The Net Benefits and Costs of Prestage Farms to the Mid Iowa Region

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Preface

The Net Benefits and Costs of Prestage Farms to the Mid Iowa Region

The subsequent analysis was prepared for Mid Iowa Growth Partnership by Goss & Associates Economic Solutions. Findings remain the sole property of Mid Iowa Growth Partnership and may not be used without prior approval of this organization. The authors' biographies are provided in Appendix E. Please address all correspondence to:

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Goss & Associates thanks Kelly Halsted and Dennis Plautz with Greater Fort Dodge Growth Alliance for their assistance in providing data for this study. However, any errors, omissions, or misstatements are solely the responsibility of Goss & Associates and the principal investigators.[1]

Goals of the study

The goals of this study are to build on a recently completed Iowa State University study[2] examining the economic impact of the Prestage Foods Plant. This investigation will fully identify the net benefits and costs of the Wright County location to the Mid Iowa region and state.[3]

Large impacts must be accompanied by planning by government agencies and services, non-profit organizations and educational institutions as well as for-profit firms in the region. This study will provide knowledge of the impacts through which planning can begin. Specific goals of the study are to:

- Analyze labor availability.
- Determine the most likely residence of the Prestage workers and the geographic source of the net new workers.
- Examine the impact on area farmers in terms of grain and livestock revenues, and the environment.
- Investigate the impacts of the new plant on regional sales, wages and salaries, jobs, and state and local tax collections.
- Explore the potential financial impacts from increased demand for public services.

[1]This study was completed independently of Creighton University. As such, Creighton University bears no responsibility for findings or statements by Ernie Goss, or Goss & Associates, Economic Solutions.

[2]Swenson, D., June, 2016, Expected Regional Economic Impact of a New Hog Slaughtering Facility in Mason County: A Re-estimate. http://tinyurl.com/z65drzx.

[3]The region includes the Iowa counties of: Calhoun, Franklin, Hamilton, Hardin, Humboldt, Kossuth, Palo Alto, Pocahontas, Webster and Wright.

Glossary

Term	Definition
Direct effects	The set of expenditures applied to the predictive model for impact analysis.
Direct jobs	Jobs residing in the livestock processing industry. Does not include spillover jobs (indirect + induced jobs).
Discounted	Unless stated otherwise, all financial data in this report are stated in 2017 dollars.
IMPLAN	Using classic input-output analysis in combination with regional specific Social Accounting Matrices and Multiplier Models, IMPLAN provides an accurate and adaptable model for its users. The IMPLAN database contains county, state, zip code, and federal economic statistics which are specialized by region and can be used to measure the effect on a regional or local economy of a given change or event in the economy's activity.
Input-output analysis	A type of applied economic analysis that tracks the interdependence among various producing and consuming sectors of an economy. More particularly, it measures the relationship between a given set of demands for final goods and services and the inputs required to satisfy those demands (U.S. Bureau of Economic Analysis).
Jobs supported	A job in IMPLAN = the annual average of monthly jobs in that industry. Thus, 1 job lasting 12 months = 2 jobs lasting 6 months or = 3 jobs lasting 4 months each. A job can be either full-time or part-time.
Labor income	Wages & salaries plus self-employment income.
Location quotient	An analytical statistic that measures a region's industrial specialization relative to a larger geographic unit (usually the nation). An LQ is computed as an industry's share of a regional total for some economic statistic (earnings, GDP by metropolitan area, employment, etc.) divided by the industry's share of the national total for the same statistic.
Personal income	Refers to all of the income collectively received by all individuals or households. Personal income includes compensation from a number of sources including salaries, wages and bonuses received from employment or self-employment; dividends, farm income and distribution received from investments; rental receipts from real estate investments and profit-sharing from businesses.
Proprietor income	Represents the current-production income of sole proprietorships, partnerships, and tax-exempt cooperatives. Excludes dividends, monetary interest received by nonfinancial business, and rental income received by persons not primarily engaged in the real estate business.
Region	The region includes the Iowa counties of: Calhoun, Franklin, Hamilton, Hardin, Humboldt, Kossuth, Palo Alto, Pocahontas, Webster and Wright.
Spillover economic activity	Jobs, output, or wages and salaries in industries linked to the direct impact industry. It is equal to indirect plus induced impacts.

Executive Summary

The Net Benefits and Costs of Prestage Farms to the Mid Iowa Region

I. Economic Impacts of Prestage Farms' Wright County Facility

Using Implan multipliers described in the Appendices of this study, the economic impacts of the Wright County facility for the region[4] are estimated for both the construction phase (approximately 18 to 21 months) and five years of operations. Those impacts are listed below.

A. Construction Phase (18 to 21 months):

1. $246 million in direct construction investment.
2. Supports 2,310 total jobs in the study area; 2,624 for all of Iowa.
3. Results in $335.2 million of increased sales activity in the regional economy; $406 million statewide.
4. Provides $118.3 million in wages & salaries in the study area; $152.4 million statewide.
5. Adds $12.7 million in self-employed and business proprietor income.
6. Contributes $20.6 million to state and local tax revenues for the 10-county region.

B. Operational Phase (5 years):

1. Direct plant employment is 922 workers.[5]
2. Supports, on average, a total of 3,781 jobs each year in the study area; 4,226 statewide jobs supported (direct+spillover).
3. Increases local sales activity, or total impact, by $6.8 billion over the 5-year period.
4. Boosts wages and salaries by $1.4 billion in the study area.
5. Generates $702.6 million in self-employed and business proprietor income.
6. Contributes $124.5 million to state and local tax revenues for the region.

II. Other Impacts

A. The major beneficiaries of the Prestage plant operations are:

1. Trucking firms with almost $62 million in sales for year 1 operations.
2. Wholesale trade firms with approximately $33.1 million in added sales.

B. The new Prestage facility will increase daily regional slaughter capacity by 6.3 percent.

C. It is estimated that the new plant will support 193 farms - 97 packer farms and 96 non-packer farms.[6]

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[4]The region includes the Iowa counties of: Calhoun, Franklin, Hamilton, Hardin, Humboldt, Kossuth, Palo Alto, Pocahontas, Webster and Wright. Impacts by county are listed in Table EX1.

[5]Estimated value. Final employee count will be between 900 and 1,000.

[6]Packer farms are farms owned by Prestage Farms.

Executive Summary

D. The Prestage plant is expected to increase the price of hogs by 3.5 percent.

1. The estimated average added revenue is expected to be $724 per farm for the 811 hog farms in the 10-county area.

2. Yearly gains range from $304 for the average Kossuth County farm to $2,536 for the average Wright County farm.

E. Previous research has concluded that transporting pigs between 34 miles and 100 miles results in a weight loss of one percent. As estimated, the average transportation savings due to transport weight loss reduction for the farms in the 10-county region amounts to $16,161 per year per farm.

F. New employment related to activity at the plant is expected to add:

1. 17 new police protection positions in the study area with an increase in wages and salaries of $1,028,252 per year.

2. Five additional fire protection workers, with payrolls growing by $309,608. The preponderance of registered fire stations in Iowa are designated as volunteer or mostly volunteer is 95.9 percent. This could mitigate a portion of the impact to local government coffers.

G. As a result of the new plant, the demand for new housing units in the region will likely increase by 3.4 percent (2,622 units).

1. Owner-occupied housing will increase by 1,907 units.

2. In addition, there will be an increase in rental demand of approximately 715 units.

3. The total value of new owner-occupied and renter-occupied housing units will be approximately $585.6 million.

H. Due to yearly operations of Prestage Farms in Wright County, the region is expected to:

1. Add approximately 1,700 students to the public schools in the 10 county region.

2. Require 106 public school teachers in the 10-county region.

3. Add $20.8 million in additional state and local K-12 spending.

I. IMPLAN model predicts total number of workers during operations , direct plus spillover, will be 3,834.7.

1. Foreign born at Prestage (this is the case for 922 direct workers); 277 foreign-born workers and 645 native-born workers.

2. Foreign born for region (Prestage and spillover); 486 foreign-born workers and 2,426 native-born workers.

3. Results: Total **763 foreign-born workers and total 3,072 native-born workers**.

The Prestage plant is expected to increase the price of hogs by 3.5 percent. The estimated average added revenue is expected to be $724 per farm for the 811 farms in the 10-county area.

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III. The Region Status Quo - Is Change Needed?

A. Since the beginning of the U.S. economic recovery in 2009 until 2015, the region:

1. Lost population relative to Iowa and the U.S. every year. If the region's population had expanded at the same rate as Iowa, it would have 4,870 more individuals residing in the 10-county area in 2015.
2. Lost employment relative to the rest of Iowa and the U.S. every year except 2013. The region would have 4,835 more individuals working in 2015 if its employment had expanded at the same rate as Iowa.[7]
3. Gained 2015 farm proprietor income relative to Iowa for most years during the period. The region's farm proprietor income would have been $127.8 million lower, or approximately $15,000 per farm if its farm proprietor income had expanded at the same rate as Iowa.
4. Increased non-farm proprietor income at a faster pace than Iowa's. The region's non-farm proprietor income would have been $250.4 million lower, or approximately $1,746 per capita lower, if its non-farm proprietor income had expanded at the same rate as Iowa.

The region has 15.0 percent of the state's livestock production activity, but less than 1.0 percent of the state's livestock processing activity, thus pointing to the significant gain from the addition of a pork processing plant.

B. For 2015, it is estimated that the 10-county region:

1. Exported almost $3.3 billion of farm products to the rest of Iowa, the U.S. and to international markets. This represents almost one-third of the region's personal income. In 2015, Palo Alto County was the biggest livestock exporter, as a share of its economy, among the 10 counties.
2. Had 15.0 percent of the state's livestock production activity, but less than 1.0 percent of the state's livestock processing activity, thus pointing to the significant gain from the addition of a pork processing plant.
3. Had a deficit of 672 livestock processing jobs relative to the rest of Iowa. This generates a loss in direct wages & salaries for the region of $34.1 million.

[7]The gain in population compared to the increase in employment is low due to workers and their families living outside of the region.

Executive Summary

C. Iowa leads the nation in pork production, accounting for 36 percent of all U.S. production.[8] In addition, at over $7.5 billion, Iowa leads the nation in cash receipts from marketing and sale of livestock slaughter.[9]

1. Iowa counties occupied 42 spots on the top 100 counties for pork production.
2. Within the 10-county study area, the following counties were among America's Top 100 Pig Counties, as ranked by the National Pork Board:

   Hardin (#9)

   Hamilton (#12)

   Kossuth (#14)

   Franklin (#17)

   Wright (#20)

   Palo Alto (#21)

   Calhoun (#33)

   Pocahontas (#67)

   Webster (#92)

Photo: Goss & Associates

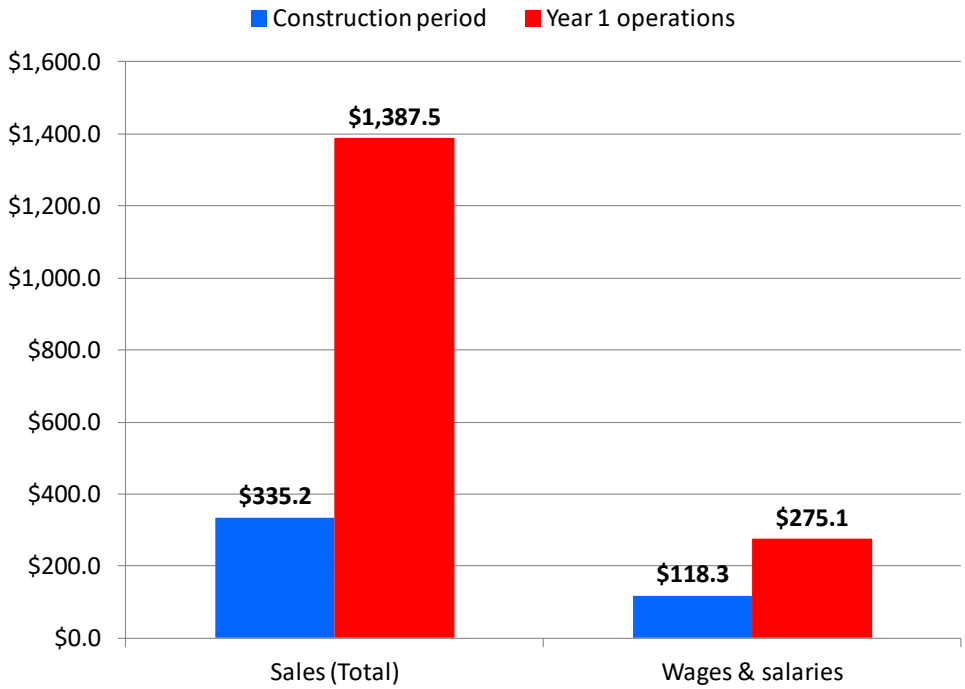
[8]Source: Livestock Slaughter Annual Summary, USDA, NASS, April 2015.

[9]Source: Meat Animal Production, Disposition and Income, USDA, NASS, April 2015.

