IT Revolution in Agriculture

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Intro to Data Analytics - Final Project

December 13, 2016

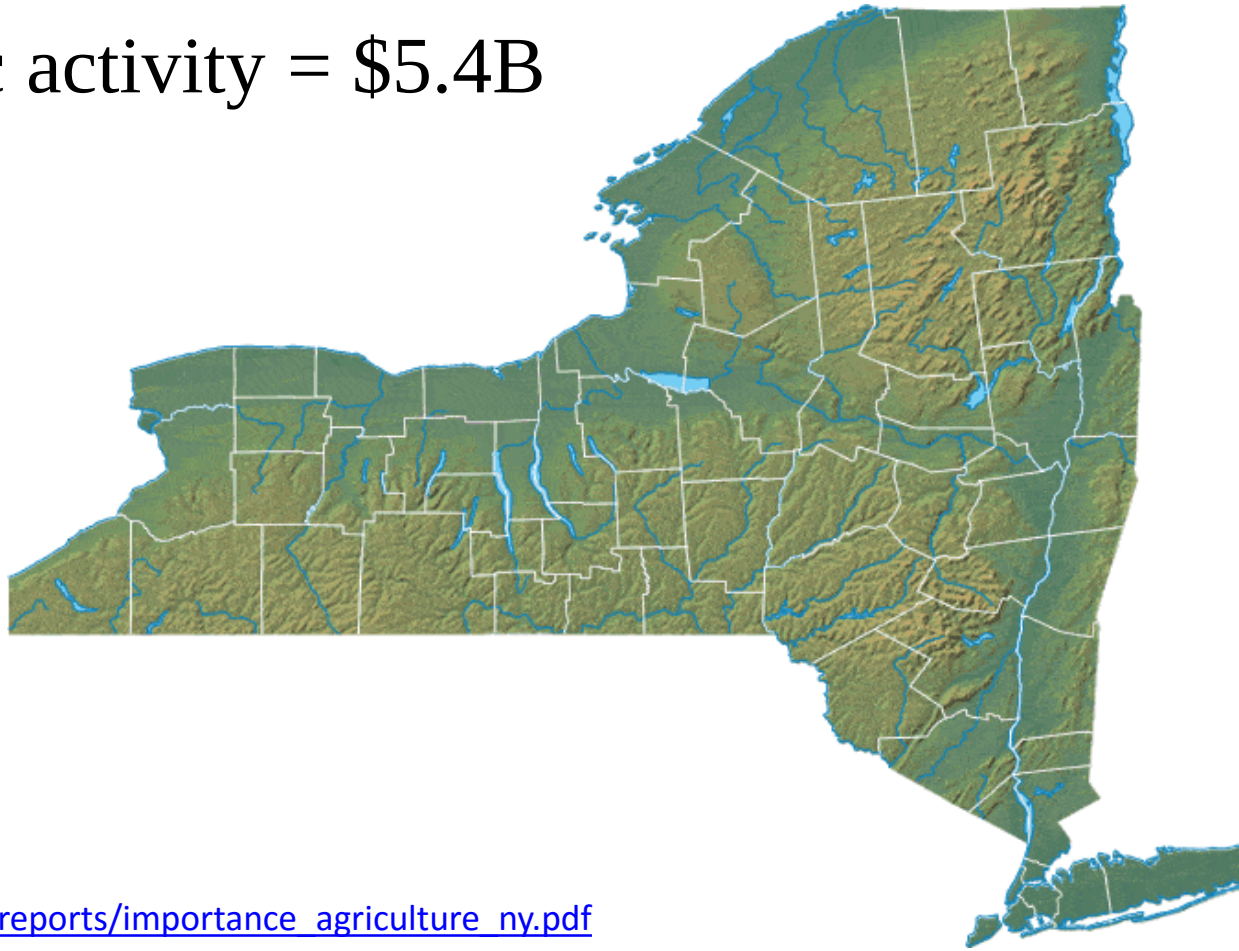
BUFFALO STATE
The State University of New York

Agenda

- Why Invest in Agriculture?
- Trends in the Industry
- Overall Project Goal
- Analyst Workflow and Results
- Conclusion and Discussion

Why Agriculture?

- Total Economic Impact = $37.6B
- Direct economic activity = $5.4B



Source: http://www.osc.state.ny.us/reports/importance_agriculture_ny.pdf

Why Agriculture?

