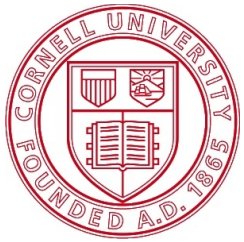
Progress Report On Study to Support Growth and Competitiveness of Pennsylvania's Dairy Industry

Chuck Nicholson

August 16, 2017



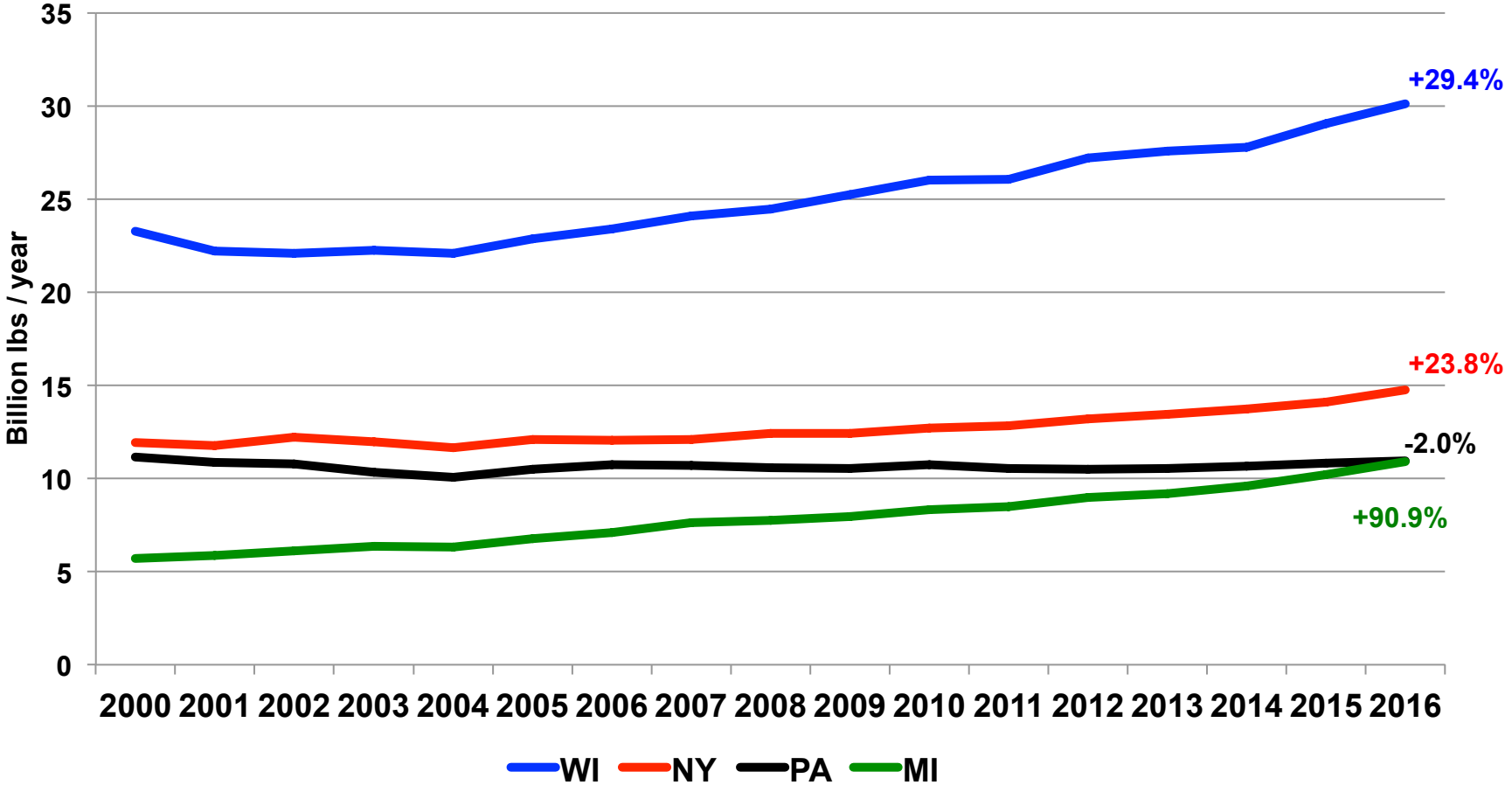
Outline

- Study Objectives
- Study Elements
- Progress and Preliminary Results
- Q&A
- Questions for you

Study Objectives

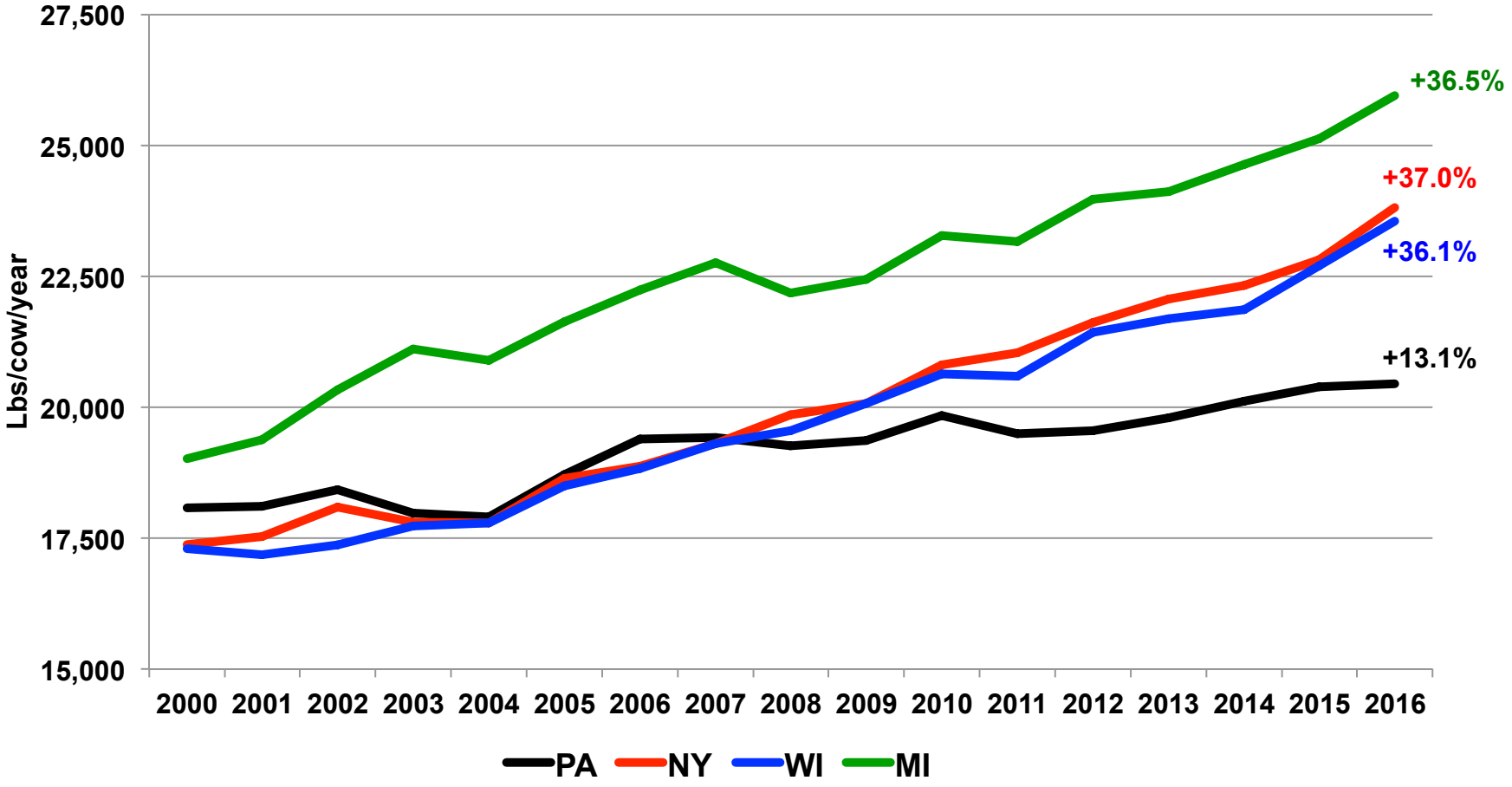
- Review past performance to gain insights
- Explore future potentials for growth
- Seek stakeholder input/feedback
- Suggest actions to PDA
- to enhance growth and competitiveness of Pennsylvania's dairy industry

Milk Production, 2000-2016



One motivation for study elements: slower milk production growth in PA

Milk Per Cow, 2000-2016



One motivation for study elements: slower productivity growth in PA

Study Elements

Phase I:

- Farm performance and competitiveness
- Processing performance and competitiveness
- Data assessment
- Institutional assessment
- Current program and policy assessment
- Economic development assessment
- Economic impact of dairy

Compare Pennsylvania performance with other states with similar agronomic resources (NY, MI, WI) to gain greater insights

Study Elements

Phase I:

- Farm performance and competitiveness
- Processing performance and competitiveness
- Data assessment
- Institutional assessment
- Current program and policy assessment
- Economic development assessment
- Economic impact of dairy

Phase II:

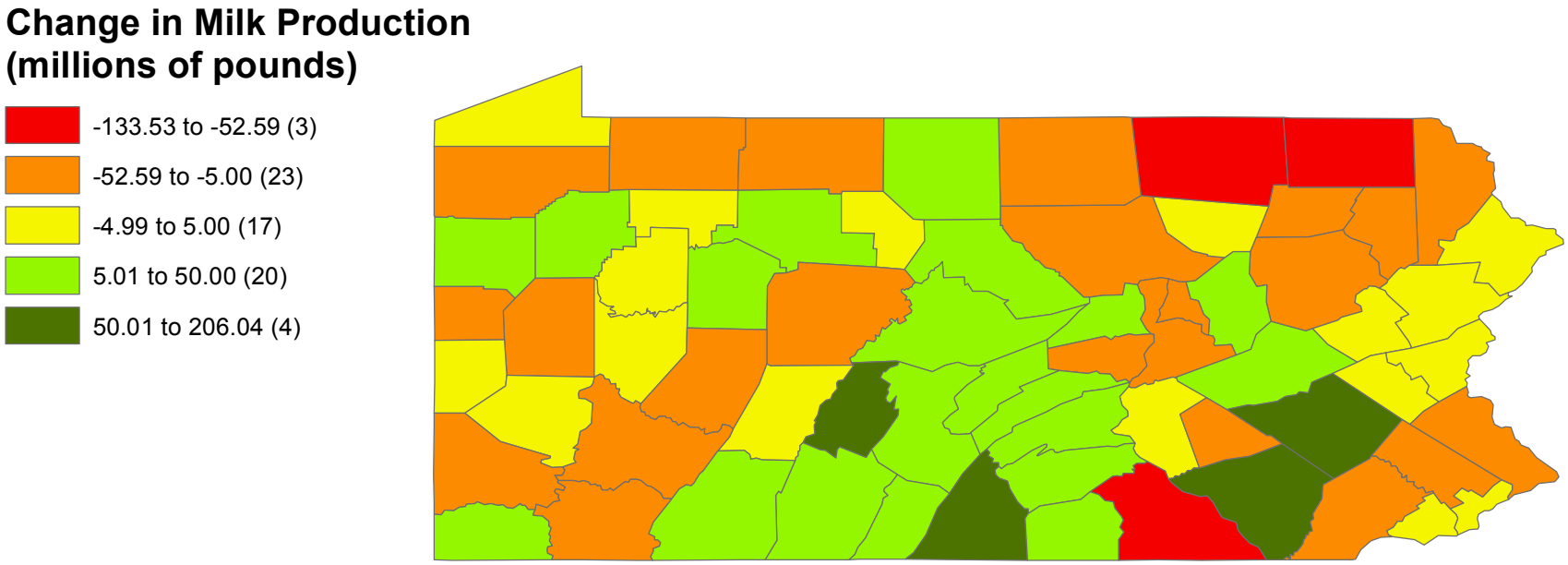
- Dairy Demand Outlook 5 to 10 years
- Dairy Demand and Export Projections
- Production and Processing Investments
- Role of PhilaPort in Dairy Exports from PA
- Proposed alternative Institutional arrangements
- Impacts of PMMB price regulation

Compare Pennsylvania performance with other states with similar agronomic resources (NY, MI, WI) to gain greater insights