Executive Summary

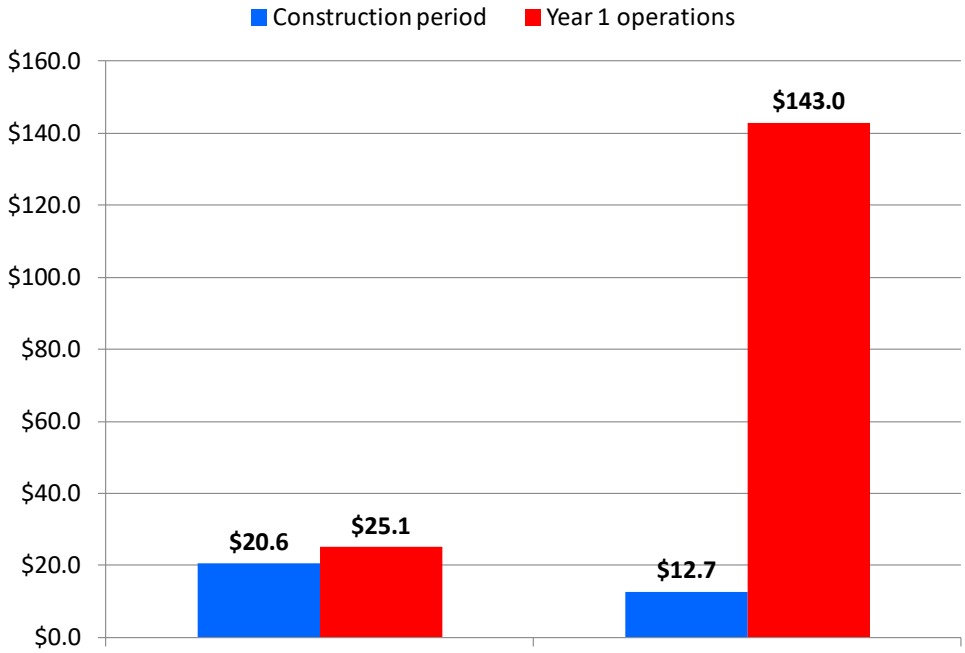
Figures EX.1 - EX.4 summarize economic impacts.

Figure EX.1: Sales and wages & salaries impacts for year 1 of operations and construction period (in millions of 2017 $s)



Source: Goss & Associates from IMPLAN system

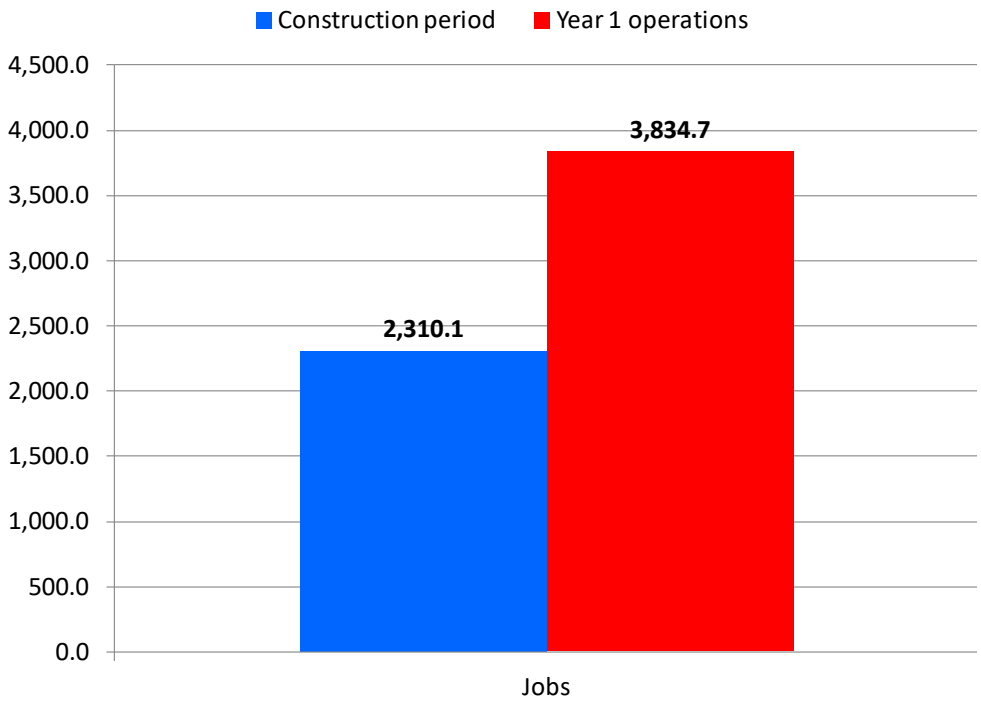
Figure EX.2: State & local taxes and self-employment income impacts for year 1 of operations and construction period (in millions of 2017 $s)



Source: Goss & Associates from IMPLAN system

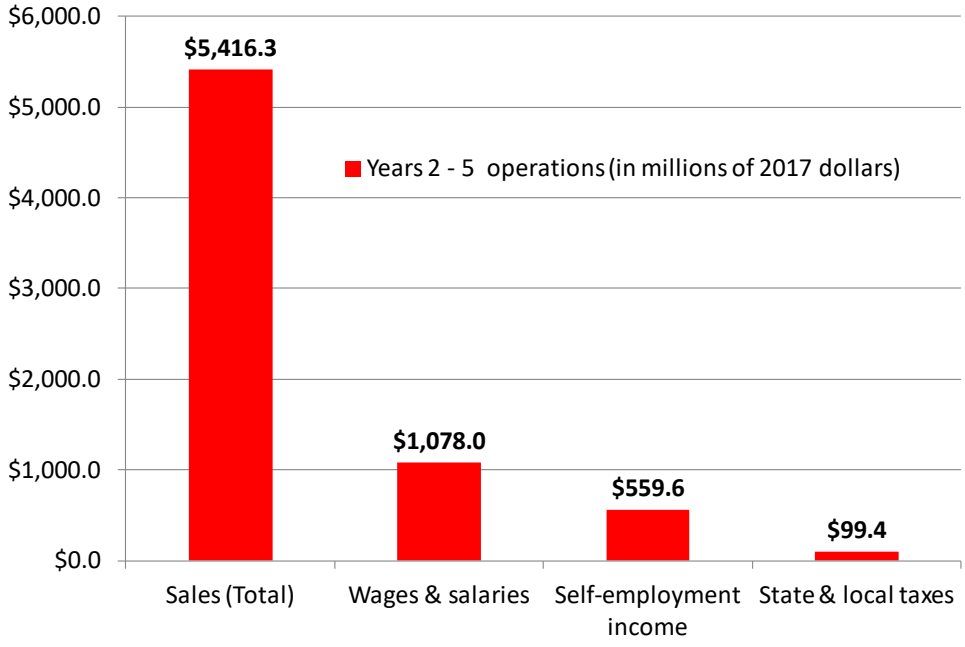
Executive Summary

Figure EX.3 : Jobs impacts for year 1 of operations and construction period[10]



Source: Goss & Associates from IMPLAN system

Figure EX.4: Sales, wages & salaries, self-employment income, and state & local taxes for years 2 - 5 of operations (in millions of 2017 $s)



Source: Goss & Associates from IMPLAN system

[10]Decimal values are possible due to the inclusion of part-time workers.

Executive Summary

Table EX.1 lists a summary of economic impacts for construction and one year of operations, and Table EX.2 details impacts by county in the region.

Table EX.1: Summary of impacts, construction + 1 year of operations (all $s in millions, 2017)	
Sales, output/total impact	$1,722.7
Wages and salaries	$393.4
Self-employment income	$155.7
Average annual employment impacts	3,072
Employment impact (year 1 operations)	3,834.7
Fiscal impacts	
State & local tax collections	$45.7
Costs:	
School system costs	$20.8
Police & fire protection	$1.3
Highways & roads	$7.8
Other state and local government spending	$2.8
Total Costs	$32.7
Net benefit to taxpayer construction + one year of operations	$13.0
Source: Goss & Associates based on Implan System and U.S. Census data	

Table EX.2: Summary of impacts by county, construction + 1 year of operations (all $s in millions, 2017)					
County	Total	Wages & salaries	Self-employment income	Jobs	Population
Calhoun	$16.2	$3.7	$1.5	36.1	56
Franklin	$46.2	$10.5	$4.2	102.8	160
Hamilton	$390.7	$89.2	$35.3	869.7	1353
Hardin	$52.5	$12.0	$4.7	116.9	182
Humboldt	$179.8	$41.1	$16.3	400.3	623
Kossuth	$55.6	$12.7	$5.0	123.9	193
Palo Alto	$13.4	$3.1	$1.2	29.9	47
Pocahontas	$17.7	$4.1	$1.6	39.5	61
Webster	$607.3	$138.7	$54.9	1,351.7	2103
Wright	$343.2	$78.4	$31.0	763.8	1188
Total region	$1,722.7	$393.4	$155.7	3,834.7	5,966
Source: Goss & Associates based on Implan System and U.S. Census data					

Section 1 - The Region: Status Quo - Is Change Needed??

Introduction

Prestage Farms, with facilities in 30 Iowa counties, is building a new pork processing plant in Wright County. The company expects to employ between 900 and 1,000 workers at the $240 million plant located near Eagle Grove, a community with a population of 3,500. Prestage Farms annual earnings per employee are expected to be $47,000, which is 16.6 percent above the average for Wright County.[11]

Ron Prestage, president of Prestage Farms, says, "We are investing in Iowa, and specifically Wright County, because we believe this plant is good for Iowa, good for agriculture, and a good step forward for our family-owned and run business."

As pointed out by Prestage, Iowa is the nation's leading pork producing state and produces significantly more pigs than it can currently process. This plant will assist in keeping the value from processing pigs in this state and region.

The plant, not including spillover impacts, will boost payroll in Wright County by more than $44 million. Additionally, the plant will stimulate indirect or spillover impacts in other county industries, going well beyond Prestage Farms' spending.

As pointed out by Prestage, Iowa is the nation's leading pork producing state and produces significantly more pigs than it can currently process.

The company plans to purchase 40 percent of the hogs for the plant from independent farmers, creating a new market option for those farmers.

Construction is expected to begin in early 2017, pending finalization of county and state approvals, with completion and first shift operations beginning in 2018. Initially operating one shift, Prestage will invest $240 million in capital and equipment in the Wright County location.

The company plans to buy 40 percent of the hogs for the plant from independent farmers, creating a new market option for those farmers.

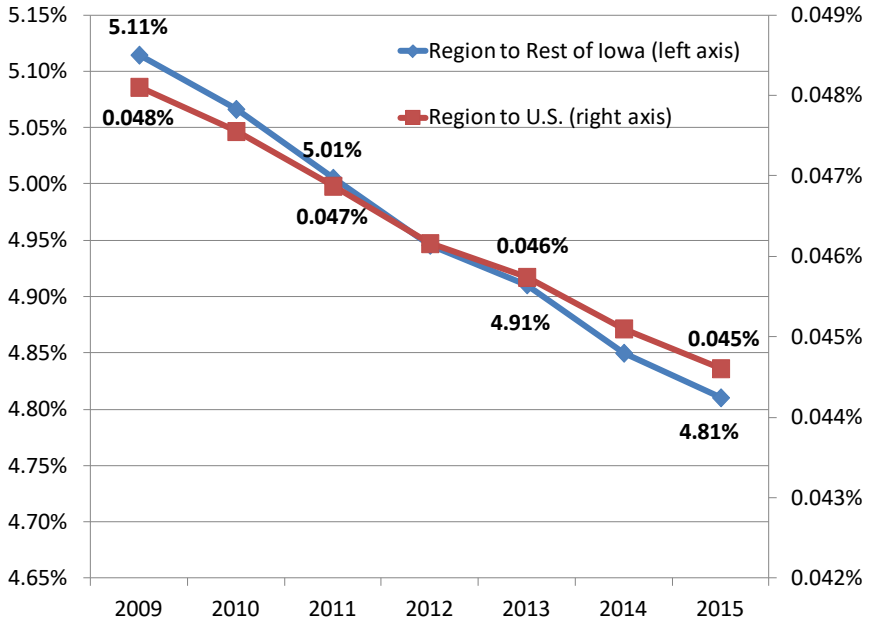
Looking Back—The Region's Economic Performance Needs

Population. Figure 1.1 shows the ratio of the region's population to that of the rest of Iowa and to the U.S. Data indicate that the region's population lost ground relative to the rest of Iowa and to the U.S. every year. In fact, from 2009 to 2015, Iowa's population expanded by 3.3 percent, and the nation's population grew by 4.8 percent while the region's population declined by 2.8 percent.

Between 2009 and 2015, Calhoun County was the only county in the 10-county region to experience positive population growth with a gain of 1.4 percent. If the region's population had expanded at the same rate as Iowa, it would have 4,870 more individuals residing in the region in 2015.

[11] According to U.S. Bureau of Economic Analysis, total wages and salaries in Wright County for 2015 were $241,265,000 for 5,985 workers, or $40,312 average per worker.

