 Population (Age-Adjusted) ⁴	28.6	20.4		3
Rate of Obesity ^m	32.09%	27.61%		9
Rate of Diabetes ^m	13.51%	10.39%		6

County Profiles – Prince George's

2 Prince George's County Food Systems Profile



Food Availability

FOOD AVAILABILITY - FOOD STORES AND RESTAURANTS ¹	Prince George's	Maryland	% of MD Total	County Ranking
Total Number of Food Stores	424	3604	11.76%	3
• Number of Supermarkets	82	602	13.62%	3
• Supermarkets / 1,000 Population	0.09	0.10		17
• % Supermarkets (# Supermarkets / Total Food Stores)	19.34%	16.66%		15
• Number of Small Food Stores ³	277	2516	11.01%	3
• Small Food Stores / 1,000 Population	0.32	0.43		15
• Number of Convenience Stores (Chains, Gas Stations, Drug Stores)	144	1169	12.32%	3
• Number of Superettes ("Mom and Pop" Stores, Corner Stores) ⁴	81	1142	7.09%	2
• Number of International Food Stores ⁵	52	205	25.37%	2
• Number of Other Food Stores ⁶	65	486	13.37%	3
Number of Fast Food Chain Restaurants	286	1757	16.28%	1
• Fast Food Chain Restaurants / 1,000 Population	0.33	0.30		14

FOOD AVAILABILITY - FOOD ACCESS	Prince George's	Maryland	% of MD Total	County Ranking
Households without Vehicle ^a	9.3%	9.30%		4
Population in Designated Limited Supermarket Access Area ^{a,b}	12.40%	10.42%		10
Population Living in a USDA Food Desert ^{a,7}	43.59%	27.34%		4
Population that is Food Insecure ⁸	15.6%	13.4%		3
Average Cost of a Meal (\$) ⁹	\$2.72	(U)		18

FOOD AVAILABILITY - NUTRITION ASSISTANCE	Prince George's	Maryland	% of MD Total	County Ranking
Average Number of Monthly SNAP Participants, 2011 ¹	90,654	645,347	14.05%	2
Population Participating in SNAP, 2011 ¹	10.5%	11.2%		13
SNAP Participation Among Low-Income Residents ¹	59.4%	(U)		15
Number of SNAP Authorized Stores ⁴	448	3,559	12.59%	3
• Number of SNAP Authorized Stores / 1,000 population	0.52	0.62		16
Students Free-Lunch Eligible, 2009 ¹⁰	43.50%	(U)		4
Number of Pantry & Free Meal Sites ⁷	96	974	9.86%	4

Baltimore City:

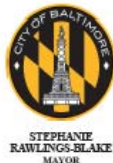
Special Focus on Food Access Data

- Food stores – supermarkets, corner stores, convenience stores
 - In Baltimore City, all stores have been verified and surveyed (HFAI)
- Farmers markets
- Urban farms and community gardens
- SNAP or ‘food stamp’ usage
- All can be overlaid with other data, for example: Demographics – income, vehicles, population density

Mapping Baltimore City's Food Environment:

2015 Report

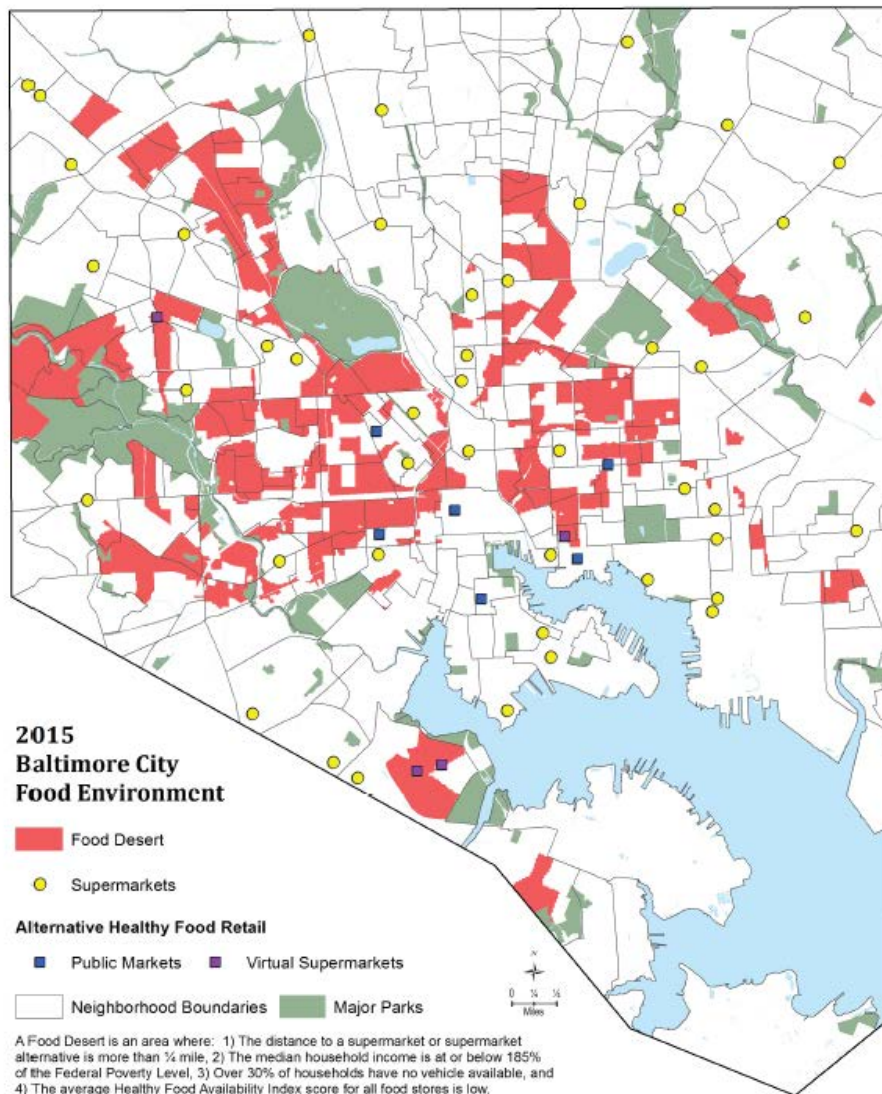
June 2015



- First ever report to explain food desert methodology in detail, and discuss City programs to address the issue
- In-depth review of food retail environment
- Also new – council district maps

<http://mdfoodsystemmap.org/2015-baltimore-city-food-access-map/>

2015 Baltimore Food Environment Map



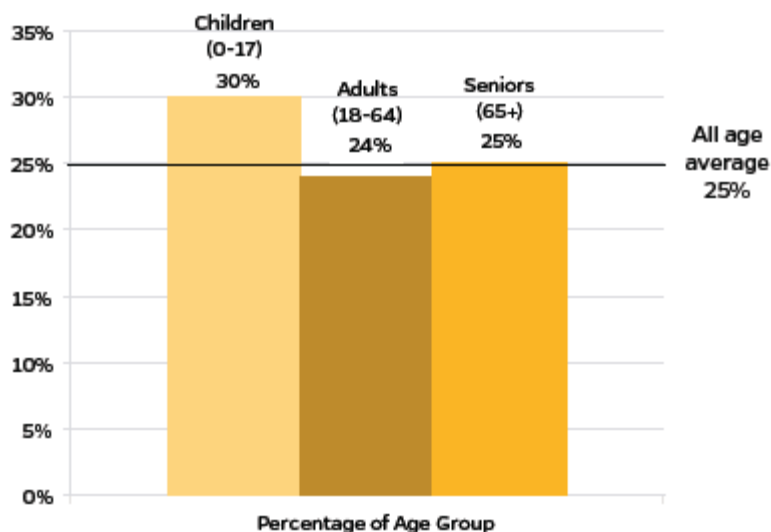
Food Desert Definition:

- > ¼ mile from supermarket or supermarket alternative
- At or below 185% federal poverty level
- Low vehicle availability, > 30% do not have access
- Low Healthy Food Availability Score (average scores of surveyed stores)