- 8.8M total acres in agricultural districts
- 6.3M farmed acres (71%)
- 3.0M cropped acres (48%)

Source: https://data.ny.gov/Economic-Development/County-Agricultural-Districts-Profile/9bc8-mx4a

Why Agriculture?

2015 Planted Crop Acres Down To A 30 Year Low

2007-2011 NYS Lost 400 Farms

24 Counties in NYS Designated as Natural Disaster Areas

Sources:
http://agriculturewire.com/2015-planted-crop-acres-down-to-a-30-year-low/
http://delawarecountyplanningdept.com/PDFs/AgPlan_10_14draft.pdf

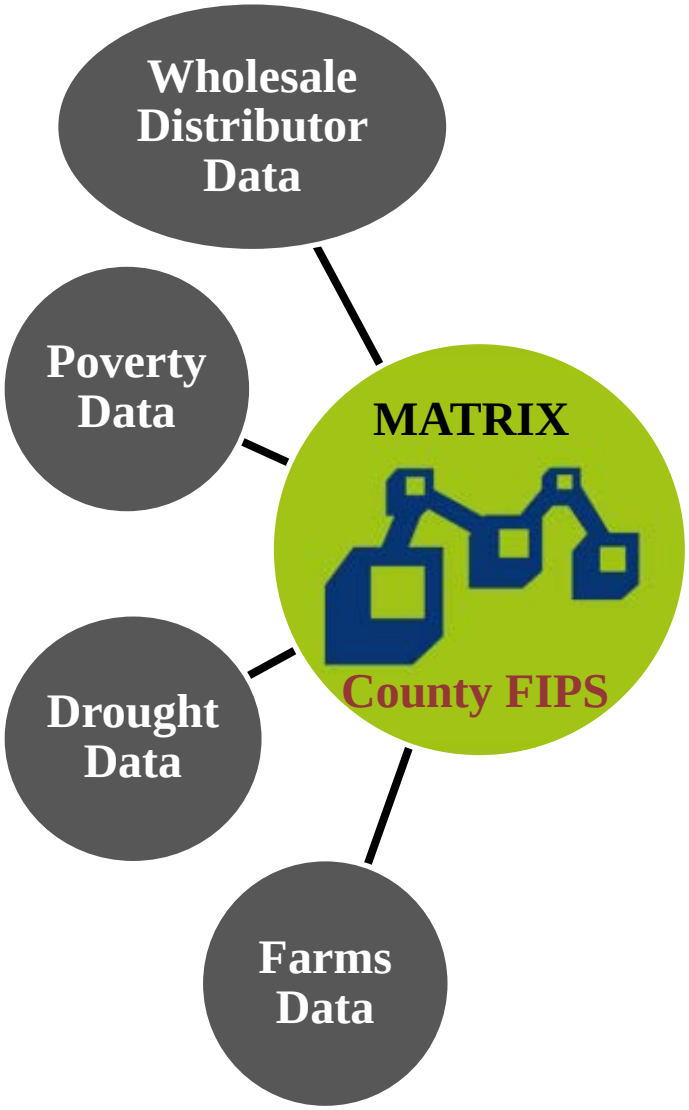
Trends in the Industry

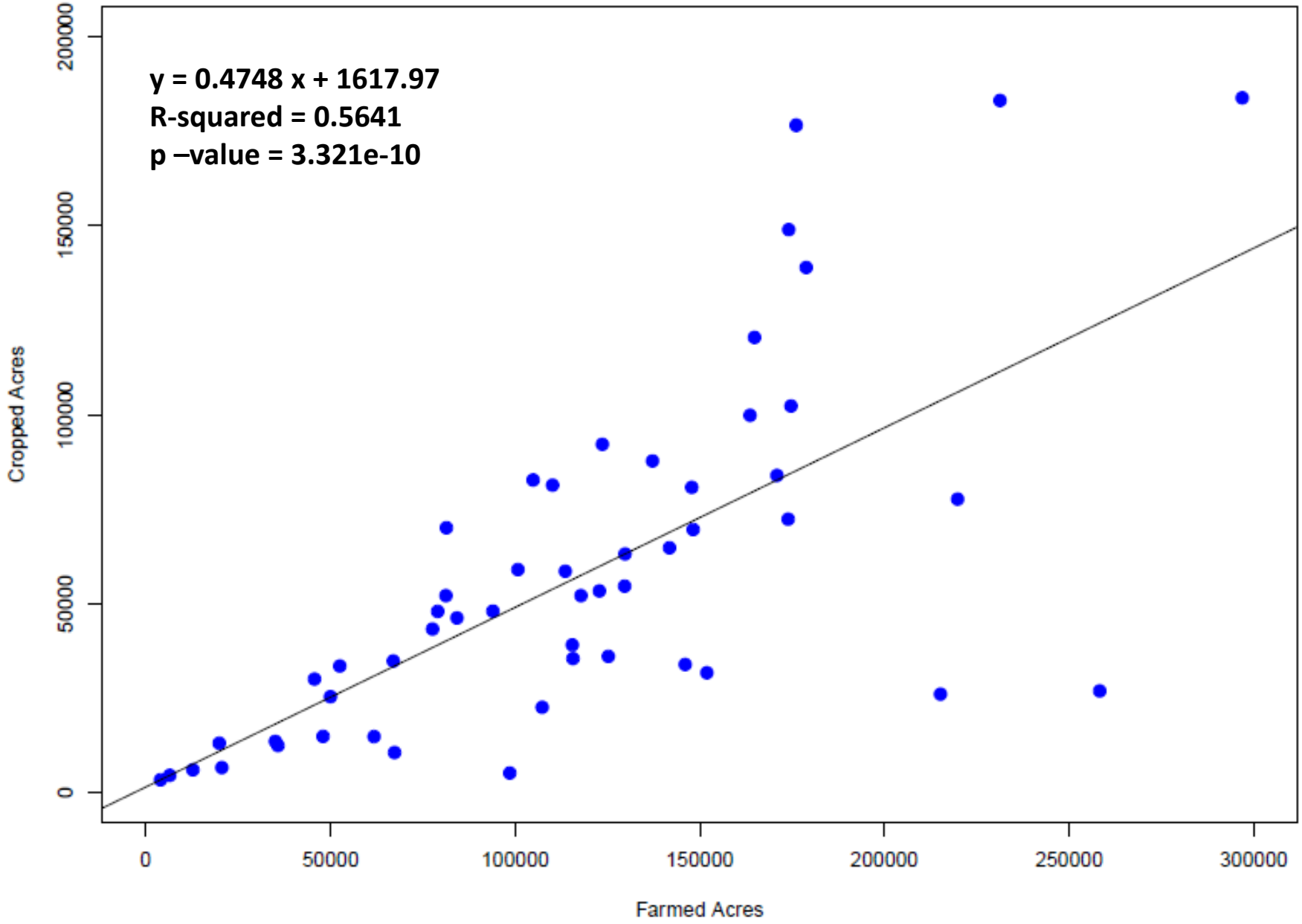
Trends in the Industry

Overall Project Goal

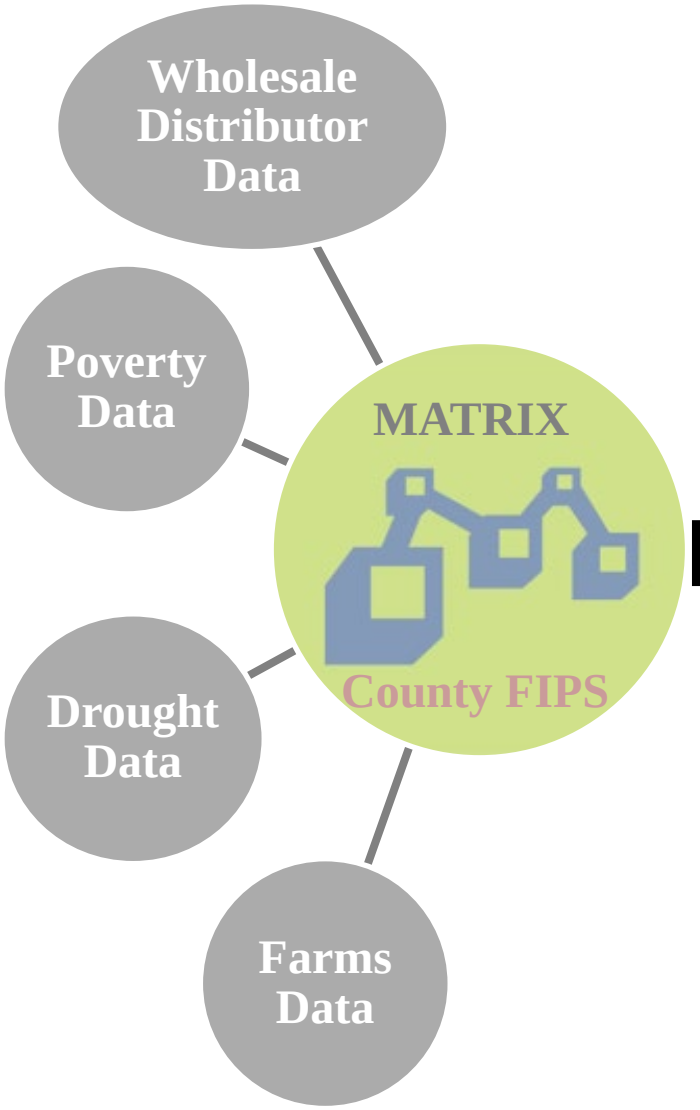
To strengthen small farms located in economically depressed communities in New York State, while systematically increasing the production of locally grown produce for wholesale distribution.