Farm Performance Assessment

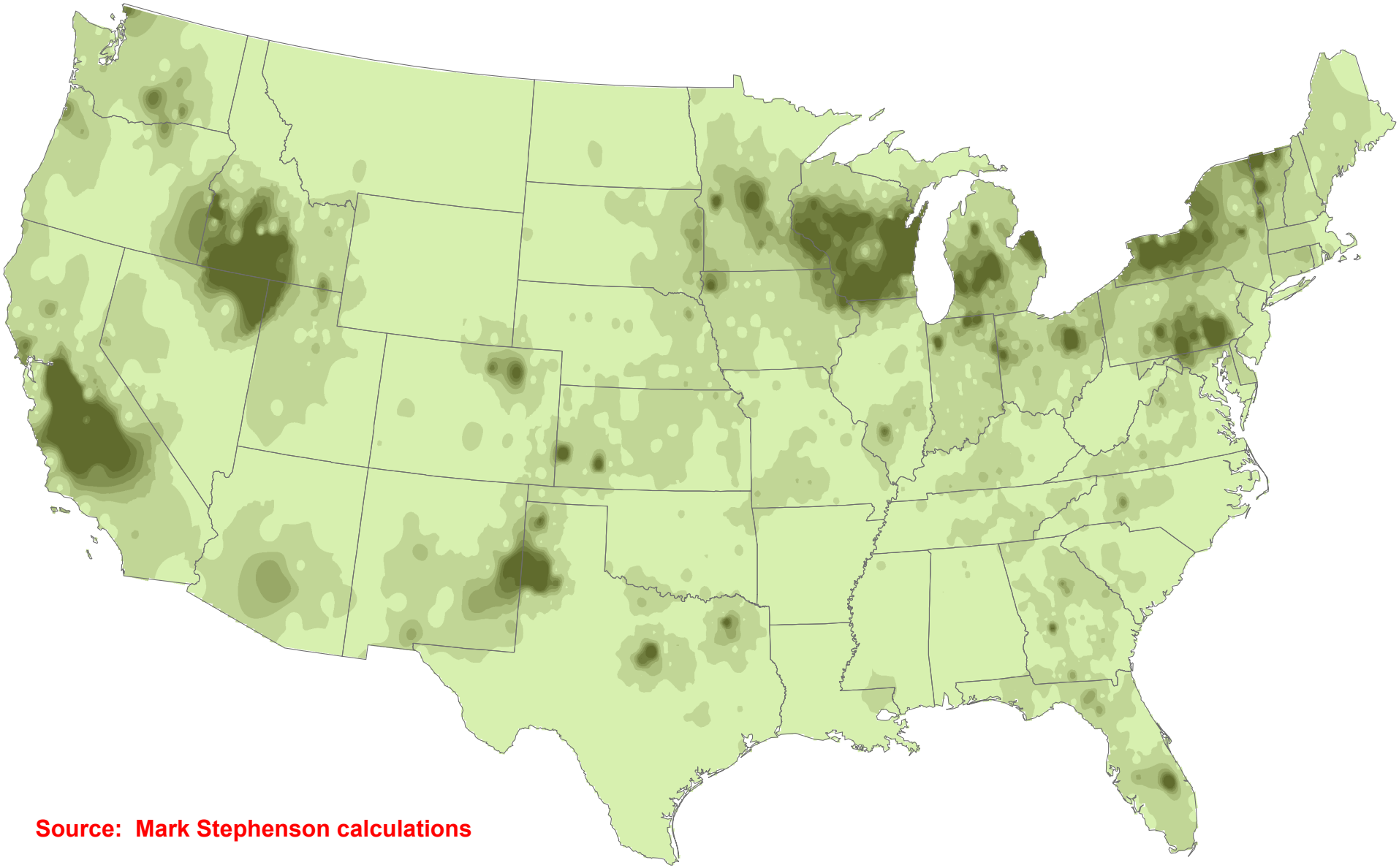
Change in County-Level Milk Production, 2007-2016

(million lbs/year)



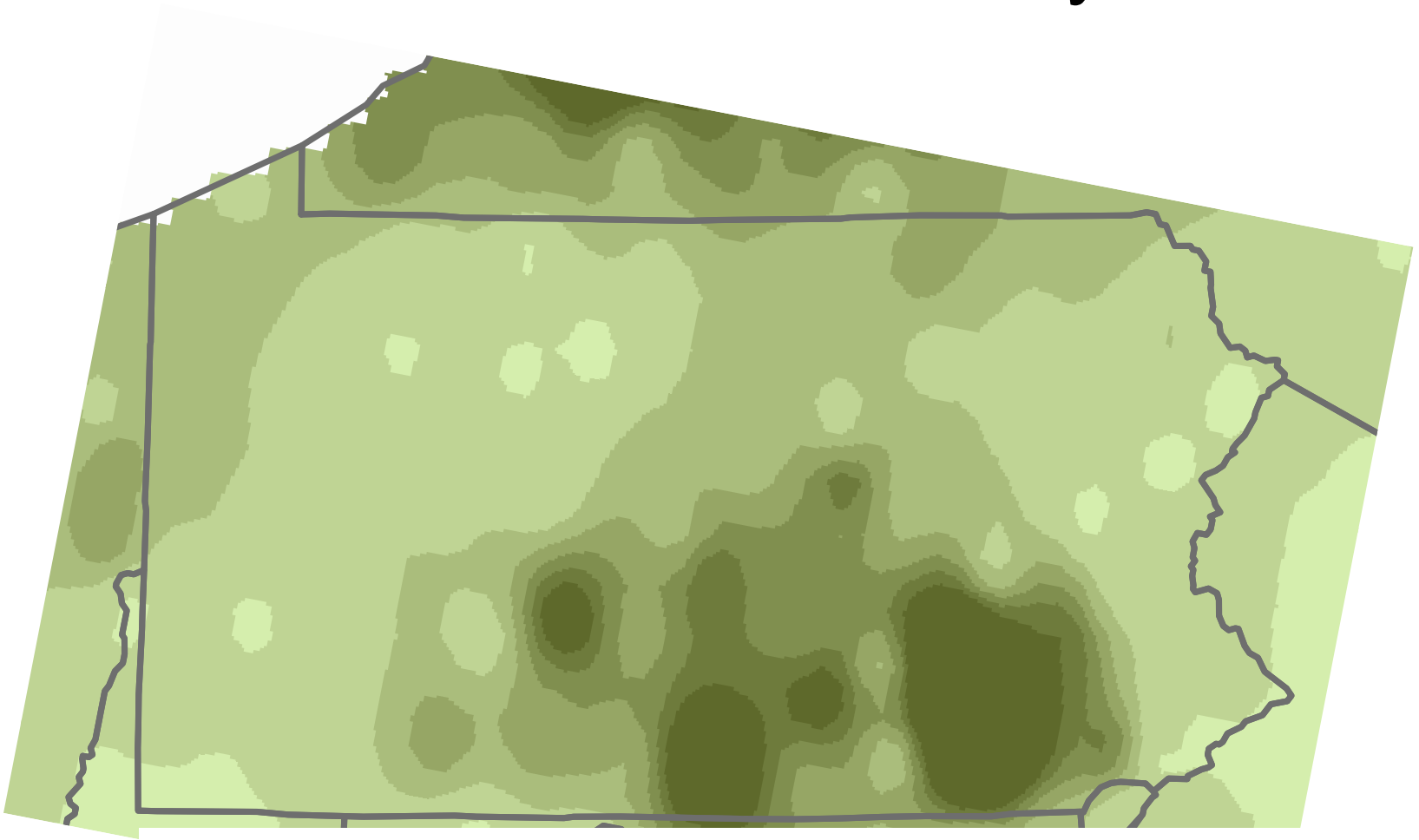
Source: Mark Stephenson calculations based on milk production and NASS cow data.

US Milk Production Density, 2016



Source: Mark Stephenson calculations

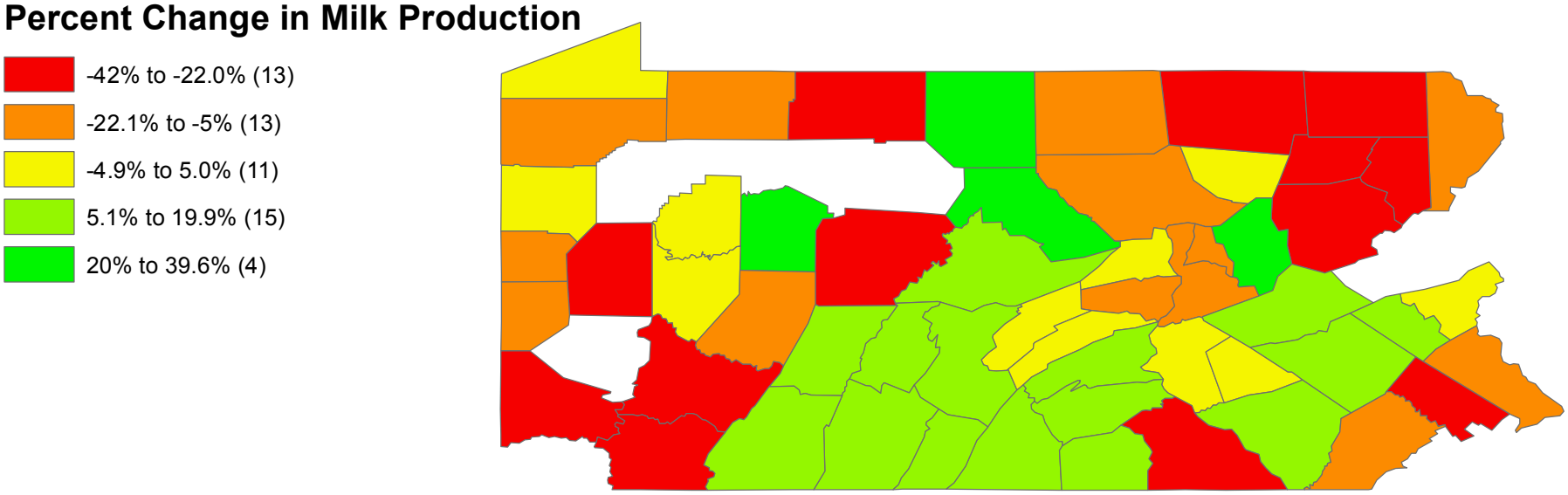
PA Milk Production Density,2016



Source: Mark Stephenson calculations

Change in County-Level Milk Production, 2007-2016

(% change compared to 2007)



Source: Mark Stephenson calculations based on milk production and NASS cow data.

Farm Performance Comparison

- Using data from “Farm Bench” project
- Farm records data from PA, NY, MI, WI being compared
  - Thanks to Mike Hosterman at AgChoice Farm Credit for sharing PA farm data
  - Also data from USDA/FSA database
- Dr. Chris Wolf at Michigan State is working on this analysis

Farm Performance Comparison

- Will compare productivity and profitability during 2011-2016
- Assess trends by size and location
- What factors affect productivity and profitability?

Farm Financial Performance

One observation: Farm financial records data are more limited in PA than other states

- Less information to assess performance and responses
- PA organizations not currently participating in multi-state farm records project (Farm Bench)