Figure 1.1: Ratio of region's population to rest of Iowa and to U.S., 2009-15

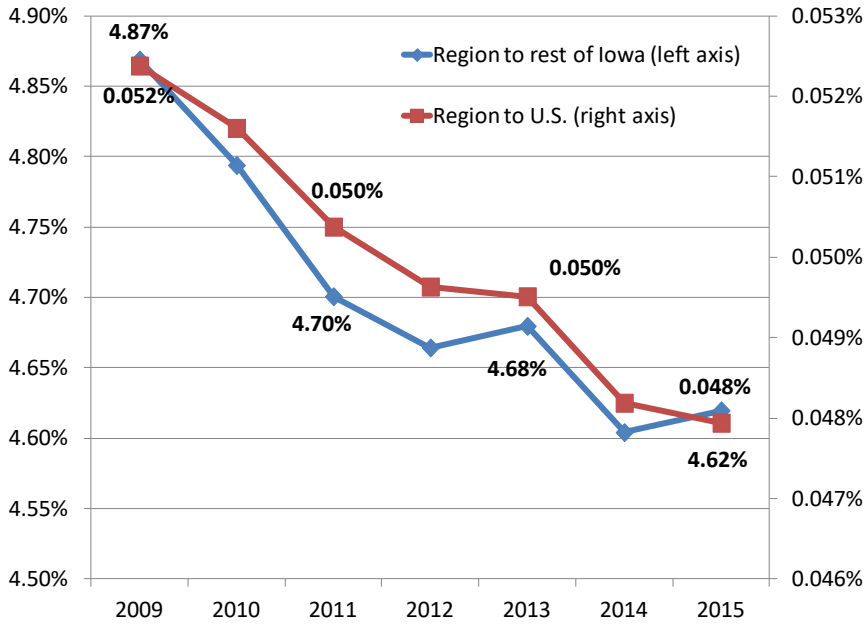


Source: U.S. Census Data

Employment. Figure 1.2 shows the ratio of the region's employment to that of the rest of Iowa and to the U.S. Data indicate that, except for 2012-13 and 2014-15, the region lost employment relative to the rest of Iowa. The region lost employment relative to the U.S. every year during the period. In fact, from 2009 to 2015, Iowa's employment expanded by 5.3 percent and the nation's employment grew by 4.8 percent, while the region's employment declined by 0.09 percent.

Between 2009 and 2015, Franklin, Humboldt, Kossuth, Palo Alto, Pocahontas and Webster counties gained jobs while Calhoun, Hamilton, Hardin, and Wright Counties lost employment. If the region's employment had expanded at the same rate as Iowa, it would have 4,835 more individuals working in the region in 2015.

Figure 1.2: Ratio of region's employment to rest of Iowa and to U.S., 2009-15

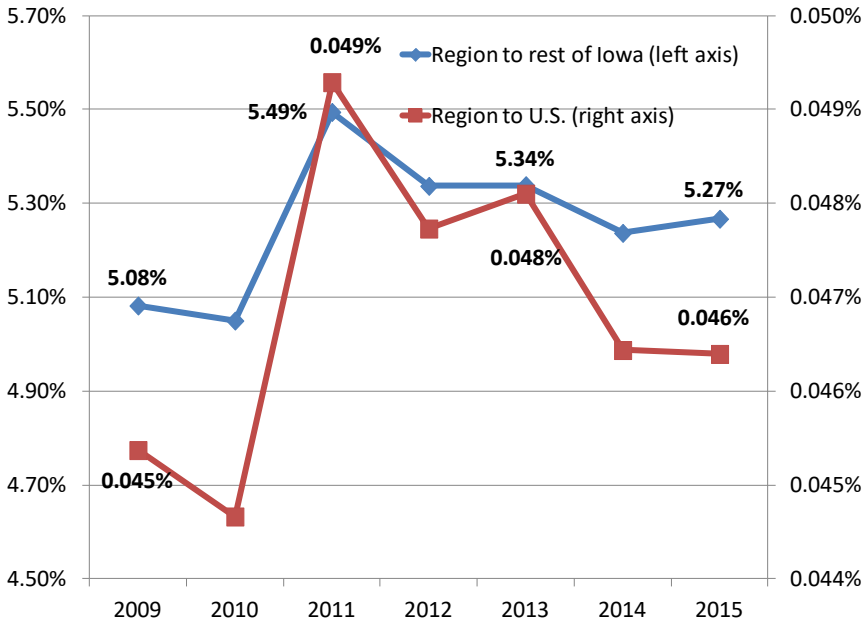


Source: U.S. Bureau of Economic Analysis

Personal Income. Figure 1.3 shows the ratio of the region's personal income to that of the rest of Iowa and to the U.S.[12] Data indicate that the region's personal income expanded at a higher rate than that for Iowa and for the U.S. for the full period 2009-15. From 2009 to 2015, Iowa's personal income expanded by 26.3 percent and the nation's personal income grew by 28.0 percent, while the region's personal income rose by a stronger 30.9 percent.

Between 2009 and 2015, all counties in the region experienced positive personal income growth with Palo Alto experiencing the strongest gain at 60.7 percent and Webster sustaining the slowest growth at 22.4 percent. If the region's personal income had expanded at the same rate as Iowa, its 2015 personal income would have been $252 million, or $1,756 per capita, lower.

Figure 1.3: Ratio of region's personal income to rest of Iowa and to U.S., 2009-15



Source: U.S. Bureau of Economic Analysis

What accounts for the region's relative loss of jobs and population, but gain in personal income? Figure 1.4 shows the ratio of the region's farm and non-farm proprietor income[13] to that of the rest of Iowa. The region gained both farm and non-farm proprietor income relative to Iowa for most years during the period. In fact, from 2009 to 2015, Iowa's farm proprietor income expanded by 83.1 percent while the region's farm proprietor income rose by a stronger 112.3 percent. If the region's farm proprietor income had expanded at the same rate as Iowa, its 2015 farm proprietor income would have been $127.8 million lower, or approximately $15,000 per farm.

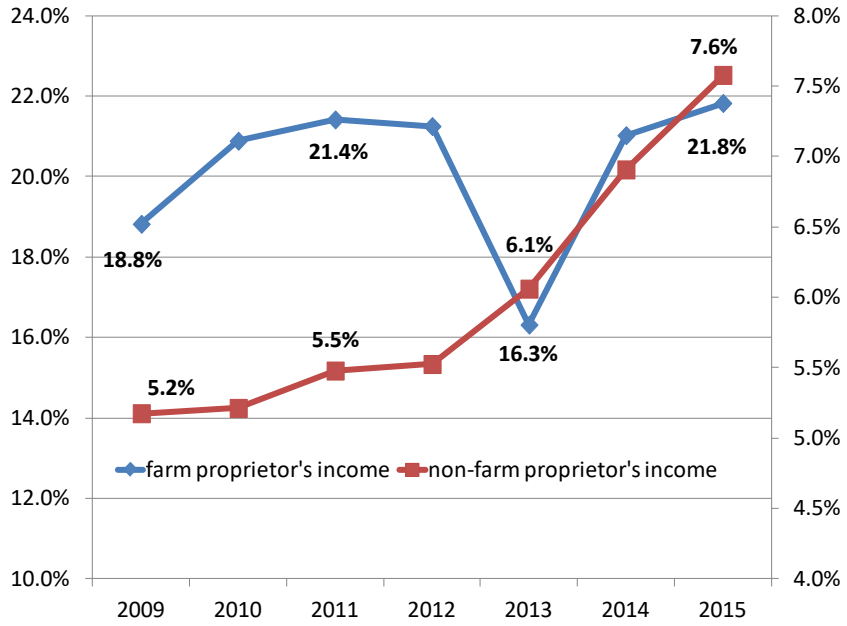
If the region's non-farm proprietor income had expanded at the same rate as Iowa, its 2015 farm proprietor income would have been $127.8 million lower, or approximately $15,000 per farm.

[12]Personal income refers to all of the income collectively received by all of the individuals or households. Personal income includes compensation from a number of sources including salaries, wages and bonuses received from employment or self-employment; dividends, farm income and distribution received from investments; rental receipts from real estate investments and profit-sharing from businesses.

[13]Proprietor income is current-production income of sole proprietorships, partnerships, and tax-exempt cooperatives. Excludes dividends, monetary interest received by nonfinancial business, and rental income received by persons not primarily engaged in the real estate business.

Figure 1.4 also shows that non-farm proprietor income for the region expanded at a faster pace than Iowa's. From 2009 to 2015, Iowa's non-farm proprietor income expanded by 38.1 percent while the region's non-farm proprietor income rose by a stronger 103.3 percent. If the region's non-farm proprietor income had expanded at the same rate as Iowa, its 2015 farm non-proprietor income would have been $250.4 million lower, or approximately $1,746 per capita.

Figure 1.4: Ratio of region's farm and non-farm proprietor income to rest of Iowa, 2009-15



Source: U.S. Bureau of Economic Analysis

If the region's non-farm proprietor income had expanded at the same rate as Iowa, its 2015 farm non-proprietor income would have been $250.4 million lower, or approximately $1,746 per capita.

Region's Concentration of Livestock Producers Almost 25 Times That of U.S

Table 1.1 contains the location quotients from the 10 counties in the region, Iowa and the U.S. for 2009 and 2015. A location quotient greater than 1.0 indicates that the area has more than its expected share of national production in a particular industry - livestock agriculture in this case. A location quotient less than 1.0 indicates that the area has less than its expected share of livestock production.[14] A location quotient greater than 1.0 indicates that the county or region is exporting livestock agriculture to other parts of Iowa, the U.S., and to international buyers.

Table 1.1: Location quotients for livestock agriculture, 2009, 2015

	LQ 2009	LQ 2015
Iowa	7.5	8.3
Calhoun	27.0	29.9
Franklin	38.1	34.2
Hamilton	29.8	33.5
Hardin	30.8	29.4
Humboldt	12.3	14.3
Kossuth	28.0	28.5
Palo Alto	44.4	37.5
Pocahontas	24.8	34.4
Webster	4.3	3.5
Wright	38.2	34.4
Region	24.2	24.8
U.S.	1.00	1.00

Source: Goss & Associates based on U.S. Bureau of Economic Analysis data

In 2015, Palo Alto County was the biggest livestock exporter among the 10-counties as a share of its economy.

A location quotient greater than 1.0 indicates that the area is exporting livestock agriculture.

[14]According to the U.S. Bureau of Economic Analysis, A location quotient (LQ) is an analytical statistic that measures a region's industrial specialization relative to a larger geographic unit (usually the nation). An LQ is computed as an industry's share of a regional total for some economic statistic (earnings, GDP by metropolitan area, employment, etc.) divided by the industry's share of the national total for the same statistic. For example, an LQ of 1.0 in agriculture means that the region and the nation are equally specialized in agriculture; while an LQ of 1.8 means that the region has a higher concentration in agriculture than the nation. LQ livestock agriculture= (% of region's income in agriculture divided by % of U.S. income in agriculture).

In 2014, U.S. County Business Patterns showed that there were three livestock processing plants in the region; one each in Calhoun, Hardin and Palo Alto counties. As presented in Table 1.2, these three plants employed a total of 12 workers in 2014.

Table 1.2: Livestock processing jobs and companies, region, Iowa and U.S., 2014 (NAICS = 311611)

	Number of processing		Location quotient	Additional jobs expected if same concentration as:	
	Companies	Employees	Livestock processing	U.S	Iowa
Region	3	12	0.17	58	672
Iowa	80	14,788	9.79		
U.S.	1,506	145,515	1.00		

Source: Goss & Associates based on U.S. Census County Business Patterns, 2014

Data in Table 1.2 indicate that the region has a deficit of 672 livestock processing jobs relative to the state of Iowa. That is, if the region had the same percentage of livestock processing jobs as a percent of total employment as the state, it would have an additional 672 jobs in this industry alone. This does not include spillover jobs. Assuming the average hours and pay for these jobs, this results in a loss of $34.1 million not including impacts to firms and industries in the region linked to livestock processing.[15]

Table 1.3 lists the region's share of livestock production personal income in the state of Iowa and the region's percentage of livestock processing jobs. The data show that the region has 15.0 percent of livestock production, but only .08 percent of livestock processing activity. These data point to the potential gain for the region by expanding the region's livestock manufacturing or processing activity.

Table 1.3: Region's share of livestock production and processing activity, 2015

Region's share of livestock production personal income	15.0%
Region's share of livestock processing jobs	0.8%

Source: Goss & Associates based on U.S. Census and U.S. Bureau of Economic Analysis data.

Within the 10-county study area, the following counties were among America's Top 100 Pig Counties, as ranked by the National Pork Board: Hardin (#9); Hamilton (#12); Kossuth (#14); Franklin (#17); Wright (#20); Palo Alto (#21); Calhoun (#33); Pocahontas (#67) and Webster (#92). In total, Iowa counties occupied 42 spots on the top 100 list.

Data in Table 1.2 indicate that the region has a deficit of 672 livestock processing jobs relative to the state of Iowa.

[15]Iowa's average hourly pay and hours worked for manufacturing jobs in 2015 were $23.72 and 41.2 hours, respectively (Source: U.S. Bureau of Labor Statistics). Data not available for livestock processing.

Table 1.4 shows agriculture and pork exports for the region, Iowa and the U.S. for 2009 and 2015 along with the percentage growth from 2009 and 2015. As presented, agriculture and pork exports have been an important economic driver for the region and the state.