Analyst Workflow and Results



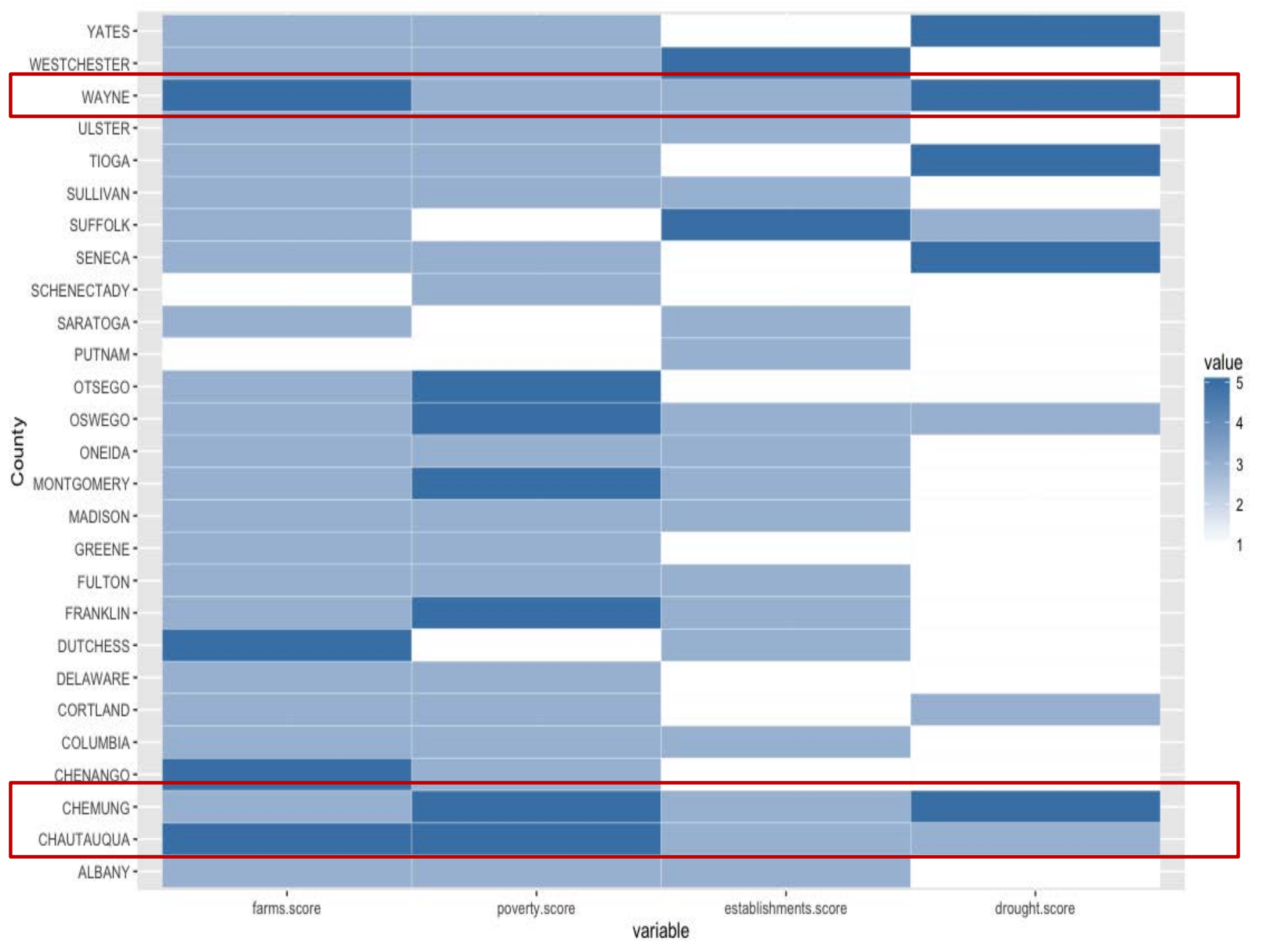

Scatter Plot with Regression Line
Farmed Acres vs. Cropped Acres
y = 0.4748 x + 1617.97
R-squared = 0.5641
p –value = 3.321e-10
Cropped Acres
Farmed Acres
0
50000
100000
150000
200000
250000
300000

Analyst Workflow and Results