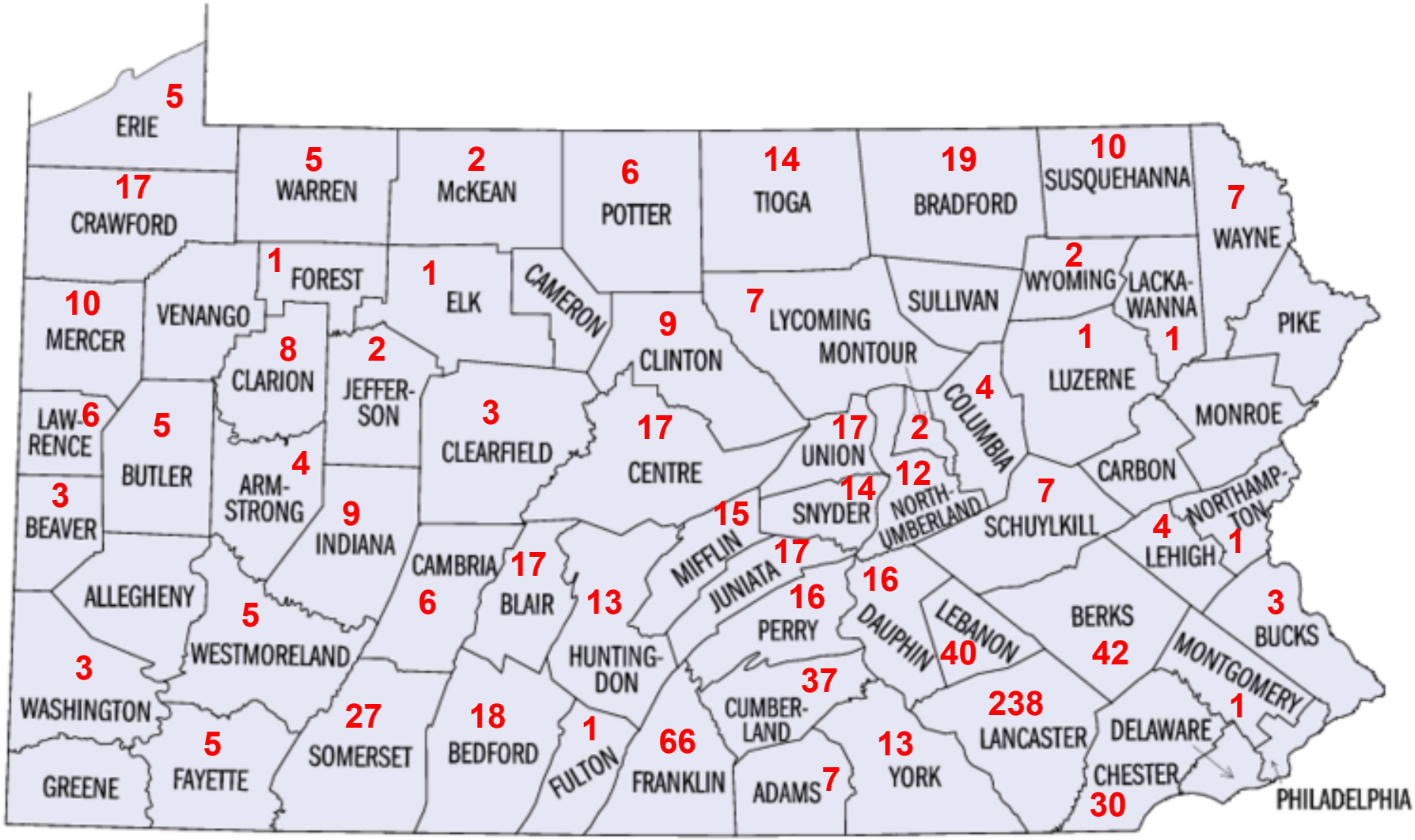
Farm Performance

CDE 2017 Producer Survey results are available

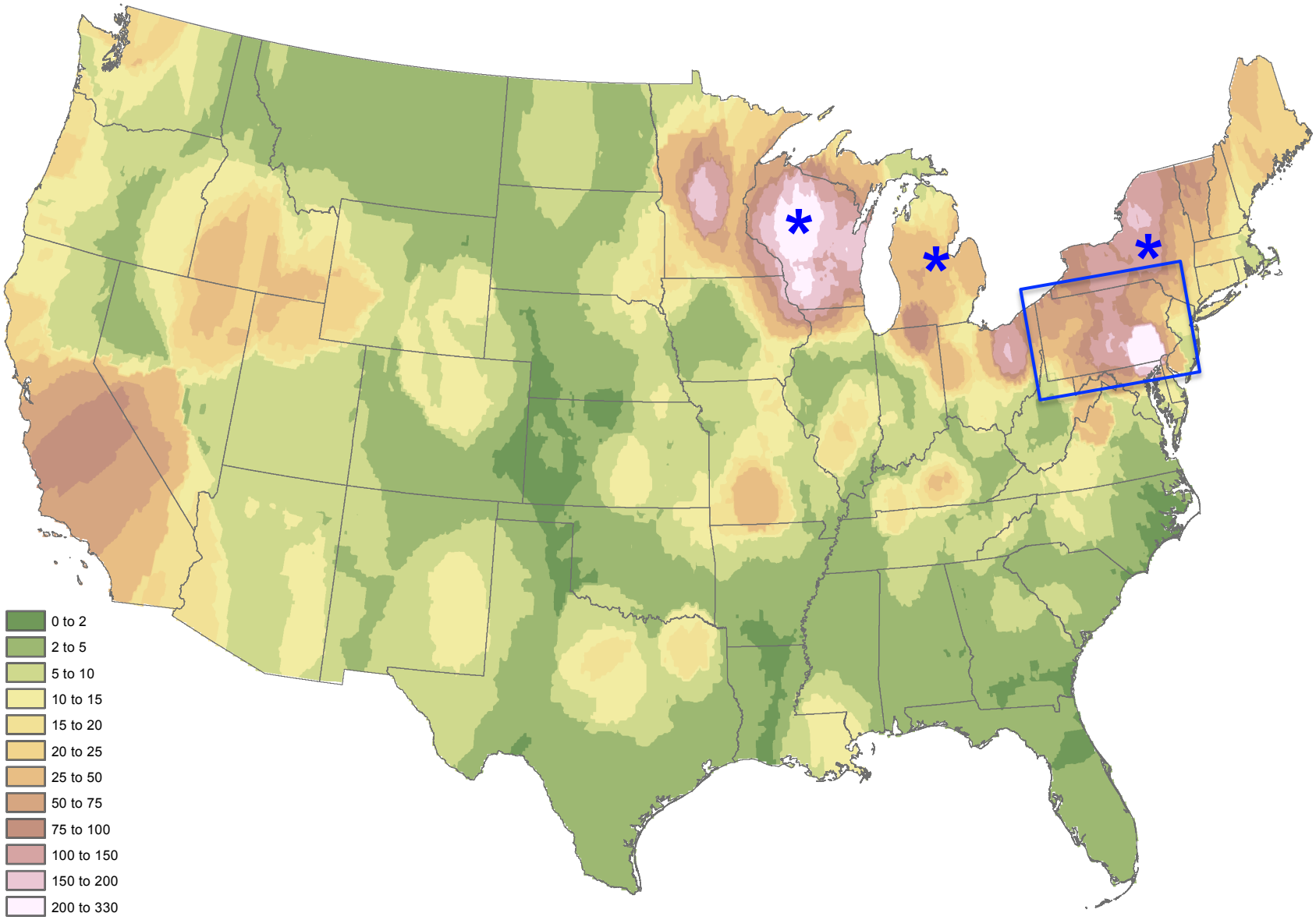
- Focus on selected results related to future growth and competitiveness
- Together, these suggest challenges for growth and competitiveness?