Table 1.4: Export of agriculture products, Iowa, U.S. and region, 2009 and 2015 (in millions of $s)

	Total agriculture exports			Total pork exports		
	2009	2015	Growth 2009-15	2009	2015	Growth 2009-15
Iowa	$13,559.3	$22,547.0	66.3%	$1,298.4	$1,987.8	53.1%
U.S.	$98,453.9	$133,052.5	35.1%	$4,284.2	$5,565.6	29.9%
Region (estimated)	$2,001.5	$3,274.8	63.6%	$204.3	$298.4	46.1%

Source: Goss & Associates

Summary

This section has demonstrated that the region has lagged Iowa and the nation in terms of employment and population growth since the beginning of the economic recovery in 2009. However, the region has clearly outperformed the state and nation in terms of livestock production. Despite the significant livestock production in the region, the region lags the state and the nation in terms of livestock processing. It was demonstrated that there is a regional gap in livestock processing, and the region would gain significantly by attracting additional livestock processing facilities.

Photo: Goss & Associates

Section 2: Lessons From Other Counties

Introduction

Past economic research indicates that the Prestage Farms' livestock processing facility will have a significant impact on area employment, income, and school districts in Wright and adjacent counties.[16]

Data from counties with livestock processing facilities of similar size were researched, collected, analyzed, and compared to counties of similar size without such a facility in the region.

Accordingly, eight counties were vetted and ultimately selected for comparison on the basis of population, urbanization level, industry distribution, region, and proximity to Wright County.

Table 2.1 lists the counties with livestock processing facilities.

Table 2.1: Animal Processing Facilities Studied

Facility Name	County	Facility Employment	Analyzed Dates of Operation
Tyson: "Louisa County Plant - Pork"	Louisa, IA	1,750	Before 1990 - After 2010
Tyson: "Finney County Plant - Beef"	Finney, KS	3,750	Before 1990 - After 2010
"Premium Protein Products"	Adams, NE	750	1995 - 2005
"Tyson Fresh Meats: Dakota City"	Dakota, NE	3,750	Before 1990 - After 2010
"Tyson Fresh Meats: Lexington"	Dawson, NE	3,750	1995 – After 2010

Source: The analysis utilized data provided by the U.S. Census Bureau.
Note: Platte County NE, Gage County NE, and Webster County IA were included as control counties.

Accordingly, eight counties were vetted and ultimately selected for comparison on the basis of population, urbanization level, industry distribution, region, and proximity to Wright County.

[16]Swenson, D., June, 2016, Expected Regional Economic Impact of a New Hog Slaughtering Facility in Mason County: A Re-estimate. http://tinyurl.com/z65drzx.

Population. Tables 2.2 through 2.5 compare growth between eight livestock processing and non-livestock processing counties in Iowa and Nebraska.

Table 2.2 lists population and population growth for the eight counties during the time period. As shown, population in livestock processing counties grew by 11.9 percent, a substantially higher rate than that of non-livestock processing counties, which suffered an overall loss of -1.3 percent. All but one non-livestock processing county, Platte County, Nebraska, lost population while all but one livestock processing county gained population.

Table 2.2: Population and population growth for livestock and non-livestock processing counties in Nebraska and Iowa, 1990 - 2015

	Population			Growth		
County	1990	2000	2015	1990-2000	2000-2015	1990-2015
Adams NE	29,639	31,154	31,587	5.1%	1.4%	6.6%
Dakota NE	16,829	20,296	20,781	20.6%	2.4%	23.5%
Dawson NE	20,032	24,410	23,886	21.9%	-2.1%	19.2%
Finney KS	33,200	40,508	37,118	22.0%	-8.4%	11.8%
Louisa IA	11,620	12,174	11,185	4.8%	-8.1%	-3.7%
All livestock processing	111,320	128,542	124,557	15.5%	-3.1%	11.9%
Gage NE	22,813	22,955	21,900	0.6%	-4.6%	-4.0%
Platte NE	29,864	31,500	32,847	5.5%	4.3%	10.0%
Webster IA	40,345	40,234	37,071	-0.3%	-7.9%	-8.1%
All non-livestock processing	93,022	94,689	91,818	1.8%	-3.0%	-1.3%

Source: Goss & Associates

Employment. Table 2.3 shows employment growth from 1990 to 2015 for livestock processing and non-livestock processing counties. As shown, employment for livestock processing counties grew at a rate of 15.6 percent, exceeding the 14.0 percent growth of non-livestock processing counties. Among non-livestock processing counties, Platte County, Nebraska's employment grew at the highest rate, 25.1 percent, while the highest gain among livestock processing counties was experienced by Dawson County, Nebraska at 35.4 percent.

Photo: Goss & Associates

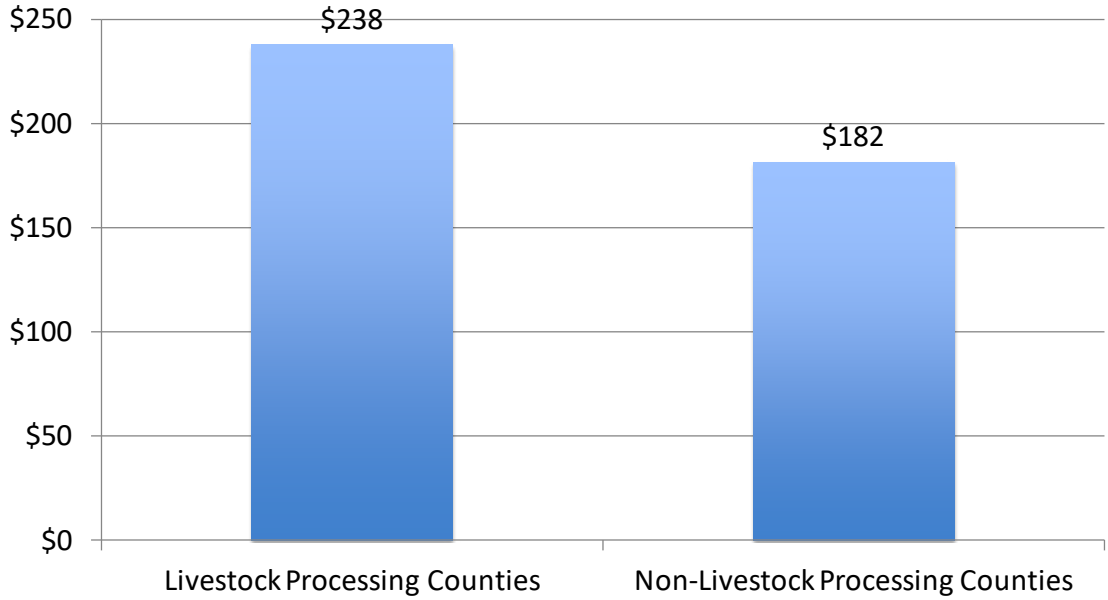
Table 2.3: Employment and employment growth for livestock and non-livestock processing counties in Nebraska and Iowa, 1990 - 2015						
	Employment			Growth		
County	1990	2000	2015	1990-2000	2000-2015	1990-2015
Adams NE	18,817	20,578	21,062	9.4%	2.4%	11.9%
Dakota NE	13,694	14,084	14,941	2.8%	6.1%	9.1%
Dawson NE	11,426	15,246	15,474	33.4%	1.5%	35.4%
Finney KS	20,940	25,376	23,985	21.2%	-5.5%	14.5%
Louisa IA	5,283	5,453	5,627	3.2%	3.2%	6.5%
All livestock processing	70,160	80,737	81,089	15.1%	0.4%	15.6%
Gage NE	12,635	14,623	13,596	15.7%	-7.0%	7.6%
Platte NE	19,737	22,832	24,693	15.7%	8.2%	25.1%
Webster IA	22,708	25,289	24,477	11.4%	-3.2%	7.8%
All non-livestock processing	55,080	62,744	62766	13.9%	0.0%	14.0%
Source: Goss & Associates						

Welfare. As shown in Table 2.4, per capita welfare benefits for livestock processing counties from 1990 to 2015 grew at a rate of 405.7 percent, substantially more than the overall 261.2 percent growth of welfare spending for non-livestock processing counties. Among non-livestock processing counties, welfare spending in Platte County, Nebraska grew at the highest rate, 406.3 percent, while the highest growth in welfare spending among livestock processing counties was experienced in Finney County, Kansas at 527.5 percent. While these expenditures are significant, it must be acknowledged that most of these costs are paid by the state and federal government.

Table 2.4: Welfare per capita and per capita welfare growth for livestock and non-livestock processing counties in Nebraska and Iowa, 1990 - 2015						
	Welfare			Growth		
County	1990	2000	2015	1990-2000	2000-2015	1990-2015
Adams NE	$157	$249	644	58.6%	158.6%	310.2%
Dakota NE	$174	$314	852	80.5%	171.3%	389.7%
Dawson NE	$141	$276	794	95.7%	187.7%	463.1%
Finney KS	$149	$269	935	80.5%	247.6%	527.5%
Louisa IA	$167	$264	613	58.1%	132.2%	267.1%
All livestock processing	$157	$269	$794	71.3%	195.2%	405.7%
Gage NE	$165	$237	596	43.6%	151.5%	261.2%
Platte NE	$95	$211	481	122.1%	128.0%	406.3%
Webster IA	$229	$309	810	34.9%	162.1%	253.7%
All non-livestock processing	$165	$237	$596	43.6%	151.5%	261.2%
Source: Goss & Associates						

Figure 2.1 shows the comparison of average annual federal lunch funding per student between livestock and non-livestock processing counties. As displayed, federal spending for lunch programs was 30.8 percent higher for livestock processing counties than for counties without livestock processing facilities.

Figure 2.1: Average annual federal lunch funding per student



Source: Goss & Associates

Summary

This section has tracked the economic growth of counties in which livestock processing companies have located facilities. Economic growth in otherwise equivalent counties without livestock facilities was compared to that of the livestock processing counties. Data show that, in general, livestock processing counties expanded jobs and population at rates exceeding that of counties without such facilities. On the other hand, livestock processing counties tended to incur higher costs of welfare benefits and federal lunch spending than non-livestock processing counties.

Photo: Goss & Associates

Section 3: The Economic Impact of the Prestage Farms' Wright County Facility

Overview

Iowa leads the nation in pork production, accounting for 36 percent of all U.S. production.[17] In addition, at more than $7.5 billion, Iowa leads the nation in cash receipts from marketing and sale of farm slaughter.[18]

Goss & Associates was asked by the Mid Iowa Growth Partnership to estimate the economic impact of construction and annual operations of the proposed plant in Wright County. The construction phase is assumed to be 18 to 21 months; the operational phase was investigated over a 5-year period.

The economic impacts identified in this study are short-run in nature and represent annual, recurring events. Long-run, but intangible factors, such as workforce development and knowledge enhancement, are acknowledged, but no attempt is made to assign dollar values to them.

The remainder of this section summarizes the economic and fiscal impacts of the project over the 18- to 21-month construction period and a five-year operation phase.

It should be recognized that the fiscal impacts identified in the section do not include the potential cost of state and local tax incentives.

More highly detailed industry impacts can be found in Appendix D.

Summary of Impacts: Construction Phase (18 to 21 months)

Direct Impacts[19]: Prestage Farms' initial investment in the new structure and equipment will result in direct economic effects on the local economy through additional new spending for goods and services as well as an increase in wages paid to workers employed in the area.

The construction phase of the project involves $246.0 million in direct investment in Wright County. The company estimates the following expenditures related to the construction of the facility: $82.0 million for the structure; $120.0 million for equipment and $44.0 million for architectural and engineering services. For the purposes of this analysis, it is assumed construction will occur during an 18 to 21-month period.[20] Table 3.1 provides a summary of the project's investment in Wright County.

Table 3.1: Direct impact, construction costs (18 to 21 months, 2017 dollars)

	Amount
Building construction	$82,000,000
Equipment (including refrigerated storage)	$120,000,000
Architectural and engineering	$44,000,000
Total direct impacts	$246,000,000

Source: Goss & Associates

[17]Source: Livestock Slaughter Annual Summary, USDA, NASS, April 2015.

[18]Source: Meat Animal Production, Disposition and Income, USDA, NASS, April 2015.

[19]Direct impacts do not include spillover impacts (indirect plus induced). These direct impacts represent simply the first round of spending by vendors and contractors in the area.

[20]The assumptions and methodology used to produce these estimates are contained in the accompanying appendices. Dollar amounts are inflation-adjusted and presented in 2017 dollars.

Total Impacts. In addition to providing direct impacts, the construction phase will result in spillover impacts. These impacts drive additional business-to-business and household spending that is not directly tied to expenditures for the project.

As shown in Table 3.2, the 10-county study area will receive an increase of approximately $335.2 million in additional sales activity as a result of the plant's construction; the state of Iowa will see an increase of $406.6 million in additional sales. Construction activity will support approximately 2,310.1 workers in the study area and 2,623.9 workers at the state level.

Table 3.2: Total impacts (direct+indirect+induced), construction phase (18 to 21 months, 2017 dollars)

Type of impact	10-County Study Area	State of Iowa
Sales (output) or total	$335,172,453	$406,580,434
Wage and salary income	$118,307,146	$152,406,142
Self-employed and business proprietor income	$12,705,824	$16,805,730
State and local taxes and fees	$20,561,969	$22,872,060
Employment - average per year	2,310.1	2,623.9

Source: Goss & Associates from IMPLAN system

Table 3.3 provides a summary of impact of the construction phase on state and local tax revenues. The project's construction has the potential to add between $20.6 million and $22.9 million to state and local tax revenue.[21] The fiscal impact occurs over an 18-month to 21-month time span.