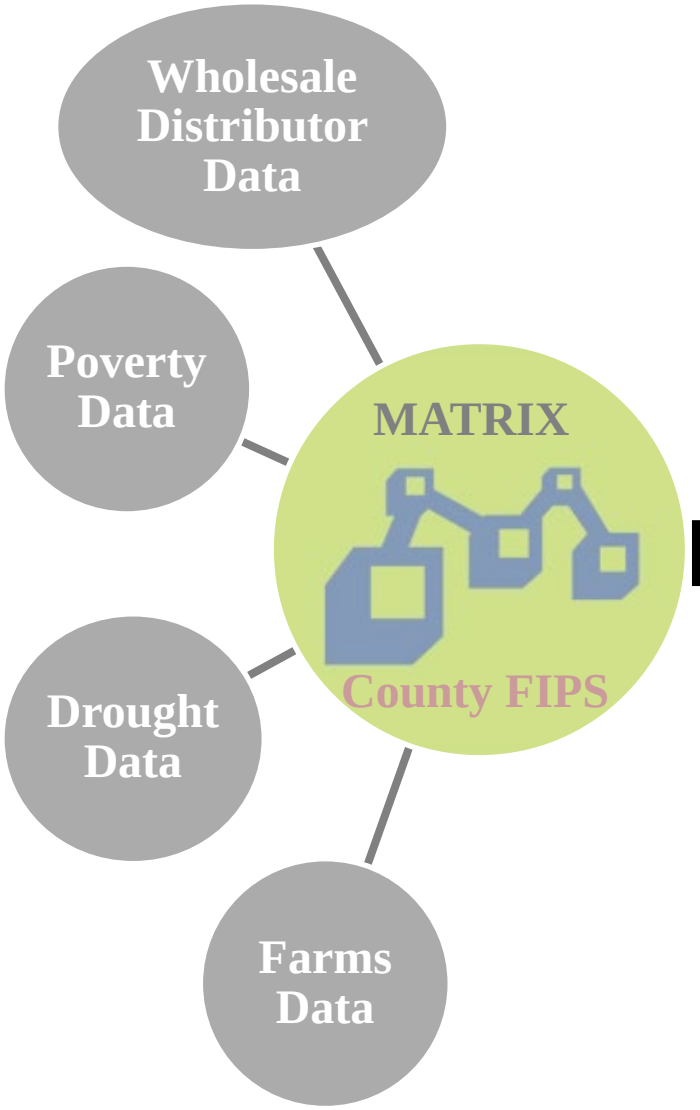


ANALYSIS - PHASE I

- **Mean and Standard Deviation Classification (low to high)**
- **Assigned scores for numeric ranking (1 to 5)**
- **Conditional Statement: total scores >= 16 & drought score >1**
- **Potential Candidates: Chautauqua, Chemung and Wayne Counties**