Demographics of Baltimore's Food Deserts

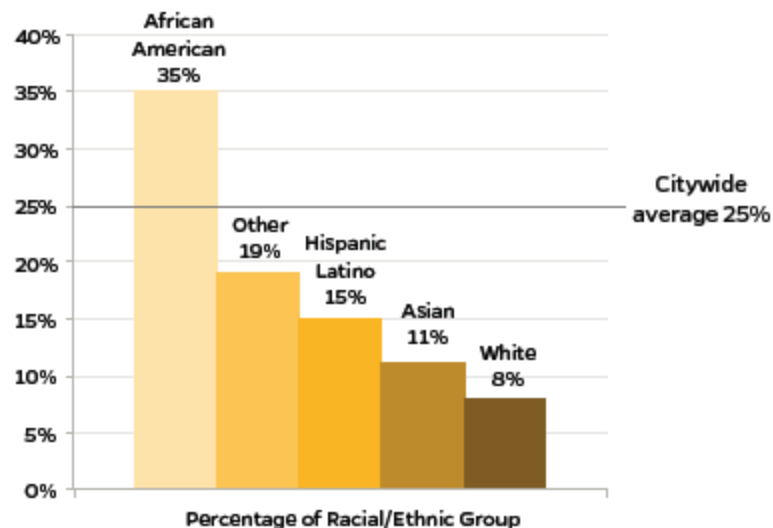
- Populations living in food deserts:
 - 1 in 4 city residents (25%)
 - 1 in 3 school aged children (30%)
 - 1 in 4 seniors (25%)
 - More than 1 in 3 of African Americans (35%)

Figure 3: Percentage of Age Group Living in Food Deserts



These are percentages of food desert residents within each age group. For example, 30% of all children living in Baltimore City live in food deserts.

Figure 4: Percentage of Race/Ethnicity Living in Food Deserts

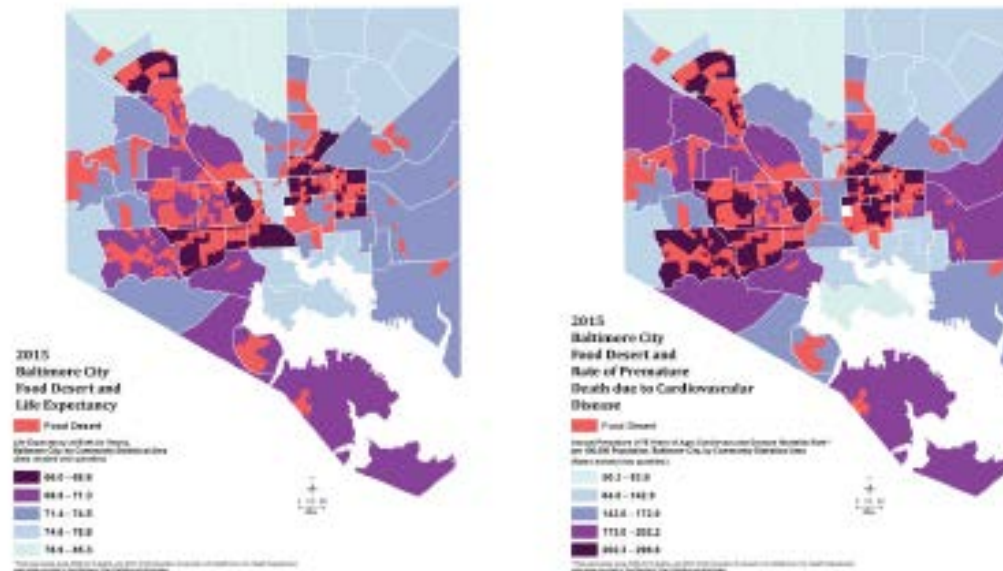


These are percentages of food desert residents within each racial/ethnic group. For example, 34% of all African Americans living in Baltimore City live in food deserts.