Table 3.3: Tax revenue impact, construction phase (18 to 21 months, 2017 dollars)

Measure	10-County Study Area	State of Iowa
State tax revenue impact - individual income	$2,514,256	$3,147,549
State tax revenue impact - sales	$5,484,357	$6,765,509
State tax revenue impact - corporate income	$323,271	$467,238
Local tax revenue impact - sales	$1,495,734	$1,845,139
Local tax revenue impact - property	$8,544,916	$8,544,916
Other state and local taxes and fees	$2,199,435	$2,101,709
Total state and local taxes and fees	$20,561,969	$22,872,060

Source: Goss & Associates from IMPLAN system

[21] Fiscal impacts do not include any potential tax incentives provided by state or local entities.

Summary of Impacts: Operations Phase (five-year period)

Direct Impacts. The direct, or first round, operational impacts from the facility are provided in Table 3.4. The plant's direct impact will be approximately $756.1 million for year 1 of operations and will total $3.7 billion during the first 5 years of operation. A steady employment level of 922 workers at the facility is used to estimate the impacts of the operations phase.

Table 3.4: Direct impacts, operational phase (5 years, 2017 dollars)

Type of impact	Year 1	Years 2 to 5	Total
Sales (output)*	$756,070,720	$2,950,657,637	$3,706,728,357
Wage and salary income*	$107,412,199	$423,007,481	$530,419,680
Employment -- average per year	922	922	922

Source: Goss & Associates
*IMPLAN derived estimates based on 922 workers; labor income includes wage and salary payments to workers (employed, self-employed, and business proprietors) and employer-provided benefits

Total Impacts. As with the construction phase, the operational phase will drive spillover impacts in the study area. Table 3.5 shows that during the first 5 years of operation, economic activity associated with the plant will increase total sales activity in the region by approximately $6.8 billion. In addition, plant operations will increase state and local tax revenues in the study area by an estimated $124.5 million during the first 5 years of operations.

Table 3.5: Total impacts (direct+indirect+induced), operational phase (5 years, 2017 dollars)

	Year 1	Years 2 to 5	Total
10-County Study Area			
Sales (output) total	$1,387,457,579	$5,416,273,703	$6,803,731,281
Wage and salary income	$275,131,891	$1,077,982,381	$1,353,114,272
Self-employed and business proprietor income	$142,978,368	$559,624,207	$702,602,575
State and local taxes and fees	$25,146,517	$99,384,782	$124,531,299
Employment -- average per year	3,834.7	3,767.1	3,780.6

Source: Goss & Associates

The fiscal impacts presented in Table 3.6 do not include the potential impact of any tax incentives that might diminish the tax revenue collected from the projects. Table 3.6 provides a summary of the 5-year fiscal impacts of the operations phase on the 10-county region. State and local tax revenue will increase by $124.5 million. State and local sales tax collections will increase by more than $32.8 million. Individual income tax revenue will increase by an estimated $29.9 million.

Table 3.6 Tax revenue impact, operations phase -- 10-County Study Area (5 years, 2017 dollars)

Category	Year1	Years 2 to 5	Total
State tax revenue impact - individual income	$6,081,180	$23,825,229	$29,906,409
State tax revenue impact - sales	$5,234,689	$20,530,532	$25,765,221
State tax revenue impact - corporate income	$954,405	$3,740,193	$4,694,598
Local tax revenue impact - sales	$1,427,642	$5,599,236	$7,026,878
Local tax revenue impact - property	$8,237,310	$32,306,305	$40,543,615
Other state and local taxes and fees	$3,211,291	$13,383,287	$16,531,299
Total state and local taxes and fees:	$25,146,517	$99,384,782	$124,531,299

Source: Goss & Associates, from IMPLAN System

Detailed Industry Economic Impacts – Construction Phase

The construction phase will impact all 20 sectors in the model used for estimating the impact on the 10-county study area. As seen in Table 3.7, outside of the wholesale, construction and professional, scientific and technical services (architecture and engineering) sectors, the top three sectors impacted by the construction, in terms of sales activity, will be the following: real estate and rental and leasing ($13.2 million); finance and insurance ($8.3 million); and health care and social assistance ($7.1 million). Appendix D lists more detailed industry impacts.

Table 3.7: Construction phase impact, 10-County Study Area (18 to 21 months, 2017 dollars)

Sector	Sales	Wage & Salary Income	Average jobs per year
Wholesale Trade	$129,381,502	$40,469,188	588.0
Construction	$83,498,920	$35,147,260	726.7
Professional, Scientific, and Technical Services	$50,890,430	$21,972,476	392.0
Real Estate and Rental and Leasing	$13,230,222	$364,093	37.2
Finance and Insurance	$8,321,438	$1,876,857	45.5
Health Care and Social Assistance	$7,130,181	$3,830,605	82.2
Information	$6,800,572	$1,459,539	31.5
Transportation and Warehousing	$5,913,903	$1,977,930	48.1
Retail Trade	$5,895,105	$2,158,467	89.4
Administrative and Support and Waste Management and Remediation Services	$4,894,704	$2,440,041	76.1
Other Services (except Public Administration)	$4,532,860	$2,229,803	60.5
Accommodation and Food Services	$3,669,657	$1,136,650	70.0
Utilities	$3,344,376	$316,302	2.7
Manufacturing	$2,352,560	$595,502	7.0
Public Administration	$2,099,350	$1,209,452	17.9
Management of Companies and Enterprises	$1,712,637	$734,260	9.3
Arts, Entertainment, and Recreation	$825,220	$122,073	16.3
Educational Services	$344,633	$188,974	8.4
Agriculture, Forestry, Fishing and Hunting	$183,102	$46,313	0.5
Mining, Quarrying, and Oil and Gas Extraction	$151,081	$31,359	0.9
Total Impact	$335,172,453	$118,307,146	2,310.1

Source: Goss & Associates, from IMPLAN System

Detailed Industry Economic Impacts – Operational Phase

This study looks at the operational phase over 5 years. Table 3.8 provides a summary of the impact of the first year of operations for the facility. Operations will support almost $1.4 billion in sales activity in the local economy and 3,834.7 jobs, with wage and salary income in excess of $275.1 million (includes employee, self- employed, and business proprietor income).

In terms of sales, the top three non-manufacturing sectors impacted by the plant are agriculture, forestry, fishing and hunting ($378.0 million), transportation and warehousing ($70.4 million) and wholesale trade ($33.1 million).

Table 3.8: Operations impact, 10-County Study Area (first year, 2017 dollars)

Sector	Sales	Wage & Salary Income	Average jobs per year
Manufacturing	$777,786,958	$109,378,637	941.6
Agriculture, Forestry, Fishing and Hunting	$377,967,805	$95,983,575	1,203.5
Transportation and Warehousing	$70,383,297	$23,259,924	444.5
Wholesale Trade	$33,113,881	$10,357,678	150.5
Real Estate and Rental and Leasing	$27,026,655	$598,646	56.8
Finance and Insurance	$19,398,203	$4,517,099	111.5
Health Care and Social Assistance	$16,057,216	$8,640,738	186.8
Retail Trade	$13,926,830	$5,133,468	210.0
Utilities	$8,439,231	$807,815	6.9
Accommodation and Food Services	$7,174,493	$2,171,640	133.6
Other Services (except Public Administration)	$7,041,478	$3,396,888	103.8
Information	$6,355,143	$1,212,722	25.6
Professional, Scientific, and Technical Services	$5,606,262	$2,540,125	58.6
Administrative and Support and Waste Management and Remediation Services	$4,496,107	$2,086,800	78.7
Public Administration	$4,022,151	$2,205,036	32.8
Construction	$3,699,744	$1,157,434	25.0
Management of Companies and Enterprises	$2,016,118	$864,372	10.9
Arts, Entertainment, and Recreation	$1,642,038	$267,274	30.5
Educational Services	$831,625	$457,361	20.1
Mining, Quarrying, and Oil and Gas Extraction	$472,343	$94,662	3.0
Total:	$1,387,457,579	$275,131,891	3,834.7

Source: Goss & Associates, from IMPLAN System

Table 3.9 summarizes the 5-year impact on local wage and salary income. The region's wage and salary income will likely experience a $1.4 billion increase over the 5-year operations phase in this study. The following sectors that will experience the greatest income increase: manufacturing ($540.1 million), agriculture, forestry, fishing and hunting ($470.6 million), and transportation and warehousing ($114.0 million).

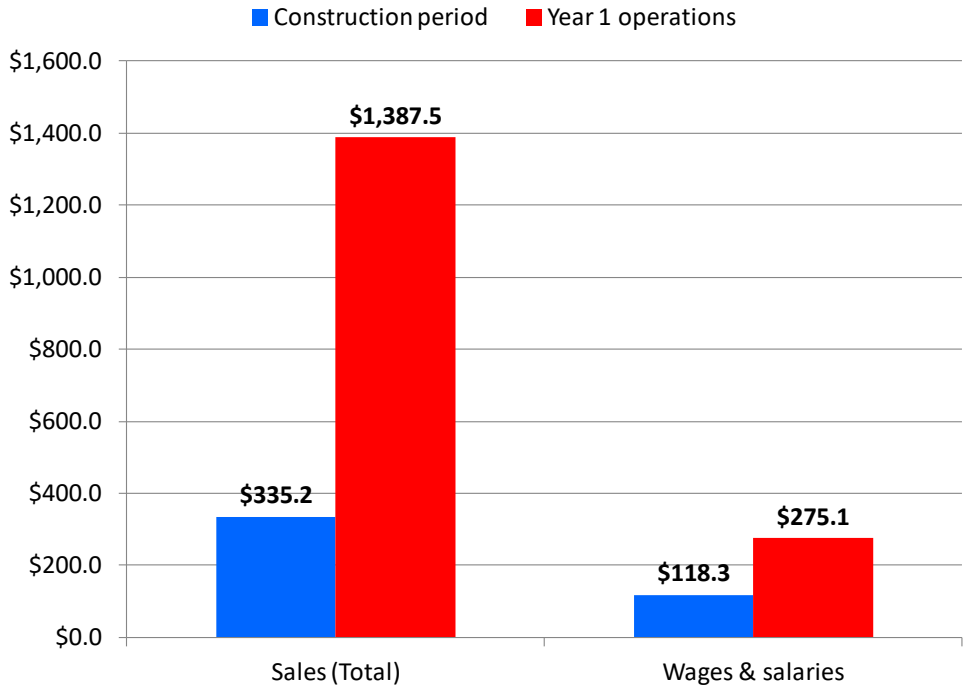
Table 3.9: Operations impact on wage and salary income, 10-County Study Area (5 years, 2017 dollars)

Sector	Year 1	Years 2 to 5	Total
Manufacturing	$109,378,637	$430,685,000	$540,063,637
Agriculture, Forestry, Fishing and Hunting	$95,983,575	$374,588,887	$470,572,461
Transportation and Warehousing	$23,259,924	$90,787,508	$114,047,432
Wholesale Trade	$10,357,678	$40,447,735	$50,805,412
Health Care and Social Assistance	$8,640,738	$33,856,247	$42,496,985
Retail Trade	$5,133,468	$20,107,846	$25,241,313
Finance and Insurance	$4,517,099	$17,662,131	$22,179,230
Other Services (except Public Administration)	$3,396,888	$13,296,352	$16,693,240
Professional, Scientific, and Technical Services	$2,540,125	$9,927,676	$12,467,801
Public Administration	$2,205,036	$8,613,613	$10,818,649
Accommodation and Food Services	$2,171,640	$8,502,692	$10,674,332
Administrative and Support and Waste Management and Remediation Services	$2,086,800	$8,155,912	$10,242,712
Information	$1,212,722	$4,743,818	$5,956,540
Construction	$1,157,434	$4,525,134	$5,682,567
Management of Companies and Enterprises	$864,372	$3,375,775	$4,240,147
Utilities	$807,815	$3,157,686	$3,965,501
Real Estate and Rental and Leasing	$598,646	$2,340,448	$2,939,094
Educational Services	$457,361	$1,791,790	$2,249,152
Arts, Entertainment, and Recreation	$267,274	$1,046,461	$1,313,735
Mining, Quarrying, and Oil and Gas Extraction	$94,662	$369,670	$464,332
Total:	$275,131,891	$1,077,982,381	$1,353,114,272

Source: Goss & Associates, from IMPLAN System

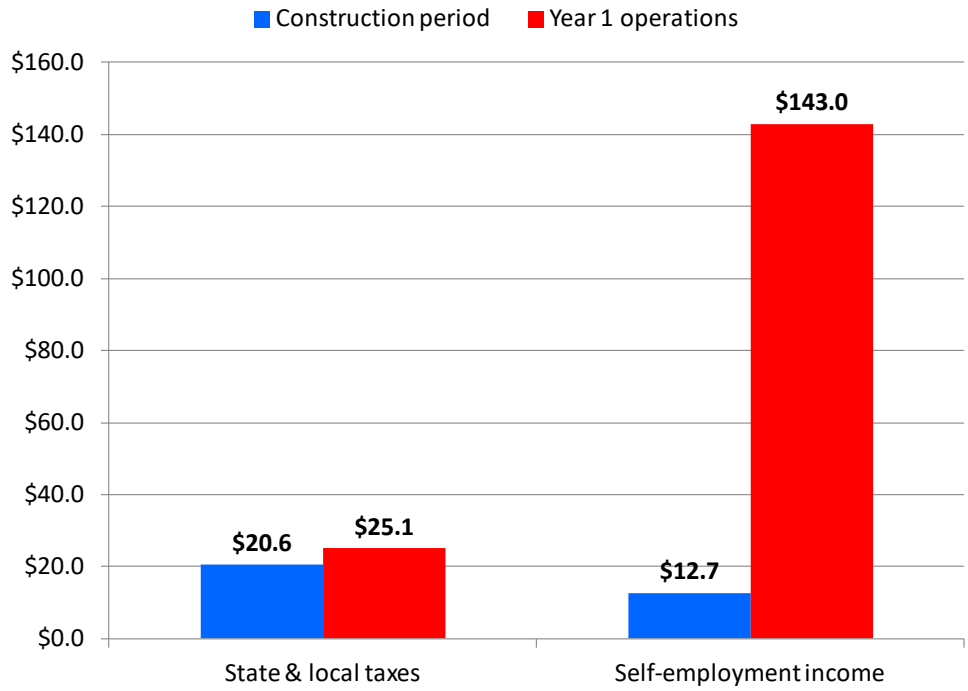
Figure 3.1 shows sales and wages & salaries impacts for the first year of operations and construction, while figure 3.2 shows state & local taxes and self-employment income impacts for year one of operations and construction.