CDE Producer Survey Responses

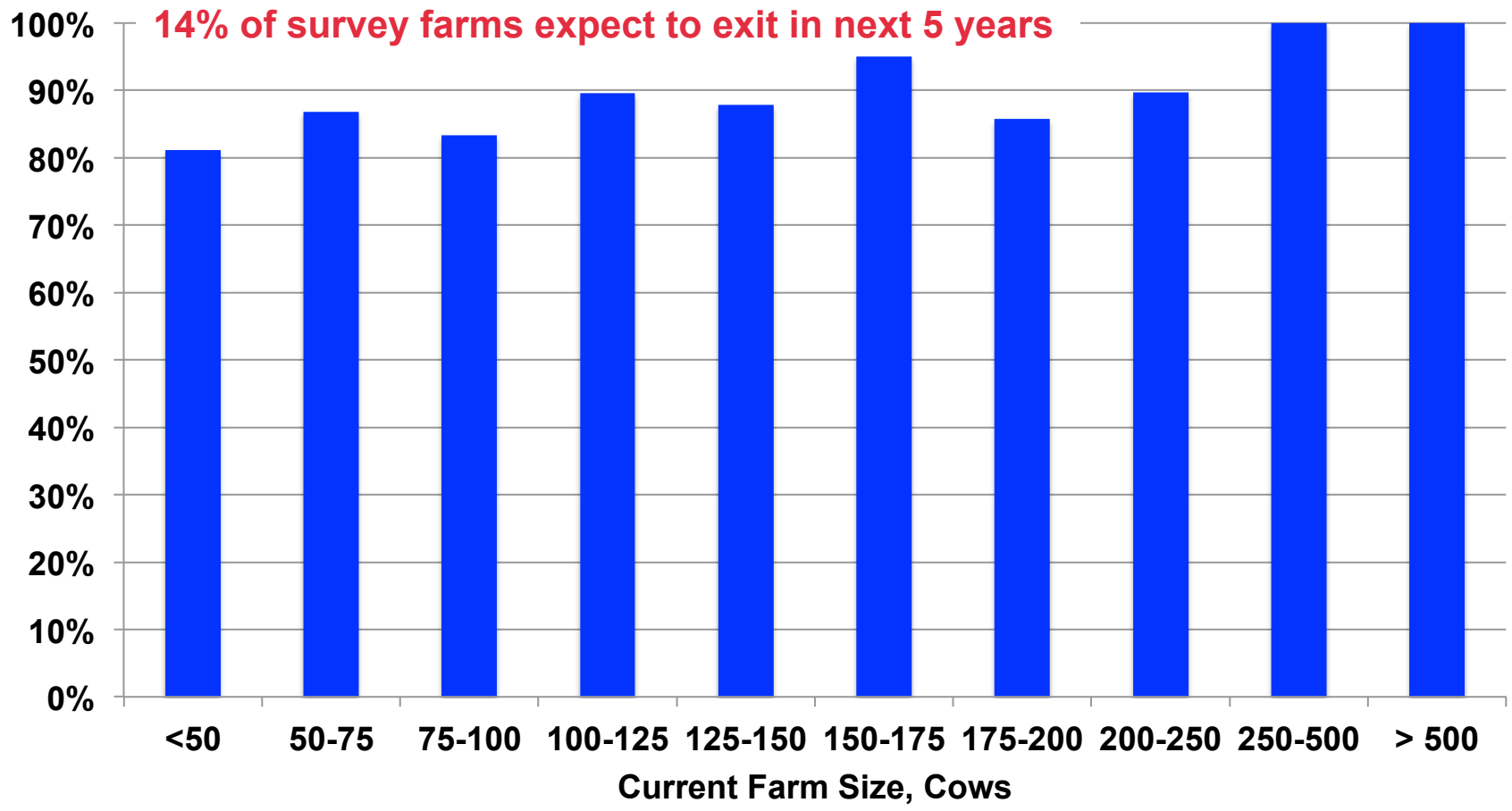
Number of Farms Per County



Number of Dairy Farms, 2012

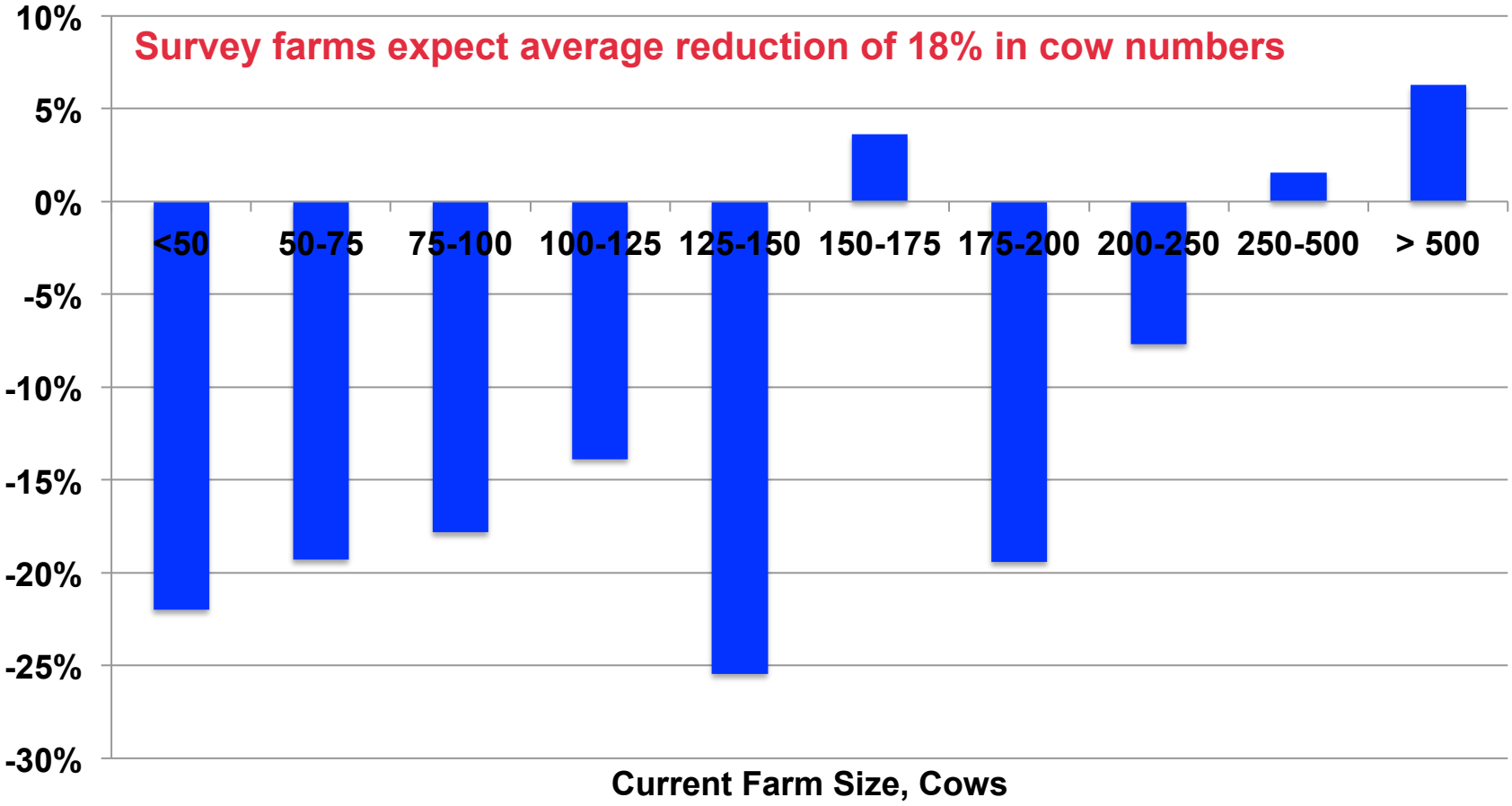


Percentage of PA Farms that Expect to be Dairying in 2022, by Farm Size



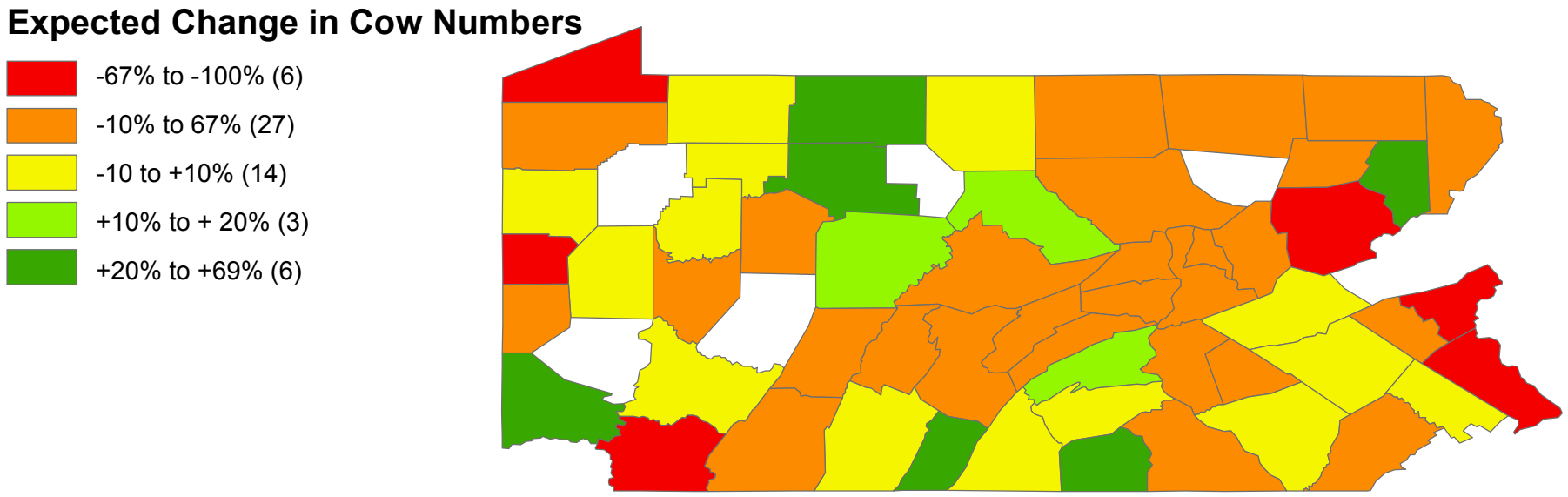
Source: Center for Dairy Excellence 2017 Producer Survey

Expected % Change in Cows by 2022, PA Farms by Current Size



Source: Center for Dairy Excellence 2017 Producer Survey

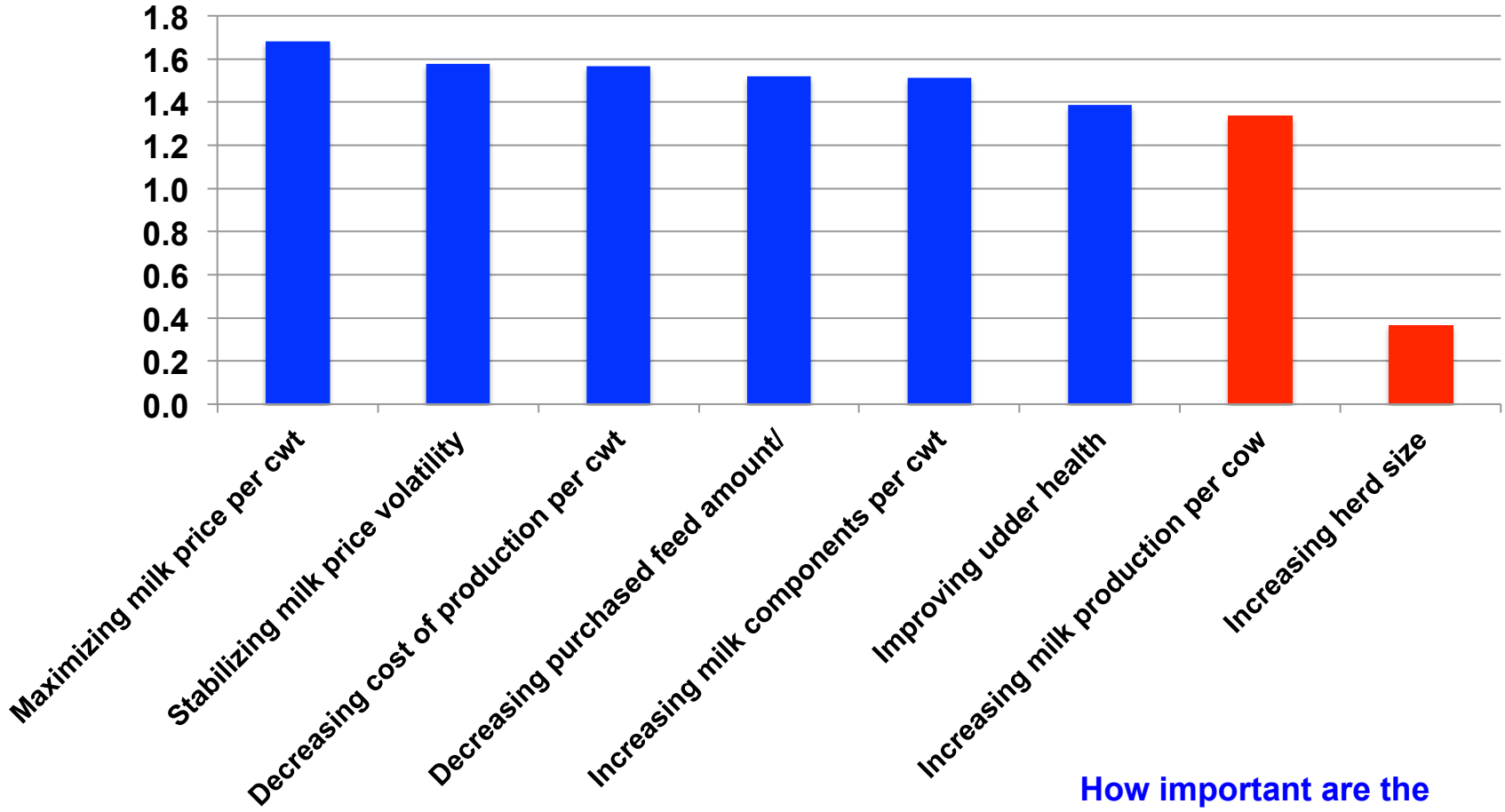
Expected % Change in Cows by 2022, PA Farms by County



Source: Center for Dairy Excellence 2017 Producer Survey

Importance to Future Farm Business Performance

(Average of 0=Not Important, 1=Somewhat Important and 2=Very Important)

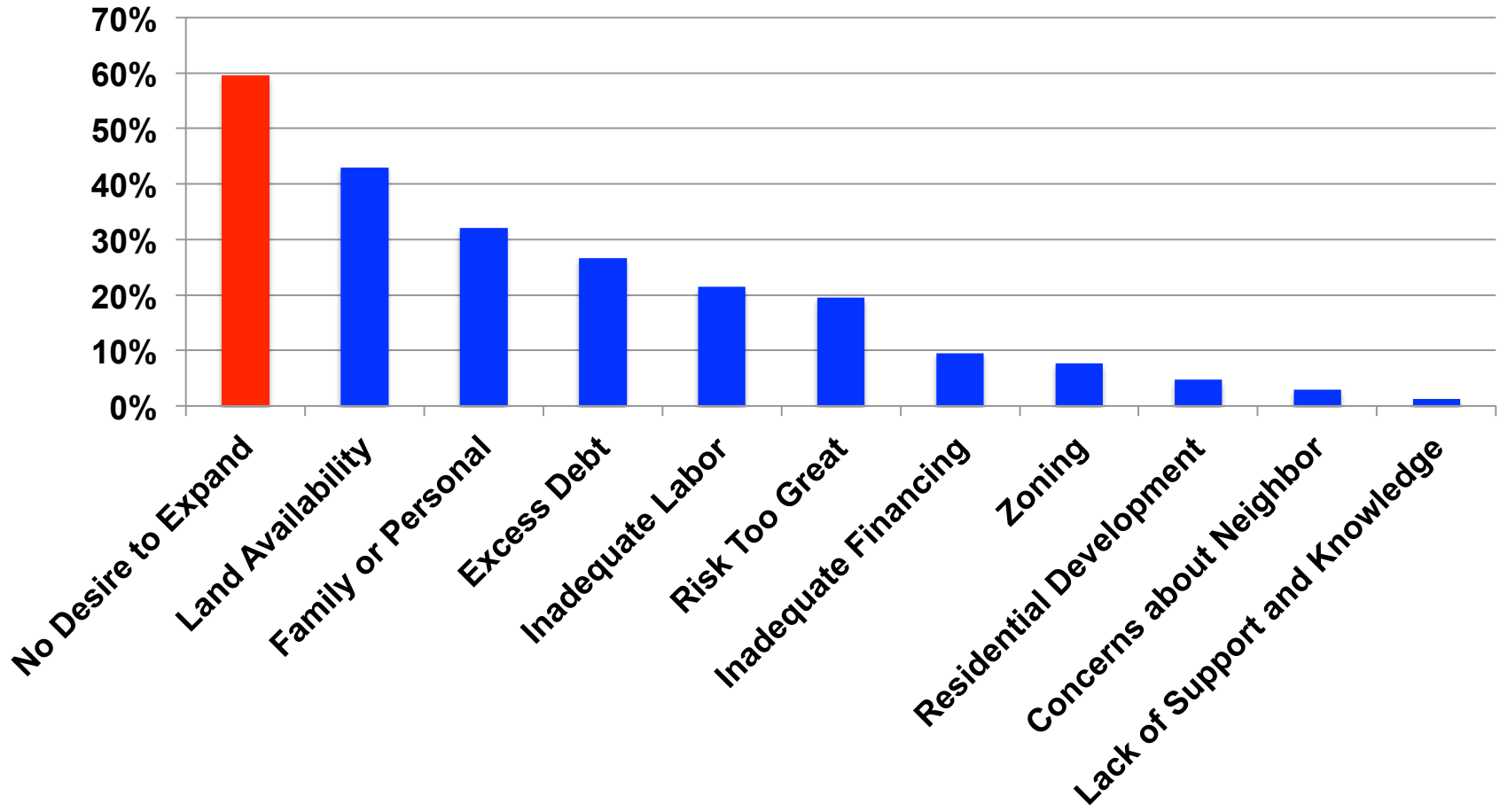


How important are the following in improving business performance for your dairy in the next 3-5 years?