Health Outcomes and Food Deserts

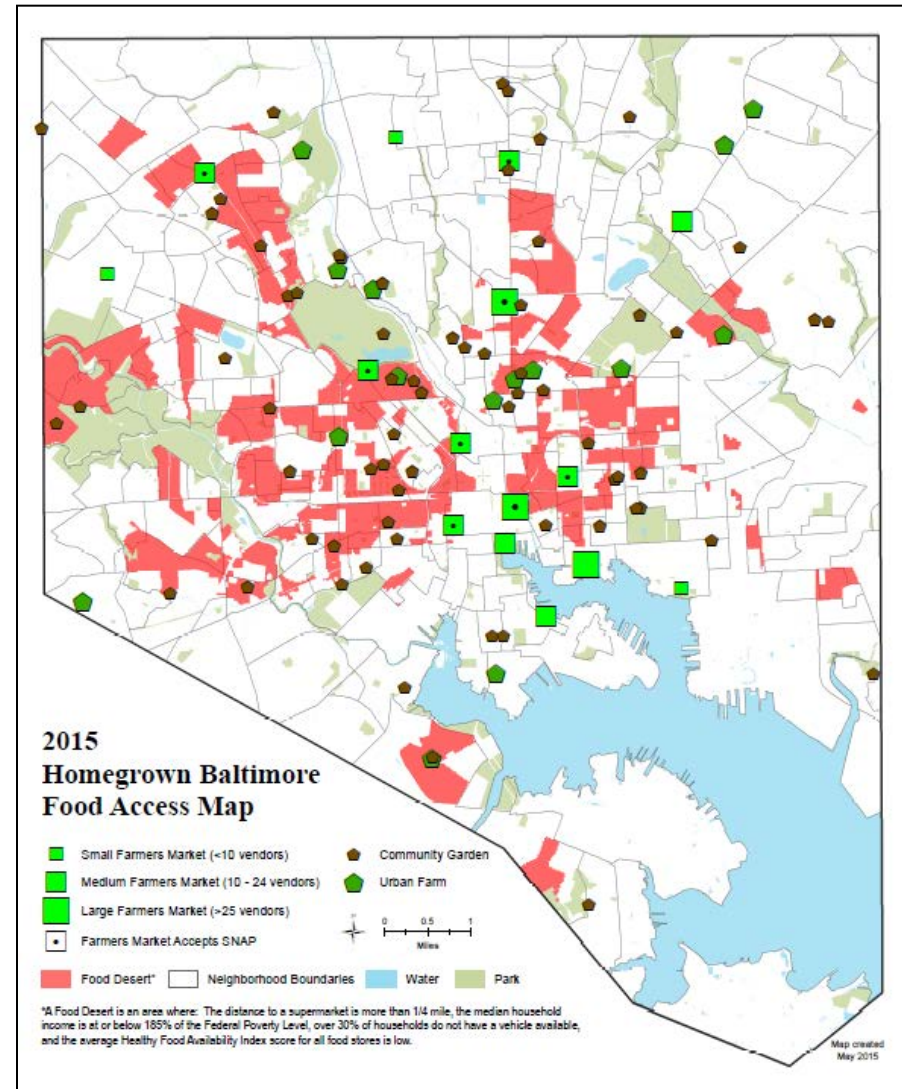
- Life Expectancy
Lowest = 66 years old
Highest = 85 years old
(20 year gap!)
- Rate of Premature Death due to Cardiovascular Disease
Lowest = 50 per 100,000
Highest = 296 per 100,000