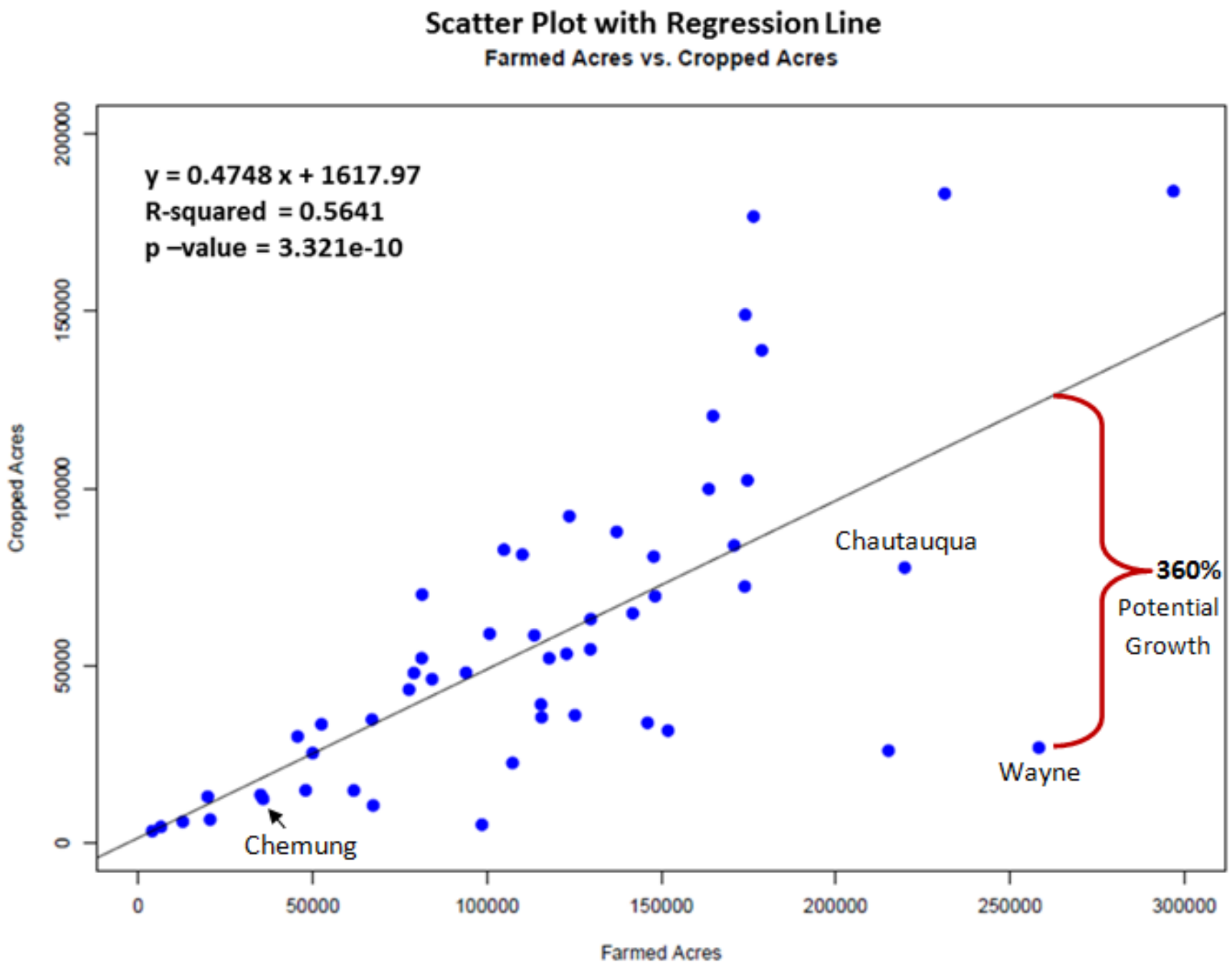

YATES
WESTCHESTER
WAYNE
ULSTER
TIOGA
SULLIVAN
SUFFOLK
SENECA
SCHENECTADY
SARATOGA
PUTNAM
OTSEGO
OSWEGO
ONEIDA
MONTGOMERY
MADISON
GREENE
FULTON
FRANKLIN
DUTCHESS
DELAWARE
CORTLAND
COLUMBIA
CHENANGO
CHEMUNG
CHAUTAUQUA
ALBANY
County
farms.score
poverty.score
establishments.score
drought.score
variable
value
5
4
3
2
1