Source: Center for Dairy Excellence 2017 Producer Survey

Factors Constraining Farm Expansion

(Proportion of Farms Indicating)



Source: Center for Dairy Excellence 2017 Producer Survey

Processing Performance Assessment

Our initial idea was…

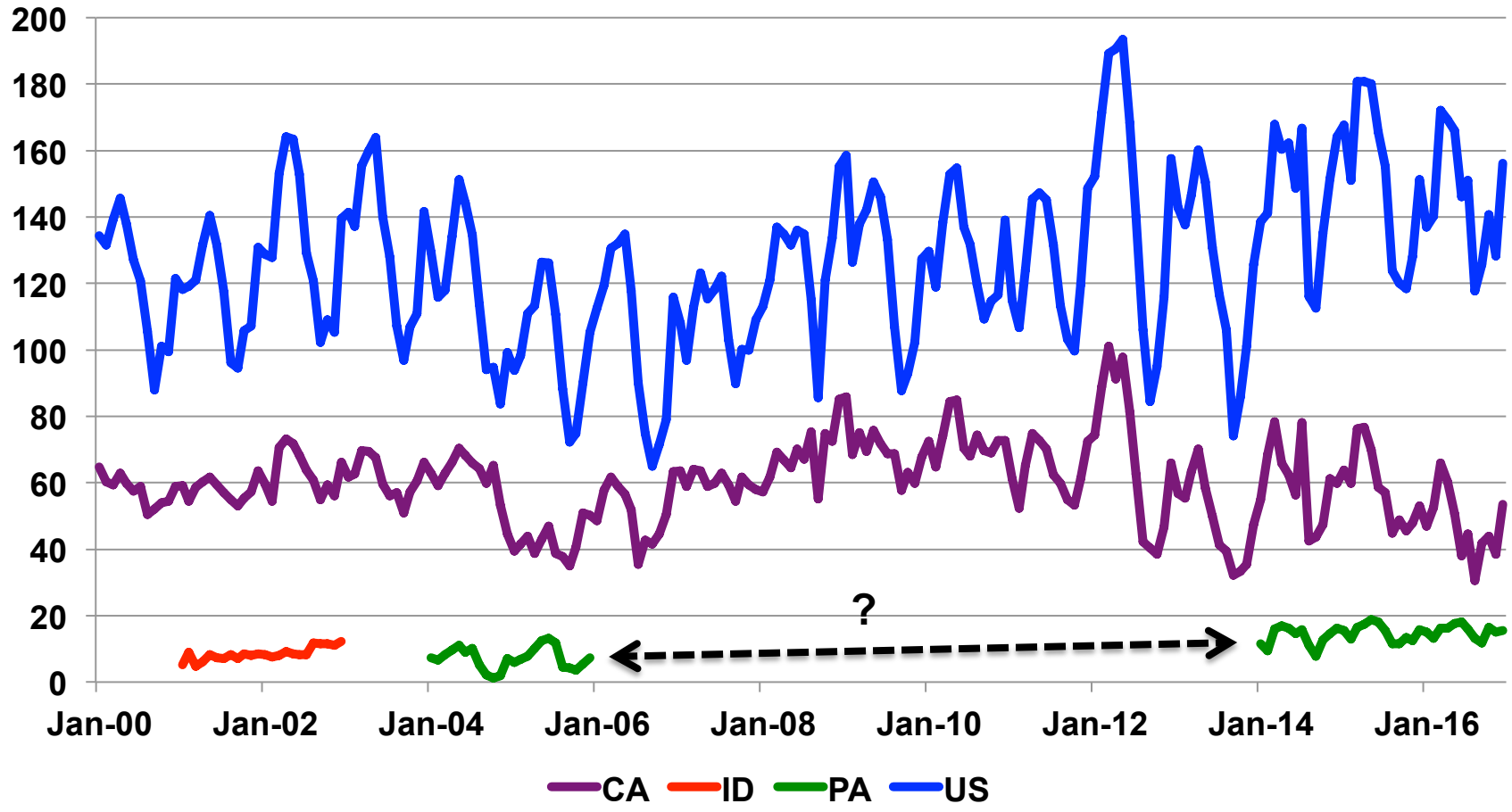
Use NASS dairy product data to study trends in:

- Production
- Plant numbers
- Plant volumes

Processing Performance Assessment

- Publicly available NASS data are incomplete and limit analysis to compare state trends in processing volumes and capacity
- Data often not published for states in our study for the time period we wanted to look at

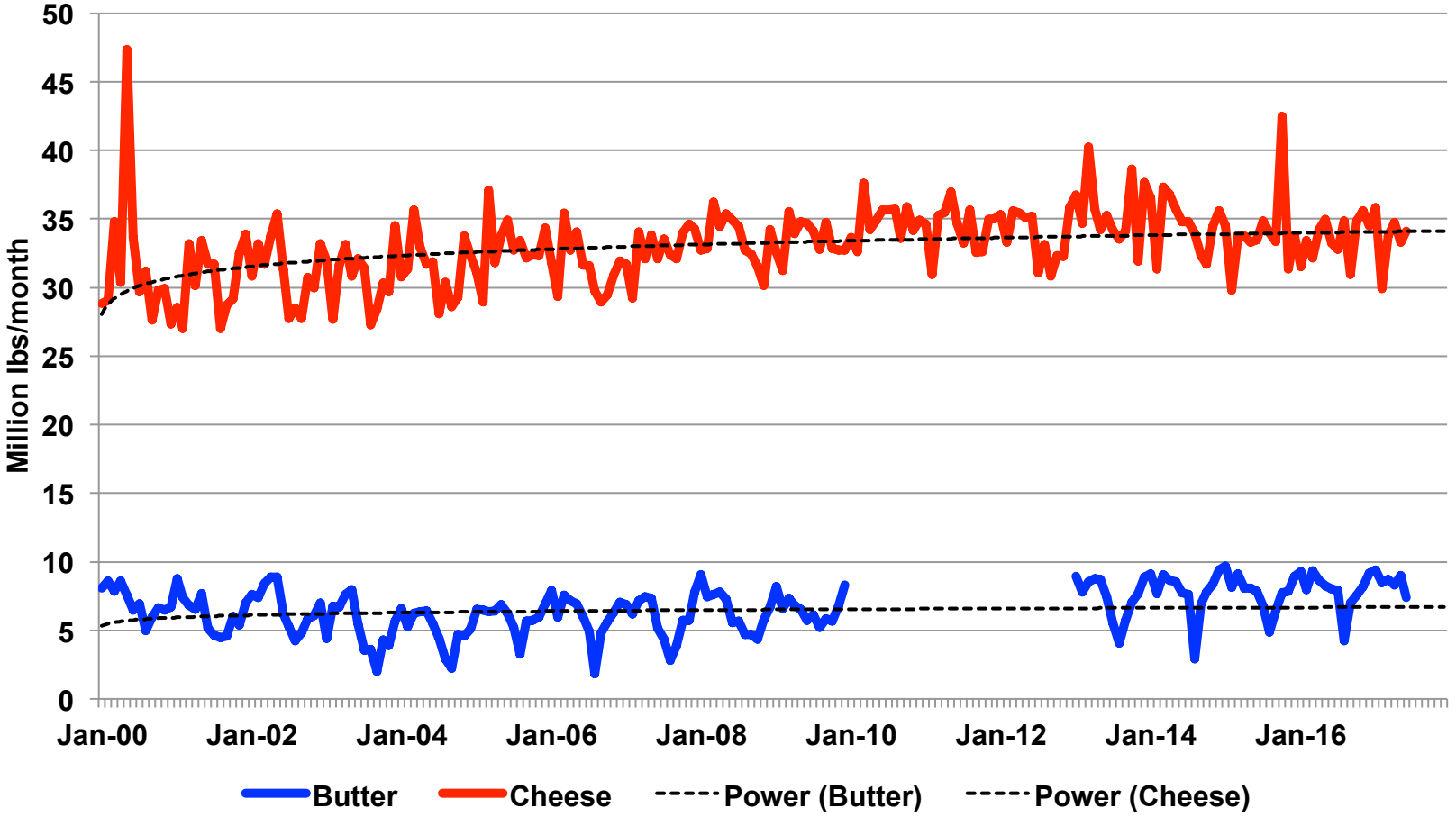
NASS Processing Data Limitations: NDM Production



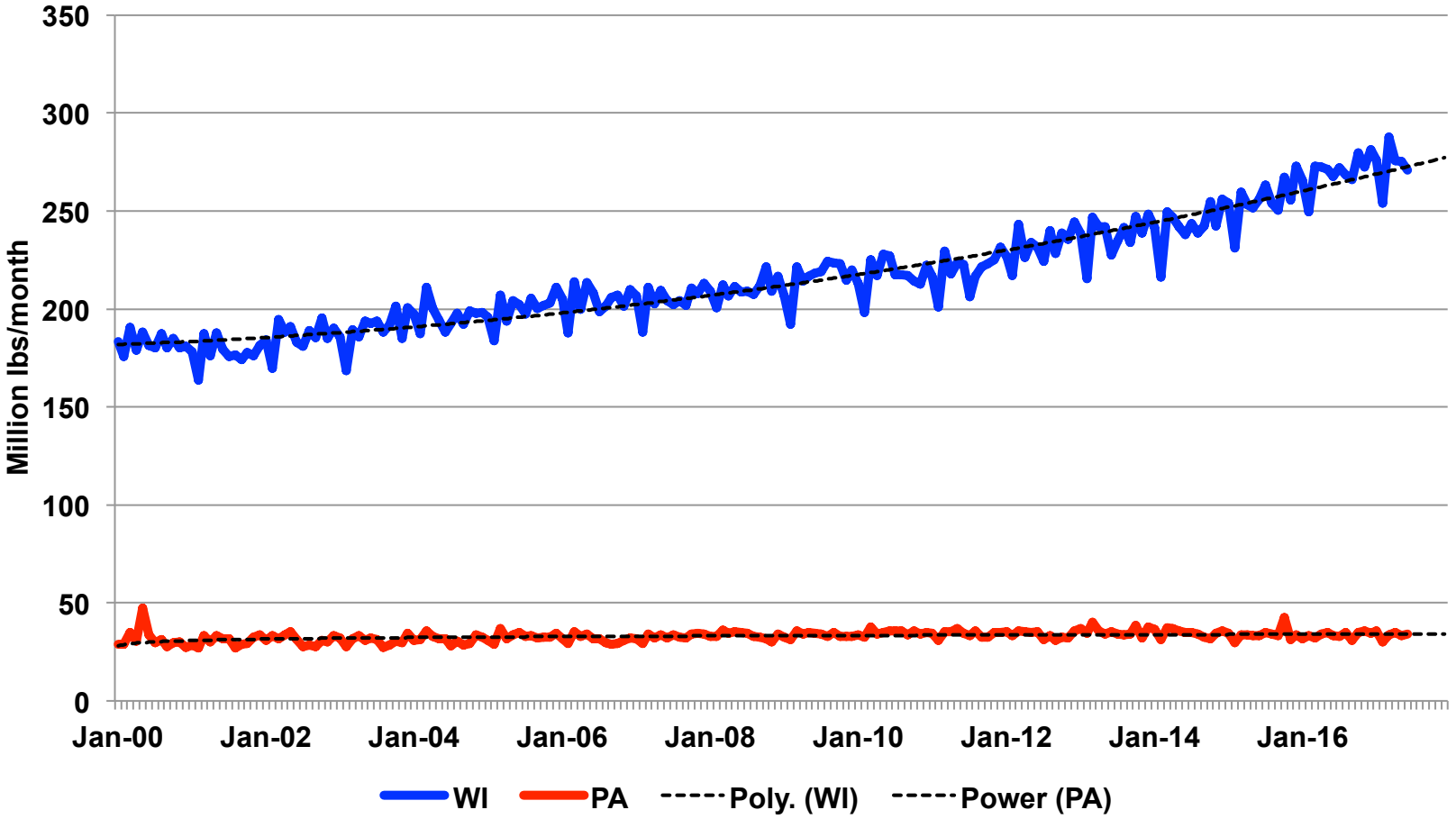
Example: NASS Processing Public Data Availability

	US	PA	NY	WI
Cheese, All Other Types, Production	2000-date	1993-1994	2000-2008	2000-2001, 2004-2008
Cheese, American Types, Cheddar - Production	2000-date	1992	2000-2004	2000-date
Cheese, American Types, Production	2000-date	2014-2016	2000-2004, 2014-2016	2000-date
Cheese, American Types, Other (Colby, Monterey and Jack) - Production	2000-date	Not listed	2000-2009	2000-2015
Cheese, Blue and Gorgonzola, Production	2010-date	Not listed	Not listed	1990-1995
Cheese, Brick and Muenster, Production	2000-date	Not listed	Not listed	2000-2004
Cheese, Cream and Neufchatel, Production	2000-date	1996-1997	1994-1997	Not listed
Cheese, Feta, Production	2010-date	Not listed	Not listed	Not listed
Cheese, Gouda, Production	2010-date	Not listed	Not listed	Not listed
Cheese, Hispanic, Production	2000-date	Not listed	Not listed	2000-2015