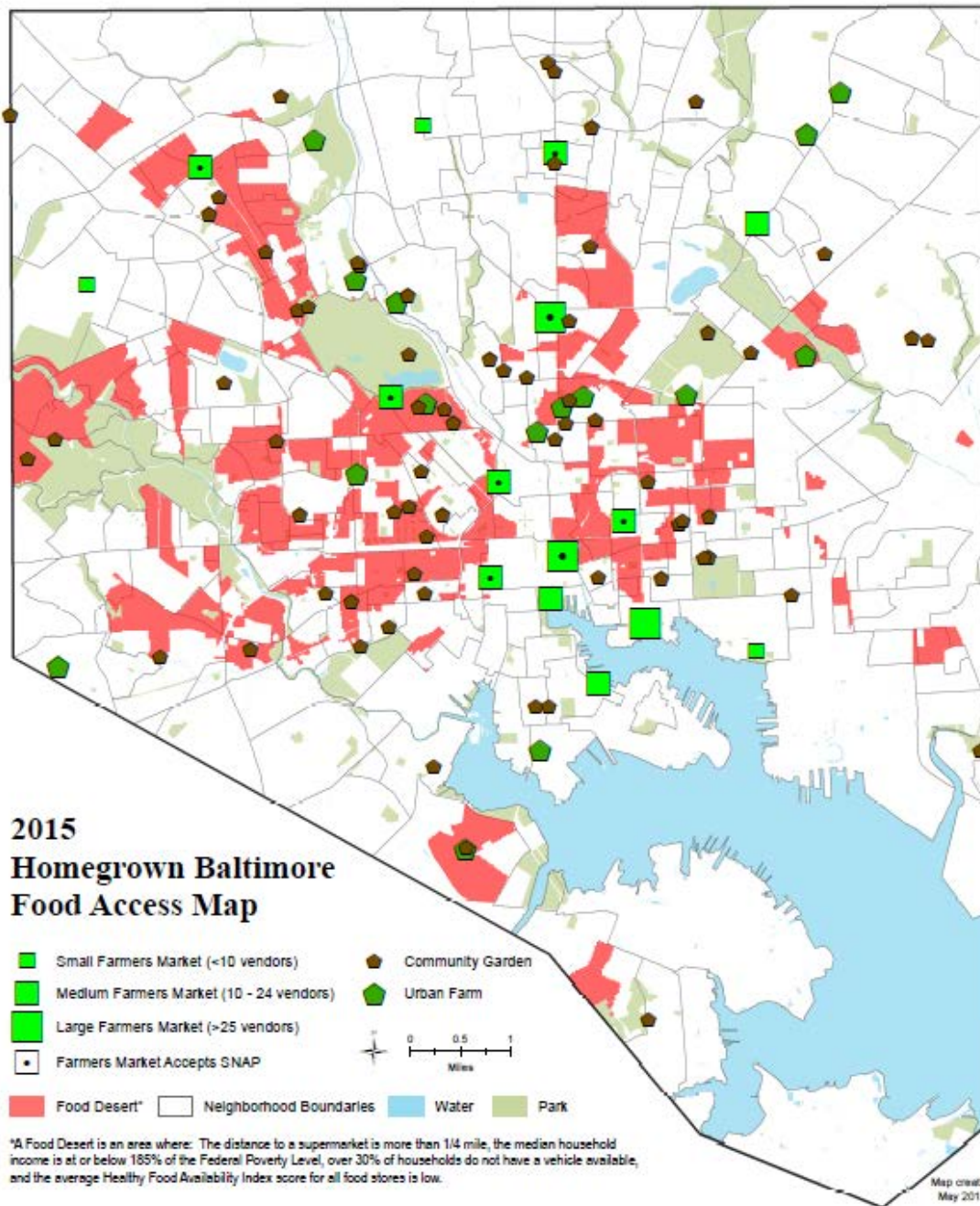
Figure 5: Food Deserts and Health Outcomes



Baltimore City's Food Desert Retail Strategy

1. Financial incentives for supermarkets
2. Support non-traditional grocery retail
3. Improve public markets
4. “Homegrown Baltimore” & farmers markets
5. A transportation strategy





- Famers Markets (showing where SNAP is accepted)
- Community Gardens
 - *Note: Difficult data to collect!*
- Urban Farms

[illegible]

- www.jhsph.edu/CLF

- www.jhsph.edu/CLF

Who we've worked with, Our Partners:

- Food Policy Councils – our #1 audience
 - Montgomery County Food Council (MCFC)
 - Prince George's Food Equity Council
 - Baltimore Food Policy Initiative
 - Southern Maryland Food Council
 - Harford County Food Policy Task Force
- Results of our collaboration:
 - USDA changed grant application parameters due to our Baltimore Food Desert Map
 - MCFC conducted community food assessments & HFAI survey
 - Southern MD created own maps for “on the ground” use
 - Baltimore City enacted new legislation around SNAP Benefits
 - Conducted “food swamp” analysis for Howard County

Partner Organizations, cont.

- Advocacy Groups
 - Maryland Hunger Solutions
 - Maryland Food Bank and partners
- Educational Institutions
 - Johns Hopkins School of Public Health – access to students!
 - University of Maryland – Extension/ Land Grant
 - Local Colleges – students can help with data collection
- State Departments – Agriculture, Environment, Natural Resources, Health, etc.

Thank you!

Please feel free to keep in touch: abehren4@jhu.edu

www.jhsph.edu/clf

www.mdfoodsystemmap.org

Follow us! MDfoodmap on:



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THANK YOU !

Michael Conard, RA NCARB

jmc52@columbia.edu

Houman Saberi

hts2108@columbia.edu