Figure 3.1: Region sales and wages & salaries impacts for year 1 of operations and construction period (in millions of 2017 $s)



Source: Goss & Associates based on the IMPLAN system

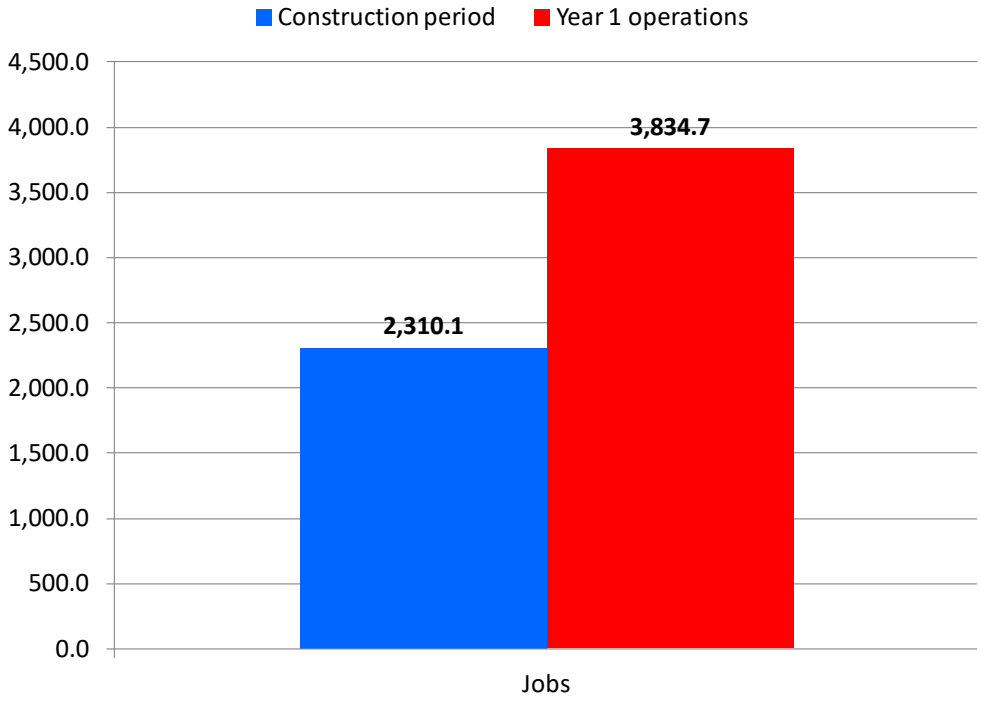
Figure 3.2: State & local taxes and self-employment income impacts for year 1 of operations and construction period (in millions of 2017 $s)



Source: Goss & Associates based on the IMPLAN system

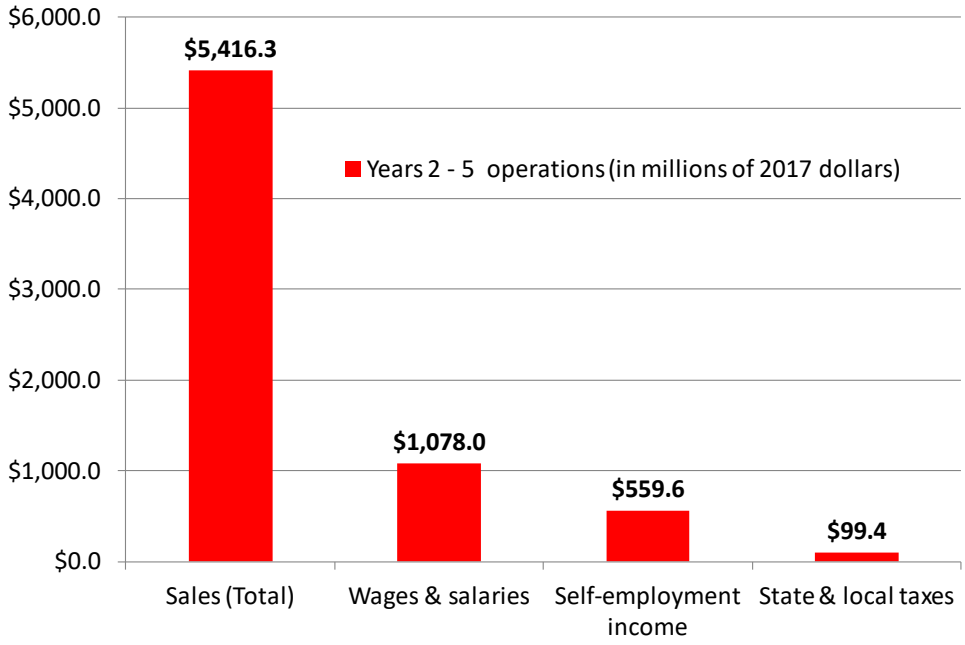
Figure 3.3 shows jobs impacts for the first year of operations and construction. Figure 3.4 shows sales, wages & salaries, self-employment income and state & local tax impacts for years 2 - 5 of operations only.

Figure 3.3: Jobs impacts for year 1 of operations and construction period (in millions of 2017 $s)



Source: Goss & Associates based on the IMPLAN system

Figure 3.4: Sales, wages & salaries, self-employment income, and state & local taxes for years 2 - 5 of operations only (in millions of 2017 $s)



Source: Goss & Associates based on the IMPLAN system

Table 3.10 provides a summary of economic impacts for construction and one year of operations. Table 3.11 details impacts by county in the region.[22]

Table 3.10: Summary of impacts, construction + 1 year of operations (all $s in millions, 2017)	
Sales, output/total impact	$1,722.7
Wages and salaries	$393.4
Self-employment income	$155.7
Average annual employment impacts	3,072
Employment impact (year 1 operations)	3,834.7
Fiscal impacts	
State & local tax collections	$45.7
Costs: (Details in Section 4)	
School system costs	$20.8
Police & fire protection	$1.3
Highways & roads	$7.8
Other state and local government spending	$2.8
Total Costs	$32.7
Net benefit to taxpayer construction + one year of operations	$13.0
Source: Goss & Associates	

Table 3.11: Summary of impacts by county, construction plus one year of operations (all $s in millions, 2017)					
County	Total	Wages & salaries	Self-employment income	Jobs	Population
Calhoun	$16.2	$3.7	$1.5	36.1	56
Franklin	$46.2	$10.5	$4.2	102.8	160
Hamilton	$390.7	$89.2	$35.3	869.7	1,353
Hardin	$52.5	$12.0	$4.7	116.9	182
Humboldt	$179.8	$41.1	$16.3	400.3	623
Kossuth	$55.6	$12.7	$5.0	123.9	193
Palo Alto	$13.4	$3.1	$1.2	29.9	47
Pocahontas	$17.7	$4.1	$1.6	39.5	61
Webster	$607.3	$138.7	$54.9	1,351.7	2,103
Wright	$343.2	$78.4	$31.0	763.8	1,188
Total region	$1,722.7	$393.4	$155.7	3,834.7	5,966
Source: Goss & Associates based on Implan System and U.S. Census data					

Summary

Prestage Farms' facility will be located in a key pork producing region and will provide a significant boost to the economy. Both the region and the state will benefit from increased economic activity generated by the facility via direct spending on the part of Prestage Farms, indirect business-to-business spending by vendors, and household spending on the part of workers at the facility. In addition, activity driven by the facility will increase state and local tax revenues.

[22]The county of residence of the new workers is distributed using a gravity model. That is, the jobs in a target county (e.g. Webster) e directly related to the population of the county and inversely associated to the square of the distance from the Prestage plant.

Section 4: Other Industry Impacts

Impact on Regional Hog Production

How many of the hogs will be purchased locally and how will that affect the income of farmers, both crop and livestock, in the region? How will this growth affect hog confinement lots in the region? How will the plant affect corn prices for ethanol plants and for area farmers? How will the new plant affect the number of hogs raised in the region? How will the addition of Prestage to the region affect the size and number of hog farms in the region? This section of the study will estimate these values.

This section reports on the potential impact of the Wright County plant on producers by providing estimates for the number of hogs demanded by the plant, the number and size of farms supported by activities at the plant, farm income and the potential impact on corn prices.

Expectations are for the Wright County facility to process 10,000 head per day. At 5.4 production days per week annual output would be 2.8 million head. Table 4.1 summarizes the annual estimate for the Prestage facility.

Plant capacity in Iowa and two plants in Minnesota that are within 160 miles of the study area totaled 129,450 head per day in 2016.[23] The new Prestage facility will increase capacity by 6.7 percent for facilities within 160 miles.

Table 4.2 presents regional plant locations and capacity (slaughter per day) for plants within 160 miles of the proposed Wright County facility.

Previous research has concluded that, in order to limit the loss in animal weight, the distance between production house and slaughter plant should not exceed 55 km or approximately 34 miles. The researchers estimated that transportation beyond the 34 mile threshold leads to a 1.5 percent loss in pig carcass weight. The study concluded that transportation of pigs is a stress factor and has adverse effects on the live weight of the animals.[24] The research concluded that the effect of the transportation has a linear relationship with the body weight of the pigs and extensions of transportation distance have severe adverse effects on live weight.

Other studies found that even under good conditions, hogs shrink approximately 1 percent during sorting and loading, plus an additional 1 percent for the first 50 miles hauled, and another 1 percent for the next 100 miles. The researchers concluded that shrink can be reduced by gentle handling, minimizing the mixing of hog groups, shipping to the closest market, and avoiding shipping during extremely hot or cold weather.[25]

Table 4.1: Estimated number of head processed per day and year

	Head per day	Head per year*
Total production	10,000	2,808,000

Source: Goss & Associates
* Based on 5.4 production days per week

[23]The Minnesota processing plants are located in Austin and Worthington.

[24]DeSila, PHGJ and A. Kaubowila. "The Relationship of transport distance, sex on live weight loss of pigs during transit to slaughter house," Veterinary World, Vol. 5(3), March 2012, pp 150- 154.

[25]Plain, Ron, and James Mintert. "Marketing Slaughter Hogs: Where, How & When," http://articles.extension.org/pages/27212/marketing-slaughter-hogs:-where-when-how.

Table 4.2: Plant slaughter capacity per day within 160 miles			
City	State/County	Capacity per day	Distance from Eagle Grove
Perry	IA/Dallas	8,250	70 miles
Storm Lake	IA/Buena Vista	17,000	73 miles
Marshalltown	IA/Marshall	21,000	93 miles
Des Moines (sows only)	IA/Polk	3,600	94 miles
Estherville	IA/Emmet	1,250	95 miles
Waterloo	IA/Black Hawk	19,500	102 miles
Austin	MN/Mower	19,000	116 miles
Denison	IA/Crawford	10,000	121 miles
Hospers	IA/Sioux	3,150	126 miles
Sioux Center	IA/Sioux	4,500	140 miles
Sioux City	IA/Woodbury	1,200	145 miles
Worthington	MN/Nobles	21,000	155 miles
Total capacity		129,450	
Source: EMI Analytics and National Hog Farmer, June 2016			

Table 4.3 lists average savings per farm across the 10-county region assuming an average hog weight of 284 pounds with a sales price of $49.02 per CWT. As estimated, the average transportation savings due to in transport weight loss amounts to $16,161 per farm.