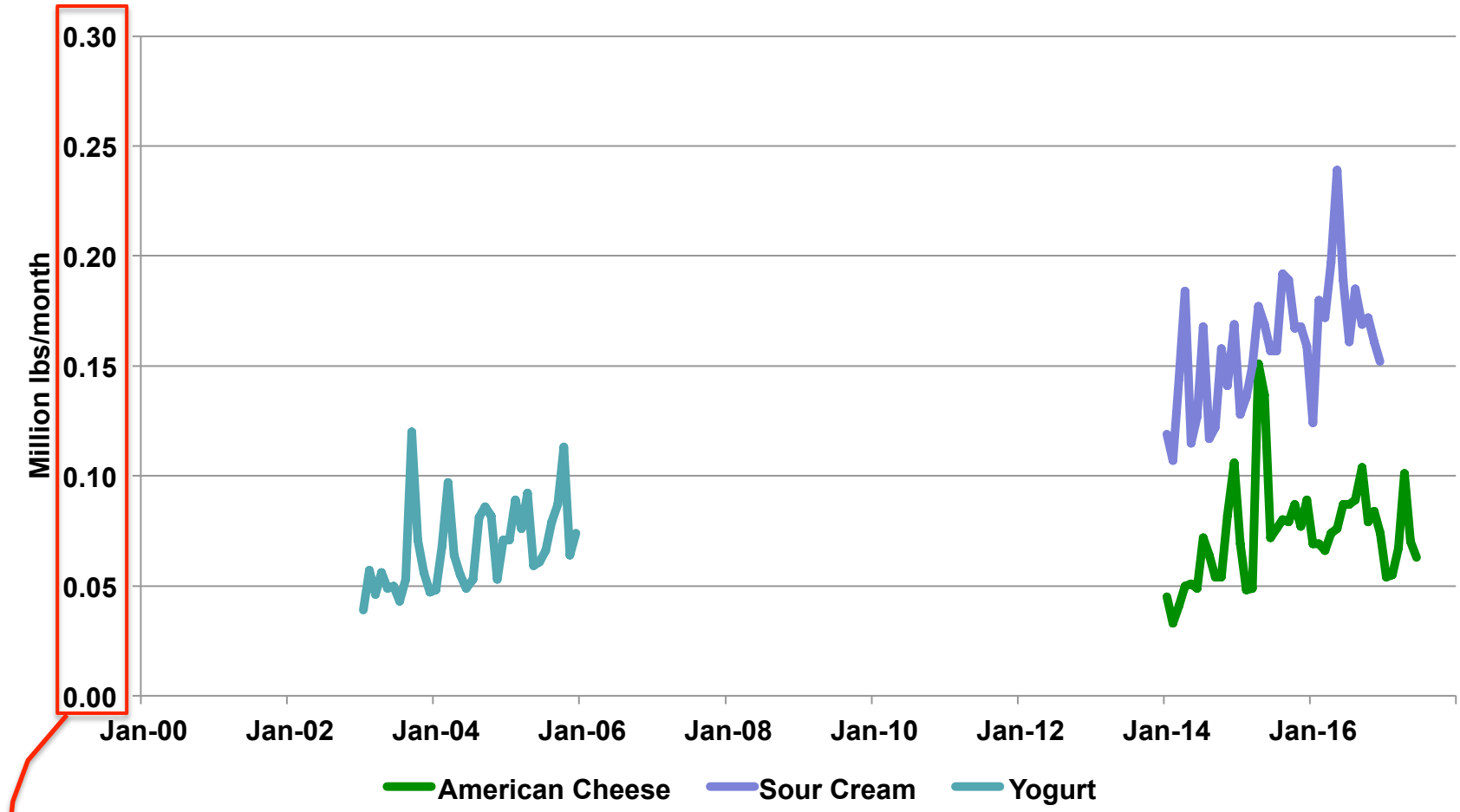
PA Cheese and Butter Production, 2000-2017



PA and WI Cheese Production, 2000-2017

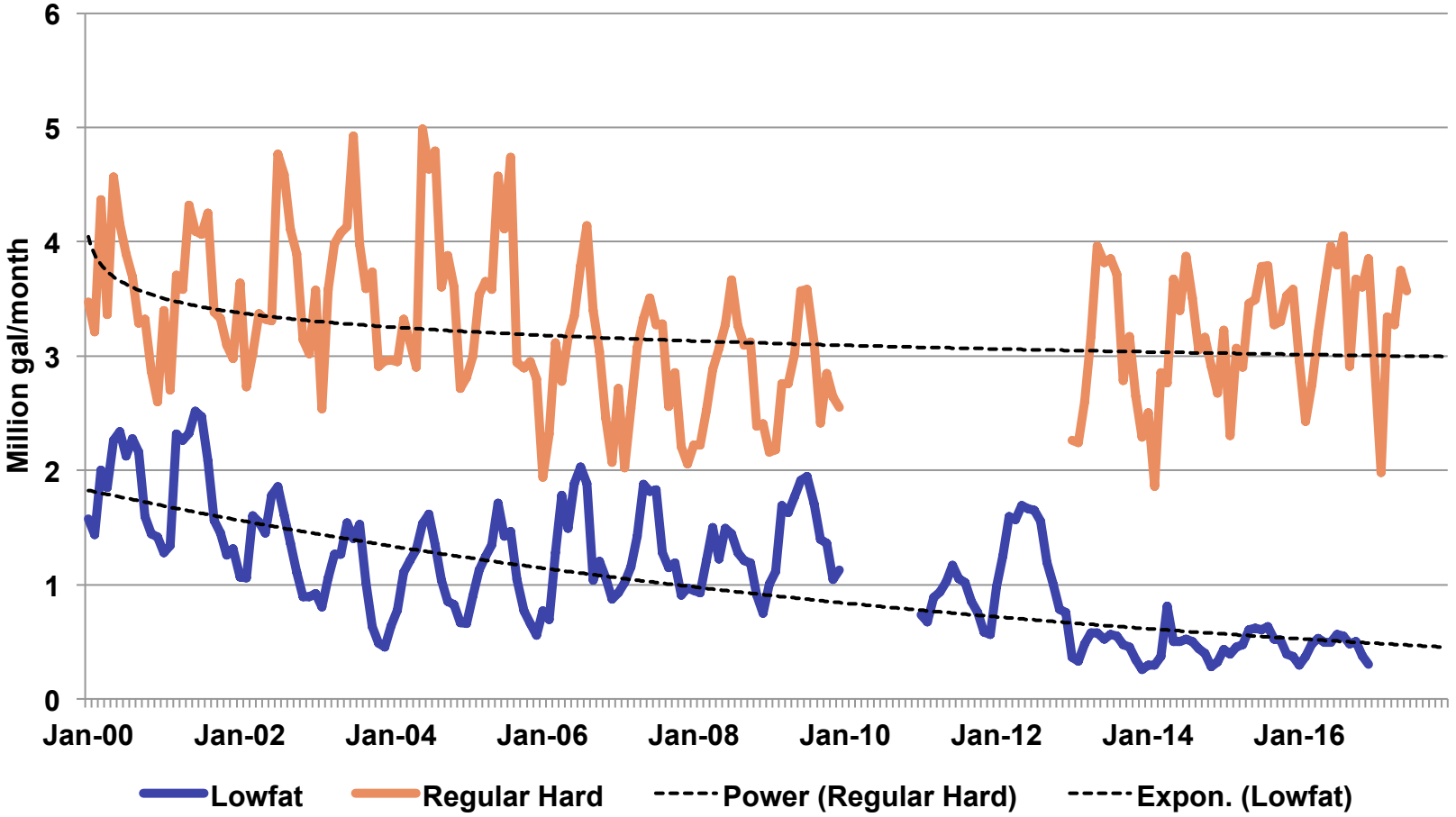


PA American Cheese, Sour Cream and Yogurt Production, 2000-2017



Note: Much smaller amounts!

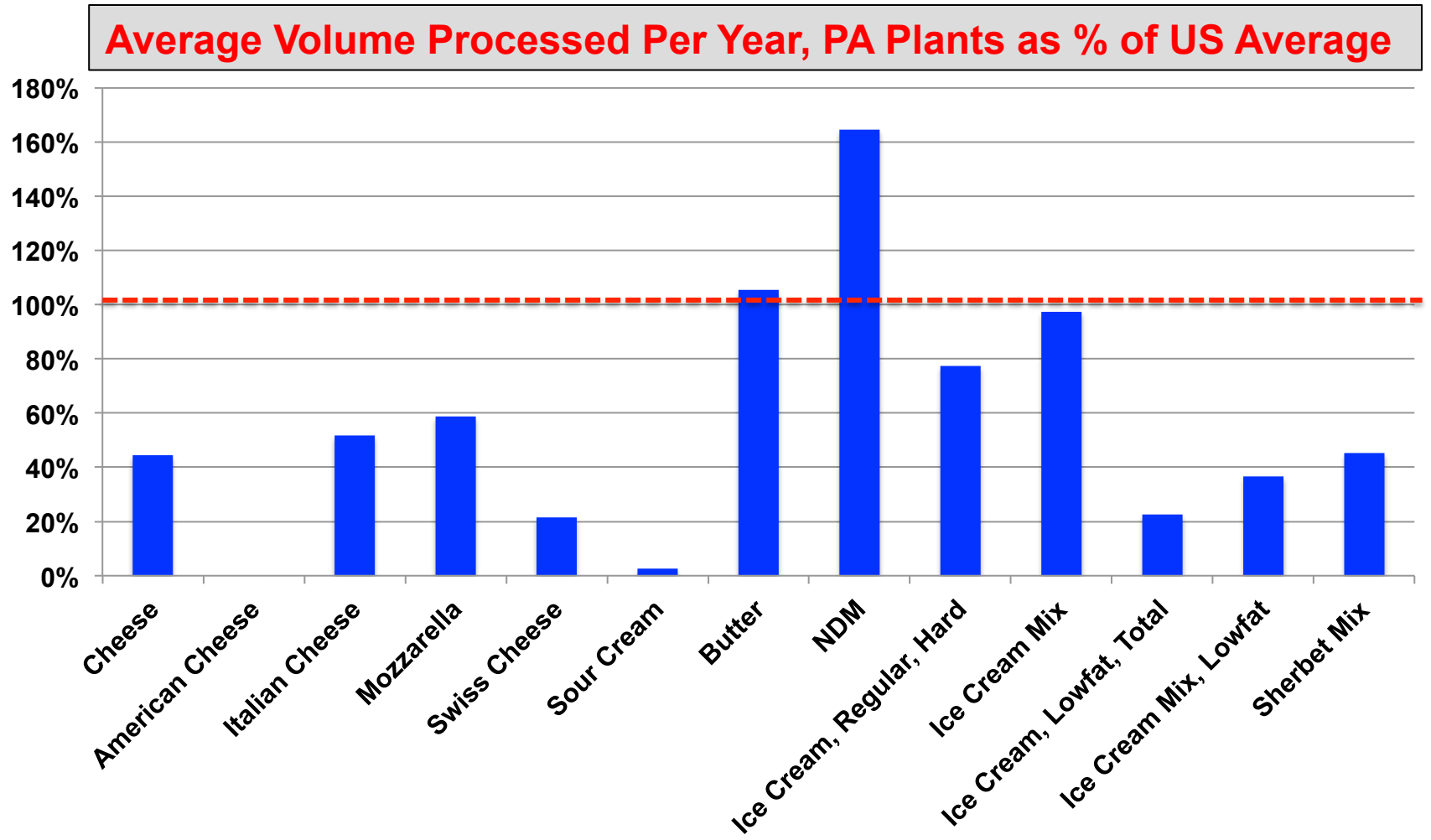
PA Ice Cream Production, 2000-2017



Processing Performance

- Publicly available NASS data are incomplete and limit analysis of state trends in processing volumes and capacity
- Available data suggest that PA plants process smaller volumes for many products

Processing Sector Economies



Source: *Dairy Products* Annual 2015

Our Processor Survey

Nationwide survey, with focus on PA, WI

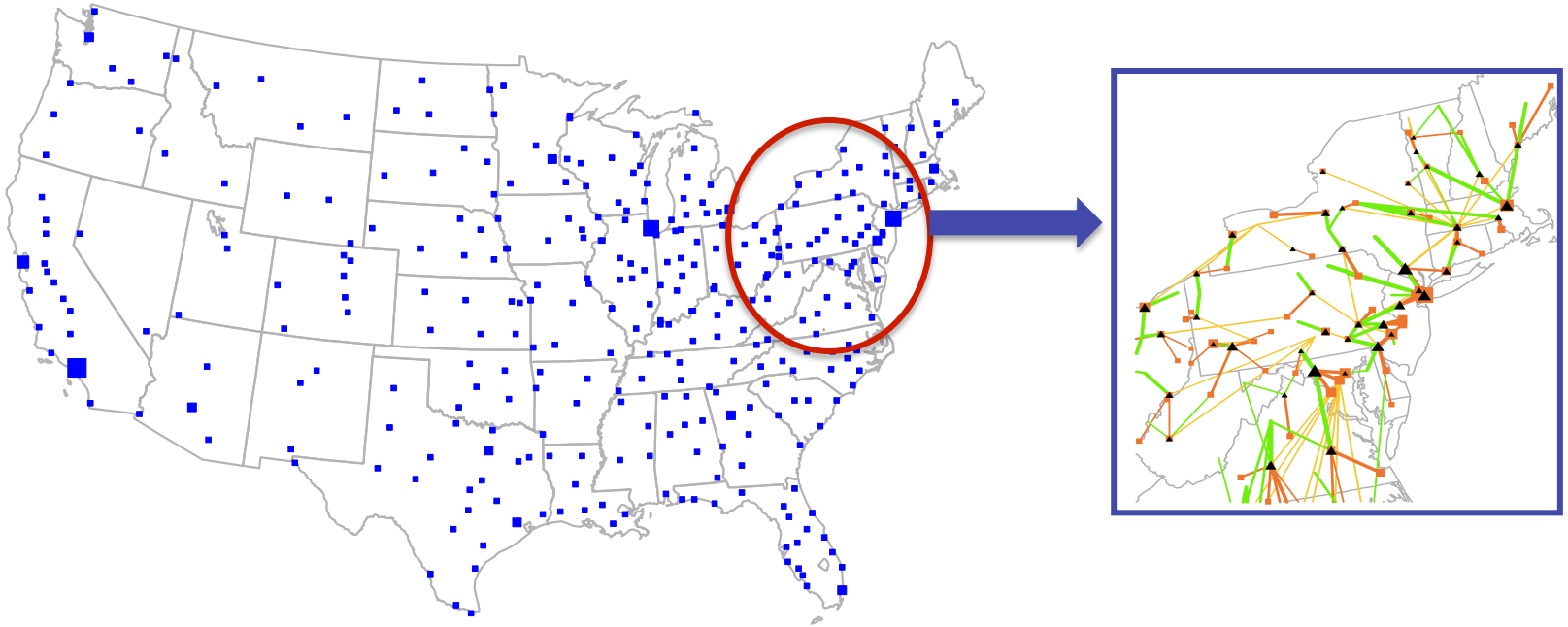
Questions about:

- Products processed and overall volume
- Capacity used in recent years
- Future plans regarding capacity and constraints
- Product exported

Potential for New Processing Capacity in PA

- Would additional investment in dairy processing capacity be profitable?
  - Would it reduce overall supply chain costs?
- What are the potential benefits to producers from additional investment?
  - Reductions in hauling costs?
  - Increases in milk values?
- What are the potential benefits to the state?