Analyst Workflow and Results



ANALYSIS - PHASE II

- **Linear Regression Model (cropped acres vs. farmed acres)**
- **Potential Increase in Cropland:**
  Chautauqua (+ 36%)
  Chemung (+ 33%)
  Wayne (+ 360%)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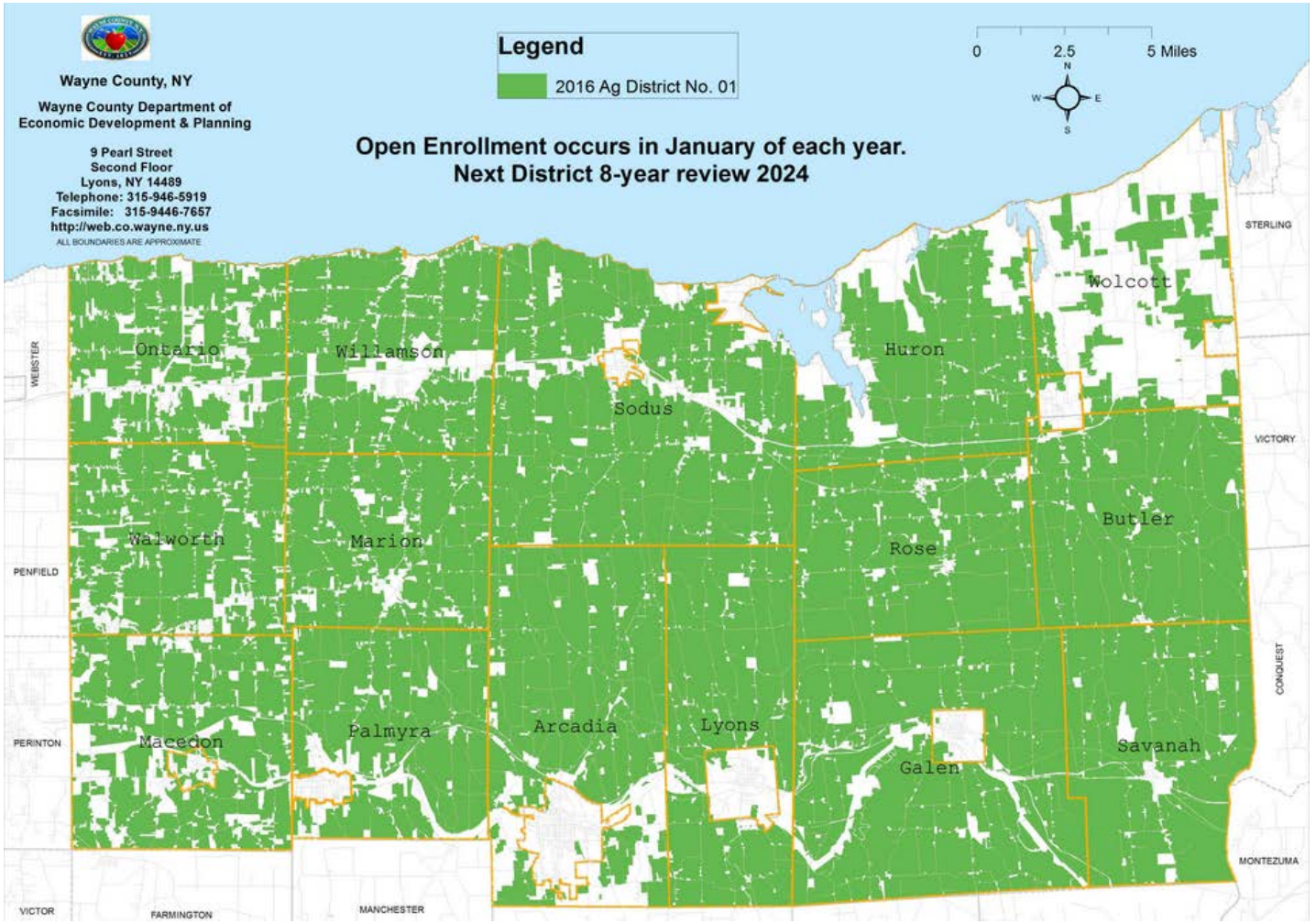
300000
Chautauqua
360%
Potential
Growth
Wayne
Chemung

Conclusion and Discussion



Source: http://web.co.wayne.ny.us/wayne-county-planning-department/wayne-countys-agricultural-district/

Conclusion and Discussion

IT Revolution in Agriculture

- Agriculture remains a depressed economic sector in New York, with incredible growth potential.
- Small farms are often hit hardest by drought conditions.
- New irrigation technology can be strategically deployed to improve local economies and provide local produce to New Yorkers.
- A $10M investment should be made in new irrigation technology for small farms in Wayne County.