Table 4.3: Average transportation savings by county based on 2012 production					
County	Number of hog farms	Hogs and pigs sold (# of head)	Transportation weight loss (1%) 284 lbs. per animal	Total savings	Savings per farm
Calhoun	89	675,552	1,918,568	$940,482	$10,567
Franklin	113	1,046,471	2,971,978	$1,456,863	$12,893
Hamilton	77	1,619,549	4,599,519	$2,254,684	$29,282
Hardin	102	1,451,386	4,121,936	$2,020,573	$19,810
Humboldt	34	286,486	813,620	$398,837	$11,730
Kossuth	147	1,350,407	3,835,156	$1,879,993	$12,789
Palo Alta	82	1,059,277	3,008,347	$1,474,692	$17,984
Pocahontas	66	636,203	1,806,817	$885,701	$13,420
Webster	61	456,273	1,295,815	$635,209	$10,413
Wright	40	832,892	2,365,413	$1,159,526	$28,988
10-counties:	811	9,414,496	26,737,169	$13,106,560	$16,161
Source: U.S. Department of Agriculture, 2012 Census of Agriculture. This is the most recently completed census.					

In terms of annual heads sold, the average size of hog producing farms in the study area is larger than the state-wide average. The study area contains 811 hog-producing farms, 9.4 percent of the number farms in the state of Iowa. Hog producers in the study area sold 9.4 million hogs and pigs in 2012, 19.1 percent of the state total. The average number of hogs and pigs sold per farm in the study area was 11,609 head, 55.6 percent more than the average Iowa farm. Hamilton (21,033 head), Wright (20,822) and Hardin (14,229) counties had largest average farm size in 2012, the latest for which there were reliable data.

Likewise, inventory per farm was 73.1 percent greater than the average Iowa farm. A summary of the data by county appears in Table 4.4.

Table 4.4: Average farm size, sales and inventory (2012) in region

County	Number of hog farms	Hogs and pigs sold (# of head)	Average head sold per farm	Average Inventory (# of head)	Average inventory per farm
Calhoun	89	675,552	7,590	359,106	4,035
Franklin	113	1,046,471	9,261	549,493	4,863
Hamilton	77	1,619,549	21,033	647,537	8,410
Hardin	102	1,451,386	14,229	720,009	7,059
Humboldt	34	286,486	8,426	155,641	4,578
Kossuth	147	1,350,407	9,186	609,437	4,146
Palo Alta	82	1,059,277	12,918	464,236	5,661
Pocahontas	66	636,203	9,639	238,701	3,617
Webster	61	456,273	7,480	185,596	3,043
Wright	40	832,892	20,822	483,790	12,095
10-counties:	811	9,414,496	11,609	4,413,546	5,442
State of Iowa:	6,616	49,355,848	7,460	20,800,000	3,144

Source: U.S. Department of Agriculture, 2012 Census of Agriculture. This is the most recently completed census.

Using state-level data, the distribution of farms by the number of hogs and pigs sold can be estimated. Approximately 36.7 percent of Iowa farms sold 5,000 or more hogs and pigs in 2012; farms that sold 1,000 pigs or more in 2012 accounted for 7 out of 10 hogs and pigs sold in the state. Table 4.5 shows the distribution of hogs sold by farm size for the state of Iowa.

Table 4.5 Average farm size and percentage distribution, Iowa (2012)

Number of hogs and pigs sold per farm	Number of hog farms	Total number of hogs sold	Average farm size (acres)	Percentage distribution
1 to 24	527	4,641	9	8.0%
25 to 49	152	5,315	35	2.3%
50 to 99	147	10,227	70	2.2%
100 to 199	170	23,375	138	2.6%
200 to 499	407	130,670	321	6.2%
500 to 999	542	389,631	719	8.2%
1,000 to 1,999	758	1,062,401	1,402	11.5%
2,000 to 4,999	1,485	4,925,254	3,317	22.4%
5,000 or more	2,428	42,804,334	17,629	36.7%
Total	6,616	49,355,848	7,460	100.0%

Source: Goss & Associates based on U.S. Dept. of Agriculture data

Estimated annual demand for the Prestage plant is 2.8 million head, with packer farms providing 60 percent of the total and non-packer farms providing the balance of the total. Annual demand from packer farms will be approximately 1.7 million head and 1.1 million head from non-packer farms. If the number of packer farms represents new farms in the study area and the new farms skew towards the larger farm size (5,000 or more head sold per year), the overall average size of farms could grow by 25.3 percent in the study area. Additionally, the activities at the plant will support 193 farms - 97 packer farms and 96 non-packer farms. Table 4.6 summarizes these estimates.

Table 4.6: Plant demand impact on farm size and number of farms of Prestage plant

	Annual* hogs	Average Farm Size** hogs	Number of farms supported
Packer farms	1,684,800	17,629	97
Non-packer farms	1,123,200	11,609	96
Total supply	2,808,000	14,549	193

Source: Goss & Associates based on U.S. Dept. of Agriculture data

*Supply: 60% packer farms and 40% non-packer farms

**Assumption: each packer farm supplies 5,000 or more hogs and pigs per year; non-packer farm size is the average for the 10-county study area.

Increased local pork processing should lead to increased price competition for local producers of hogs and pigs. If plant demand for hogs increases local producer output, prices received by producers could see a modest increase. If the 1.1 million head supplied by non-packer farms represents an expansion of output or the introduction of new producers to the region, supply would increase by 2.3 percent. As noted above, regional plant capacity will increase by 6.3 percent.

Regression analysis reveals the potential net impact on hog prices for regional producers.[26] For every one percent increase in supply, the price of hogs will decline by 1.97 percent. A one percent increase in demand, however, will result in a 1.27 percent increase in price.

The net impact on prices received by producers is expected to increase by 3.5 percent, provided the additional production is absorbed fully by regional plants. Table 4.7 summarizes the net impact on the price of hogs.

Table 4.7: Impact on hog prices

	Percent change In hog production	Impact on hog prices (%)
Supply	+2.3%	-4.5%
Demand	+6.3%	+8.0%
Net impact:		+3.5%

Source: Goss & Associates, regression analysis

Assuming an average hog weight of 284 pounds with a current price of $49.02 per CWT, the Prestage plant is expected to increase the price to $50.74 per CWT for a 3.5 percent gain in price. Table 4.8 shows the estimated average added revenue per farm which is $724 per farm for 811 hog farms in the 10-county area ranging from $304 for the average Kossuth County farm to $2,536 for the average Wright County farm.

Table 4.8: Average farm size, sales and inventory in region

County	Farms	Average head sold per farm	Added net revenue	Distribution
Calhoun	89	7,590	$36,983	$416
Franklin	113	9,261	$45,125	$399
Hamilton	77	21,033	$102,485	$1,331
Hardin	102	14,229	$69,332	$680
Humboldt	34	8,426	$41,056	$1,208
Kossuth	147	9,186	$44,760	$304
Palo Alta	82	12,918	$62,944	$768
Pocahontas	66	9,639	$46,967	$712
Webster	61	7,480	$36,447	$597
Wright	40	20,822	$101,457	$2,536
10-counties:	**811**	**11,609**	**$587,556**	**$724**

Source: Goss & Associates based on U.S. Dept. of Agriculture data

[26]Model output is shown in Appendix A.

The processing plant will support local animal and grain producers. Plant activities will support approximately $95.9 million in farm income, including $85.6 million in farm proprietor income during the first year of operation. Livestock and animal producers will receive $92.7 million dollars. Of this income, proprietors will receive $83.8 million. Grain producers will benefit, also, receiving $1.2 million in total farm income, with proprietor income of $942,449. Table 4.9, below, provides a summary of the plant's impact on farm income.

Table 4.9: Impact on farm income

Source	Farm income*	Farm proprietor income
Animal production	$92,685,513	$83,765,619
Grain production	$1,166,474	$942,449
Other	$2,036,995	$930,509
Total	$95,888,982	$85,638,577

* includes employee compensation
Source: U.S. Department of Agriculture

Activity at the plant will likely boost corn prices. A one percent increase in demand for corn from increased hog production associated with the new plant will result in an increase in corn prices of 0.24 percent, holding ethanol plant demand constant.[27] As noted above, regional hog production could potentially increase by 2.3 percent, resulting in a 0.6 percent lift to corn prices. The results are shown on Table 4.10, below.

Table 4.10: Impact on corn prices

	Percent change	Impact on corn prices (%)
Hog Production	+2.3%	+0.6%

Source: Goss & Associates

Photo: Goss & Associates

[27] Model output is shown in Appendix A.

Impact on Police and Fire Protection Spending

The number of employed workers in Iowa for 2012 was 1,562,962. During the same year, full-time equivalent (FTE) employment for police protection was 7,066 workers and 1,994 for fire protection workers; average wages in 2017 dollars were $59,684 for the former and $63,752 for the latter.

The ratio of total employed workers to police protection FTE employees in 2012 was 221 workers per one police protection employee; the ratio for fire protection employees was 784 workers to one. Total employment due to the activities at the new processing plant have been estimated at 3,834.7.

New employment related to activity at the plant is expected to require 17 new police protection positions in the study area, with an increase in wages and salaries of $1,028,252 per year. Fire protection employment is forecast to increase by 5 workers, with payrolls growing by $309,608. That said, the preponderance of registered fire stations in Iowa are designated as volunteer or mostly volunteer (95.9 percent). This could mitigate the impact to local government coffers.

Table 4.11 summarizes the protection worker impact of the Prestage plant.

Table 4.11: Estimate of new protection workers and payroll in study area

Occupation category	Full-time equivalent employment, Iowa (2012)	Average annual wage, Iowa (2017 $s)	Ratio of total employed workers to protection occupation	New protection employment due to increase in total employment in the study area	Total annual payroll for additional protection workers in the study area* (2017 $s)
Police protection	7,066	$59,684	221 workers	17	$1,028,252
Fire protection	1,994	$63,752	784 workers	5	$309,608

Source: US Census, Census of Governments (2012)
*Assumes new firefighters are not volunteers.

Impact on Housing

Housing. Prestage Farms' Wright County processing plant will increase demand for area housing. Currently, there are 60,570 housing units in the region. At 74.6 percent, the region maintains a relatively high homeownership rate. The regional average new housing unit cost is $223,330. The number of workers per household is 1.63 for the region. The number of housing units per household is 1.13.

Based on a total annual average employment of 3,834.7 workers, 922 workers at the plant and 2,912.7 indirect and induced jobs, the demand for new housing units in the region will likely increase by 3.4 percent (2,622 units). Owner-occupied housing will increase by 1,907 units. In addition, there will be an increase in rental demand of approximately 715 units. The total value of new owner-occupied and renter-occupied housing units will be approximately $585.6 million. Table 4.12, below, provides a summary of the housing impact estimate.

Table 4.12: Estimated impact on new housing		
Direct employment (average annual employment)	Indirect and induced employment (average annual employment)	Total Employment (average annual employment)
922	2,912.7	3,834.7
Workers per household (10-county area)	Cost of new housing unit (10-county area)	Homeownership rate (10-county area)
1.63	$223,330	74.6%
Number of new households	Housing units per household	New housing units
2,320	1.13	2,622
New renter-occupied housing units	New owner-occupied housing units	Total value of new housing units
715	1,907	$585,571,260
Source: Goss & Associates		

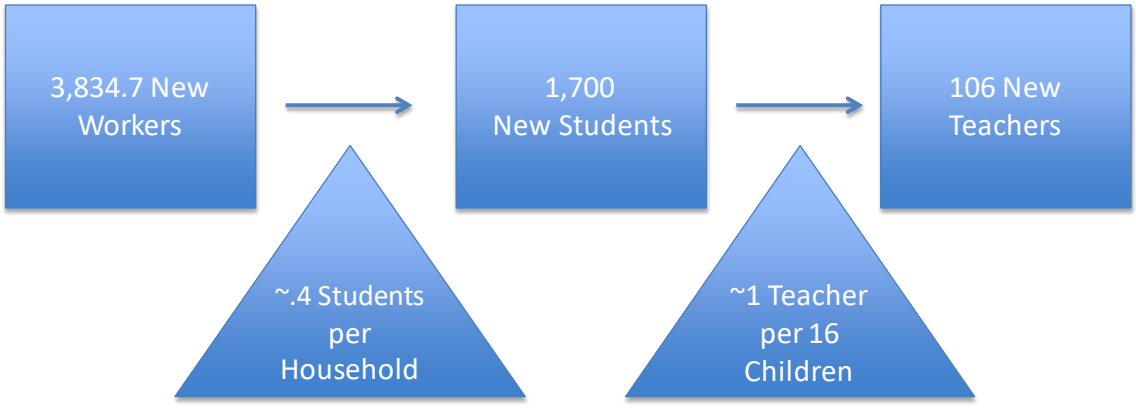
Impact on School Systems

The direct, indirect, and induced effects of the facility's placement will lead to an increase in the number of children in the region. With an increase in children comes an increase in public school enrollments, and with an increase in public school enrollments comes more employment opportunities for teachers. The facility's placement will likely lead to almost 1,700 more children in the region, as well as 106 employment opportunities for public school teachers.[28]

The number of workers was assumed to be equivalent to the number of households. The average number of public school enrollments per household multiplied by the number of new households in each of the counties, and the public school pupil/teacher ratio from the National Center for Education Statistics was used to determine the number of teachers. Additionally, the dispersion of the new students and teachers across counties was assumed to be identical to the dispersion of the new workers.

Figure 4.1 shows the assumptions used to reach the number of new students and teachers.

Figure 4.1: Additional K-12 school requirements



Source: Goss & Associates

[28]Goss & Associates analysis of data from Census Bureau, 2000 and nces.gov, 2013.