Dairy Supply Chain Model Used to Assess Incentives for New Plants



Dairy Farm → Processing → Consumer

Hauling Costs

Processing Costs

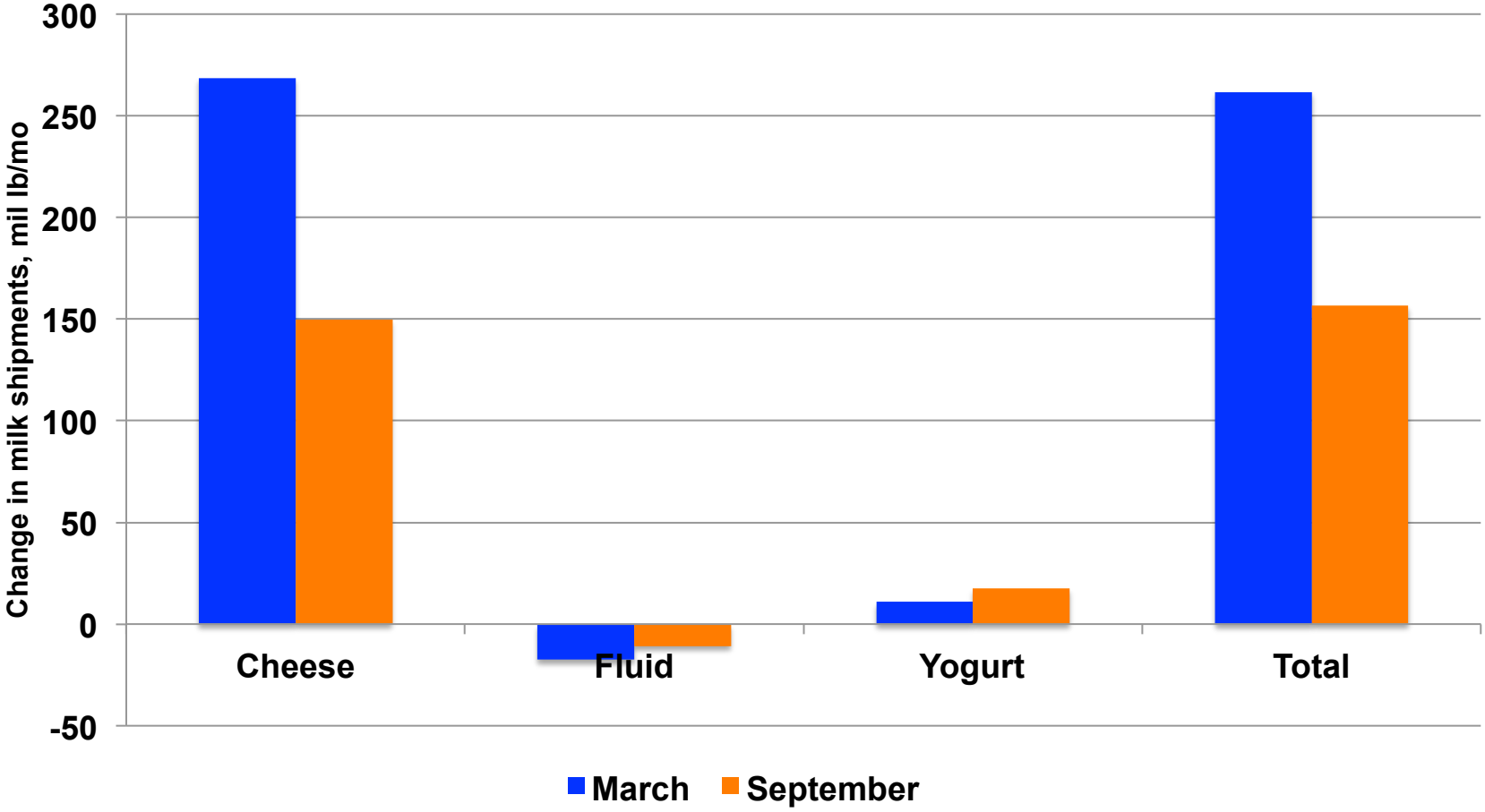
Distribution Costs

Would additional plant investment reduce costs? By how much?

Model Analysis

- March and September 2016
- Allow additional capacity to minimize costs
- Compare outcomes with additional capacity to existing plant capacity
- Examine costs and milk values

Results: Change in Farm Milk Shipped to Processing in PA, 2016



Results suggest that additional processing capacity should focus on cheese and would increase total milk processed in the state.

Impacts of New Capacity

- Reduction of $8 million per year in hauling costs for farm milk
  - $0.07 per cwt
- Increase in milk value
  - $0.15 to $0.25/cwt
- Total annual benefit $30 million
  - $0.27/cwt
- Supports investment in plant and equipment of $370 million at 8% per year

Potential Impacts of New Plant Capacity

- Increase in value of dairy manufacturing in PA ($850 million)
- Increase in state economic activity ($2 billion)
- Increase in FT employment (1500 jobs)

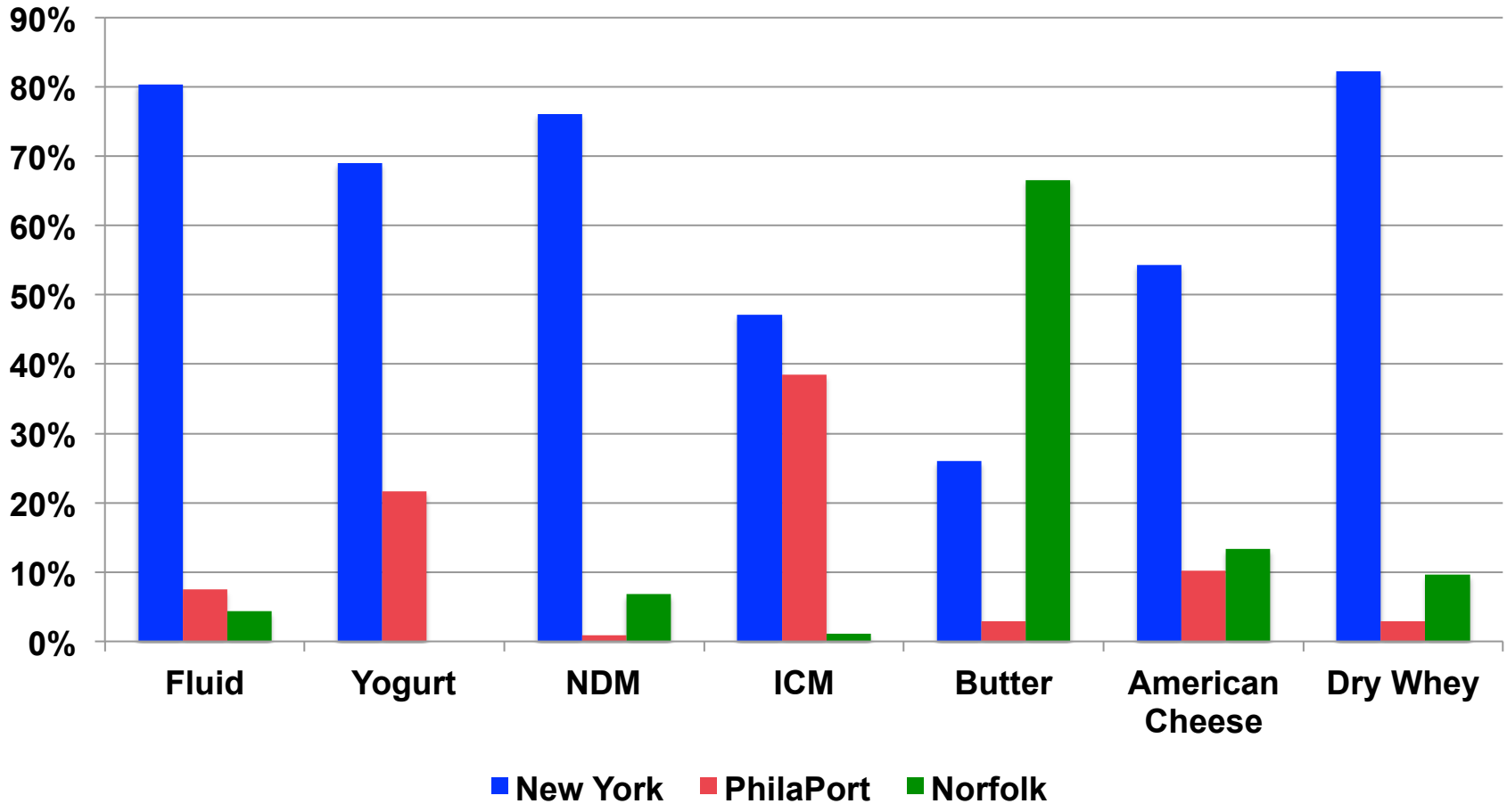
PhilaPort Analysis

- What is the potential to expand dairy exports through PhilaPort?
- What would be dairy industry impacts?

PhilaPort Analysis

- PhilaPort has the facilities, capacity and expertise to play a greater role in dairy exports from PA and the Northeast
- The recent export market share of PhilaPort has been small for most products

Dairy Product Export Share of Mid-Atlantic Ports, 2016

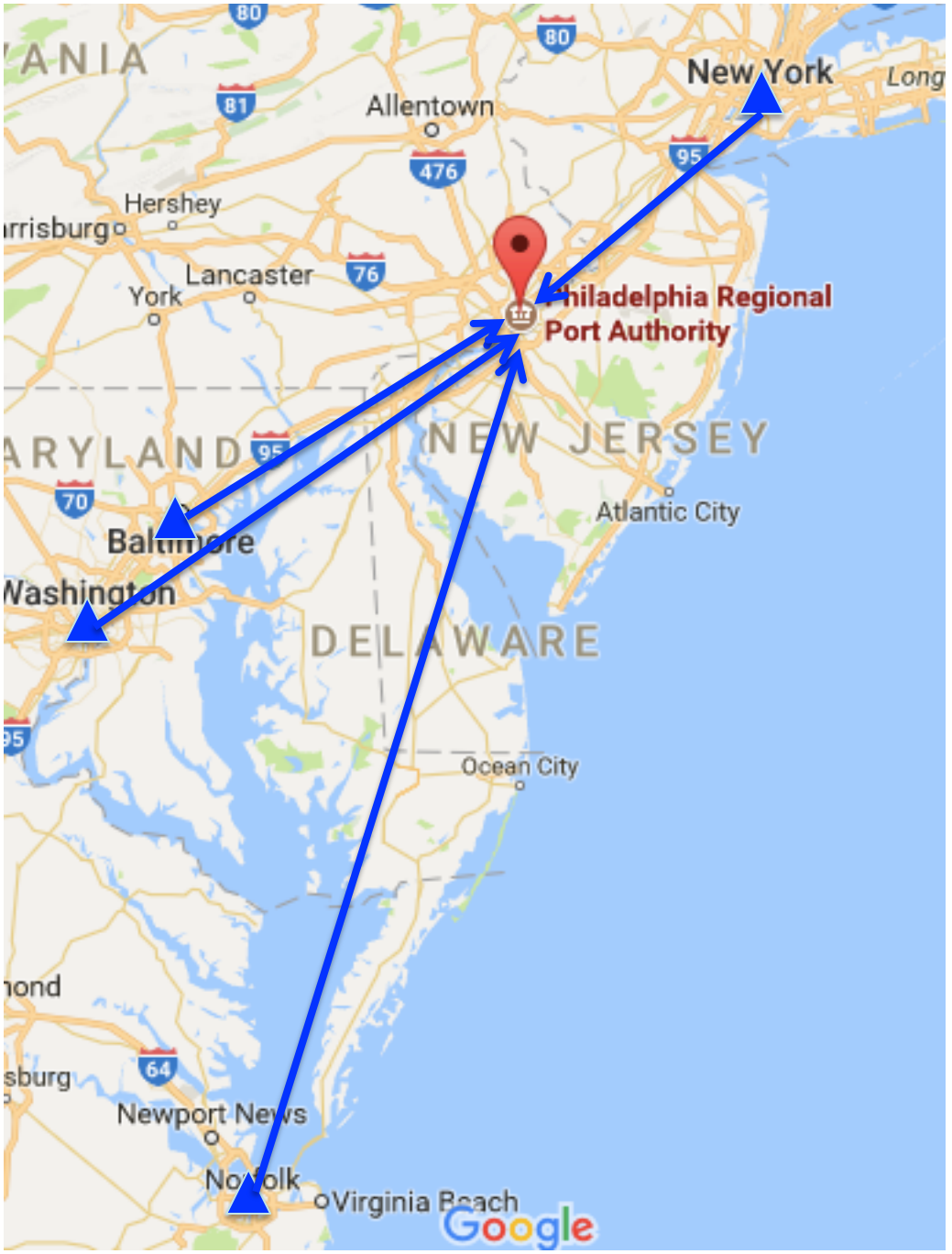


Note: Based on export volume.

Ports Modified in Analysis with Spatial Economic Model

Would use of PhilaPort for mid-Atlantic dairy exports:

- Require re-configuration of dairy processing?
- Reduce milk hauling costs?
- Reduce distribution costs?
- Increase milk values?



Results: PhilaPort Analysis

- Current configuration of plants would not need to be modified to increase exports through PhilaPort
- Modest positive impacts on PA milk value
  - $0.01/cwt
- Small reduction in overall PA milk assembly cost
- Small reduction in overall PA distribution costs

Economic Impact of Dairy

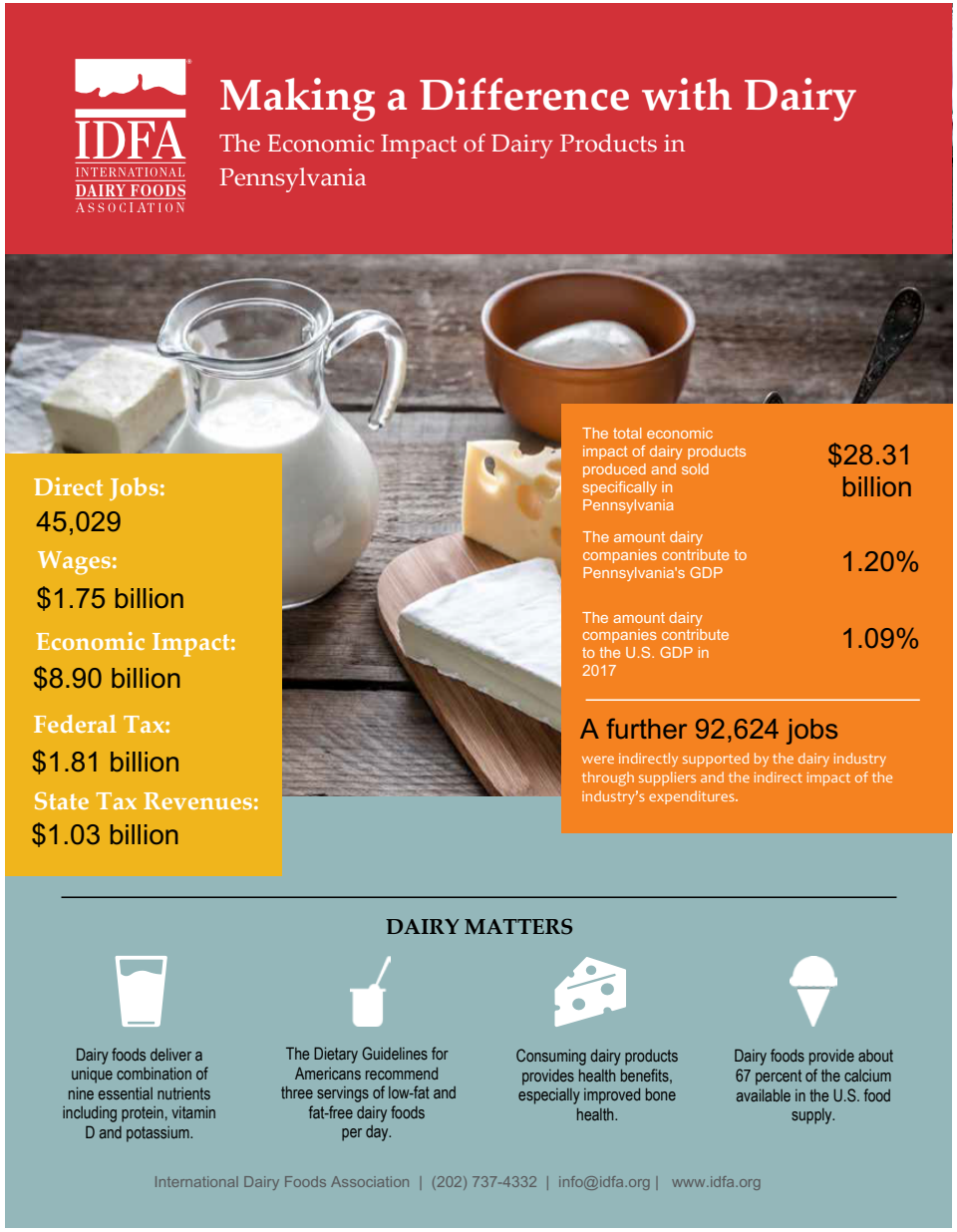
- Our study forthcoming
- IDFA sponsored a study with similar approach using 2014 data

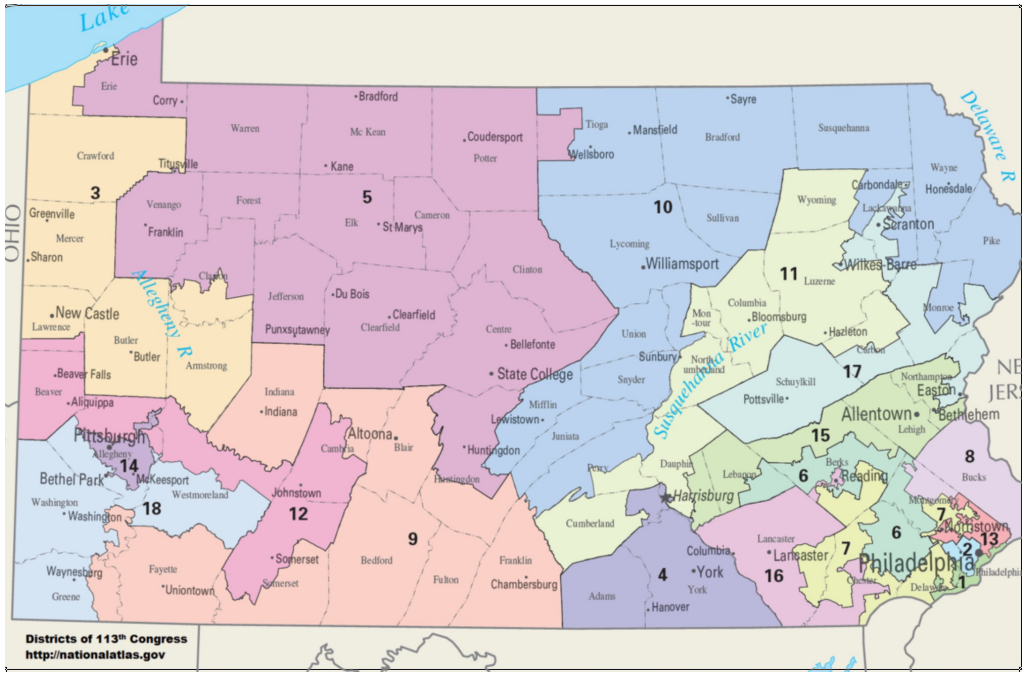
Results at:

http://idfa.guerrillaeconomics.net

IDFA Study Results

- Economic impact only within the commonwealth
- 2014 is a high-price years, so estimated impacts larger
- The direct impact of the dairy sector in PA resulted in 45,029 jobs in 2014, paying almost $2 billion in wages and having a direct contribution to the economy of almost $9 billion





District	Jobs	Wages	Economic Impact
PA Total	45,029	$1,751,289,400	$8,897,968,400
3	2,987	$136,024,100	$1,084,785,500
4	2,703	$111,641,000	$524,175,500
5	2,199	$72,026,000	$285,253,900
9	2,079	$72,137,600	$31,438,800
10	2,279	$90,030,600	$345,327,000
11	2,906	$121,675,300	$780,216,700
12	2,879	$116,571,400	$488,761,200
15	2,738	$114,201,000	$617,944,400
16	3,188	$145,054,500	$945,939,400
17	2,128	$82,370,600	$340,445,500
18	2,305	$77,287,500	$262,894,100

‘Indirect’ and ‘Induced’ Effects Also

Employment and other economic activity within the dairy sector has ripple effects throughout the economy, ranging from:

1) the impacts on suppliers to the dairy industry and the downstream processors and marketers to

2) the multiplier effects of employee and business spending on goods and services aside from anything directly related to dairy production.

PMMB Impacts: Study Questions

- What are the likely short-term and long-term impacts of pricing regulation under the PMMB, which would include assessment of:
  - Net benefits to producers
  - Prices paid by fluid milk consumers and fluid milk consumption
  - Impact on structural change (farm and processing, size, product mix)

PMMB Study

- PMMB has provided us with information we requested
- We are working to analyze the data
- Study results expected later this fall
  - Dr. Novakovic at Cornell leading this effort

Upcoming Additional Components

- Export market opportunities assessment
- Economic impact of dairy production and processing in PA—2016 data
- Stakeholder input

Questions?

Questions for you!

- Data you would like to see available?
- Programs and policies that you believe help support growth and competitiveness?
- Programs and policies that could be changed to support growth and competitiveness?
- Organizations that you believe help support growth and competitiveness?
- Organizations that could be changed to support growth and competitiveness?

Additional Info

- Email: cfn10@psu.edu

Presentation available at DMAP site:

- dairymarkets.org
  - "Pubs & Podcast link"

Study Status, Phase I

Study Component	Study Activities to Date	Key Findings to Date
Farm performance competitiveness	Data collected for NY, WI, MI and from AgChoice Farm Credit for PA. Chris Wolf at Michigan State is analyzing the data.	Evaluated selected responses to CDE 2017 Producer Survey. Comparative farm business performance expected shortly.
Processing performance and competitiveness	NASS data reviewed for 2000-2016 Northeast Order data on PA processing volumes obtained. Processor survey developed and sent out.	Publically-available NASS data are sufficiently incomplete that cross-state comparisons are difficult. Available data suggest PA provides a small share of US processing capacity for most products. PA processing plants smaller than US average for most products.
Data assessment	Reviewed available data sources on farm and processing.	Systematic data on farm and processing performance not generally available in PA.
Institutional assessment	Collecting information from key stakeholders*	None yet, awaiting further input.
Current program and policy assessment	Collecting information from key stakeholders*	None yet, awaiting further input.
Economic development program assessment	Contacted key economic development program staff.	Dairy production and processing has benefitted from economic development funds in some cases.
Economic impact of dairy	Data for analysis obtained and Steven Deller (UW-Madison) working on analysis	None yet, but expected shortly for multi-county regions in PA.

Study Status, Phase II

Study Component	Study Activities to Date	Key Findings to Date
Dairy Demand Outlook 5 to 10 years	Data collected and simulation model work nearly completed	None yet, but expected shortly.
Dairy Demand and Export Projections	Data collected and simulation model work nearly completed	None yet, but expected shortly.
Production and Processing Investments	Production analysis underway, will inform that component. Incentives for processing investment and benefits analyzed with spatial economic model.	Incentives exist for additional processing capacity in PA based on spatial economic modeling, and would reduce hauling costs, and increase milk values.
Role of PhilaPort in Dairy Exports from PA	Collected descriptive information on PhilaPort capacities for dairy export. Assessed impacts of larger dairy exports from PhilaPort rather than alternatives using spatial economic model.	PhilaPort has sufficient capacity to support dairy product exports, but has a small share of most products. Shifting 2016 export volumes to PhilaPort would have modest impacts on milk values, hauling costs and distribution costs.
Proposed alternative institutional arrangements	Collecting information from key stakeholders*	None yet, awaiting further input.
Impacts of PMMB price regulation	Data collected from PMMB and being analyzed by Andy Novakovic, Cornell University. Perspectives of industry stakeholder have been provided project team.	None yet.