In Table 4.13, the increases in educational costs due to the plant's placement are shown. When viewing these figures, it is important to note that only around 50 percent of educational costs are borne by local governments in this region of Iowa.[29] The remainder is a combination of federal and state funding. Thus, the burden borne by local taxpayers would be $10.4 million.

Table 4.13: Estimate of new protection workers and payroll in study area

County	Average Cost per Student per Year	New Students	Total Cost Increase ($)
Calhoun	$11,920	16	$189,921
Franklin	$12,040	45	$546,929
Hamilton	$13,030	384	$5,009,071
Hardin	$14,990	52	$774,946
Humboldt	$11,750	177	$2,079,257
Kossuth	$13,570	55	$742,937
Palo Alto	$13,880	13	$183,507
Pocahontas	$12,520	17	$218,580
Webster	$11,840	597	$7,074,252
Wright	$11,830	338	$3,994,329
Total	$12,737	1,695	$20,813,729

Source: Goss & Associates based on U.S. Department of Education data

[29]Goss & Associates analysis of data from Census Bureau, 2000 and nces.gov, 2013.

Impact on Highway, Bridge, and Road Spending

Activity at the plant will result in increased use of state highways - expanded use that will add to annual maintenance costs. The new plant will employ 922 workers and an additional 20 new employees will work at area manufacturing facilities that see increased product demand due to "spillover" expenditures.

Based on state-level highway expenditure data from the most recent *Census of Governments* and manufacturing employment data from the US Bureau of Labor Statistics, it was found that the per manufacturing worker highway expenditure for the state of Iowa is $8,264. Applying this amount to the 942 new area manufacturing workers, it is estimated that annual highway expenditures will increase by 0.4 percent ($7.8 million). Table 4.14, summarizes these findings.

Table 4.14: Impact on state highway maintenance expenditures	
New study-area manufacturing workers (total)	942
New manufacturing workers (direct)	922
New manufacturing workers (indirect + induced)	20
State expenditures -- highways (FY2012)	$1,770,222,000
State manufacturing workers (average of 2012 and 2013)	214,200
Highway expenditures per manufacturing worker	$8,264
Increased highway expenditures	$7,785,010
Source: US Census, Census of Governments (2012); Bureau of Labor Statistics	

Impact on Air Quality

Prestage Farms has indicated that areas with the potential to impact air quality will be enclosed and use odor mitigating technologies. This includes the following areas: hog barns, rendering operations and wastewater pre-treatment. The plant will have a covered wastewater treatment area and will use the captured methane as an energy source at the plant. Further, the company states, "wastewater treatment and rendering will use the latest technology available for further remediation and conditioning prior to emission."

The plant will utilize state-of-the-art "air scrubbing" technology designed specifically for the rendering and food processing industry. Customization of system design affords the opportunity for the scrubber to match the volume and specific type of material being processed at the facility.

In addition, the company reports that plant construction will help to contain odors. The design includes the enclosure of areas subject to odors. Also, the plant will utilize negative air pressure to reduce air emissions. Finally, the company will transport materials subject to odor via a closed pipe system, thereby reducing exposure to the air compared to truck transport and open-air operations.

Anaerobic digestion systems (ADS) could help in this endeavor, as well. ADS is a biological process that produces a gas principally composed of methane and carbon dioxide, also known as, biogas. These gases can be produced from organic wastes such as livestock manure.

The process involves the digestion of manure (mixed with various types of bacteria) in an airtight container. The biogas produced is typically 55 to 75 percent pure methane. State-of-the-art systems report producing biogas that is more than 95 percent pure methane.

Many anaerobic digestion technologies are commercially available and have been demonstrated for use with agricultural wastes and for treating municipal and industrial wastewater. Goss & Associates in collaboration with EcoEngineers of Des Moines have completed the analysis of five systems in the State of Iowa and found them to be effective tools generating positive impacts on the area.

Impact on Percentage of Population - Foreign Born

Census data indicate that one-third of meatpacking jobs were done by immigrants, although the percentage may be much higher due to underreporting.[30] However, only 2.0 percent of the region's area's population are foreign born. What share of the net new workers will come from outside the U.S.? What will be the non-English writing and speaking languages of the net new residents? How will the addition of non- English speaking and writing residents to the region impact institutions such as schools and hospitals?

One characteristic of the meat processing industry is that it tends to be filled with workers born outside of the United States; approximately one third of the meat processing workforce is foreign-born.[31] According to BLS data in 2015, 34.4 percent of the all workers in the animal processing industry are Hispanic or Latino. The foreign-born segment of Latino animal processing workers was around 82 percent.[32] These statistics combined mean that approximately 28.2 percent of the entire foreign-born workforce for the meat processing industry is Latino.

One element of concern regarding meat processing plants is that the foreign-born workers that they bring often have limited English capabilities. This concern does have some credence. It was estimated that while less than one-quarter of Latino immigrants (23 percent) report being able to speak English very well, nearly all their children (88 percent) do.

Despite the existence of the language barrier, there is a remarkable level of integration for the children of the foreign born, perhaps due to the educational system.

Within the workplace, 43 percent of foreign-born Latino workers speak exclusively Spanish, whereas 29 percent speak mainly or mostly English at work.[33]

In society, many foreign-born Latinos will engage in "language brokering," using their children to translate for them to English-speaking neighbors[34] , which can serve to mitigate the language barrier.[35]

With an increase in the foreign-born population, some fear that an increase in public expenditures will result. Though this intuitively may appear to be the case, some parts of public expenditures, such as free and reduced lunches and English learning, increase, while welfare spending actually decreases, for a near-zero net effect.[36] High turnover rates typical in the animal processing workplace cause high turnover in educational systems as well.[37] which may cause some kind of educational stress, but with regards to educational spending this does not appear to be the case.[38]

To determine the likely effect of the Prestage Farms plant on the foreign-born population in Wright County, this study looked to examples of meat processing plants in recent years. In 2015, 18.2 percent of the population in meat processing counties was foreign born, whereas only 2.5 percent of the population in control counties was foreign born. Figure 4.1 details these results.

[30]Wainer, Andrew, 2014, "Immigrants in the U.S. Food system. http://hungerreport.org/featured/immigrants-us-food-system/.
[31]Georgeanne Artz, 2012. "Immigration and Meatpacking in the Midwest," AAEA Choices Magazine 27(2).

[32]Kendall and Parrado, "Restructuring of the US Meat-Processing Industry and New Hispanic Migrant Destinations", Population and Development Review, January 2005, 31(3): 447-471.

[33]Hakimzadeh and Cohn 2007 http://www.pewhispanic.org/files/reports/82.pdf.

[34]Straits, Kee J. E., "Language Brokering in Latino Families: Direct Observations of Brokering Patterns, Parent-Child Interactions, and Relationship Quality" (2010).All Graduate Theses and Dissertations.Paper 722.

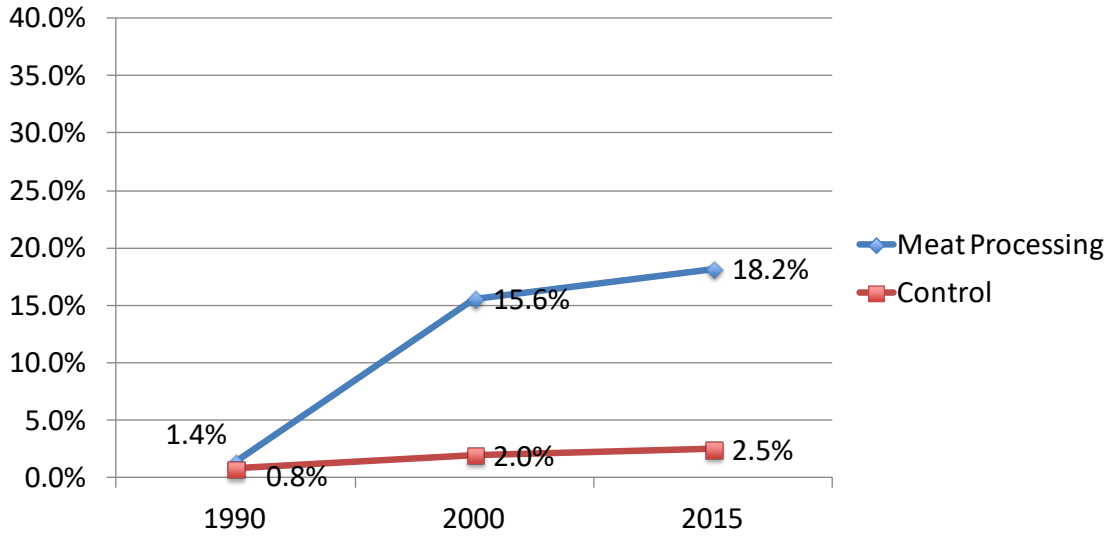
[35]Hakimzadeh and Cohn 2007 http://www.pewhispanic.org/files/reports/82.pdf.

[36]Georgeanne Artz, 2012. "Immigration and Meatpacking in the Midwest," AAEA Choices Magazine 27(2).

[37]Lourdes Gouevia and Donald Stull. 1997. "Latino Immigrants, Meatpacking, and Rural Communities: A Case Study of Lexington, Nebraska."

[38]Georgeanne Artz, 2012. "Immigration and Meatpacking in the Midwest," AAEA Choices Magazine 27(2).

Figure 4.1: Foreign-born percentage of total population by year



Source: Goss & Associates

IMPLAN model predicts total number of workers (3,835 All).

1. Foreign born at Prestage (this is the case for 922 direct workers); 277 foreign-born workers and 645 native-born workers.
2. Foreign born for region (Prestage and spillover) 486 foreign-born workers and 2,426 native-born workers.
3. Results: Total **763 foreign-born workers and 3,072 native-born workers**.

Photo: Goss & Associates

Appendices

Appendix A: Regression Output

Dependent variable: Hog prices – PPI – commodity level

Independent variable: Wholesale pork prices, supply of hogs (farm production), demand (consumer demand for pork) and DUM98 = dummy variable for collapse in 1998 market.

Table A.1:

Dependent Variable: LOG(PPIHOG -- commodity)

Method: Least Squares

Date: 01/25/17 Time: 23:25

Sample (adjusted): 1986 2015

Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.34881	1.353970	7.643311	0.0000
LOG(PPIPORK -- wholesale)	1.705746	0.133328	12.79358	0.0000
LOG(SUPPLY)	-1.968317	0.189153	-10.40597	0.0000
LOG(PCEPORKQ -- demand)	1.268574	0.266060	4.767996	0.0001
DUM98	-0.181018	0.057069	-3.171891	0.0040

R-squared	0.891508	Mean dependent var	4.388556
Adjusted R-squared	0.874150	S.D. dependent var	0.213265
S.E. of regression	0.075657	Akaike info criterion	-2.174212
Sum squared resid	0.143098	Schwarz criterion	-1.940679
Log likelihood	37.61318	Hannan-Quinn criter.	-2.099503
F-statistic	51.35816	Durbin-Watson stat	1.697609
Prob(F-statistic)	0.000000		

Source: Goss & Associates based on U.S. Census County Business Patterns, 2014

Dependent variable: Corn price

Independent variable: Corn yield, West Texas intermediate price (energy proxy), hog production at commercial farms, price of feed (includes all grains used as a input in hog production)

Table A.2:

Dependent Variable: LOG(PPIHOG -- commodity)
Method: Least Squares
Date: 01/25/17 Time: 23:25
Sample (adjusted): 1986 2015
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.34881	1.353970	7.643311	0.0000
LOG(PPIPORK -- wholesale)	1.705746	0.133328	12.79358	0.0000
LOG(SUPPLY)	-1.968317	0.189153	-10.40597	0.0000
LOG(PCEPORKQ -- demand)	1.268574	0.266060	4.767996	0.0001
DUM98	-0.181018	0.057069	-3.171891	0.0040

R-squared	0.891508	Mean dependent var	4.388556
Adjusted R-squared	0.874150	S.D. dependent var	0.213265
S.E. of regression	0.075657	Akaike info criterion	-2.174212
Sum squared resid	0.143098	Schwarz criterion	-1.940679
Log likelihood	37.61318	Hannan-Quinn criter.	-2.099503
F-statistic	51.35816	Durbin-Watson stat	1.697609
Prob(F-statistic)	0.000000		

Source: Goss & Associates based on U.S. Census County Business Patterns, 2014

Appendix B: The Importance of Prestage Farms Spending on the Economy

Revenues from outside the state are more powerful than revenues of firms that deal in intra-state commerce in terms of job and income creation since a high proportion of these revenues are "new" to the area and are not offset by reduced spending in other area industries. In the case of Prestage Farms, dollars are injected through investments for capital spending and via spending related to food processing.

Economic impacts identified in this study are short-run in nature and represent annual, recurring events. Indicators are discussed for long-run, more intangible impacts on the regional economy such as workforce development are recognized. However, assignment of dollar values for these indicators is outside the scope of this study.

In terms of long-term, but less measurable impacts, the presence Prestage Farms encourages the startup and/or relocation of other businesses in the state. By contributing to the area's attractiveness due to the availability of jobs, Prestage Farms influences community growth in non-food processing industries. Moreover, Prestage Farms' commitment to food processing contributes to the overall growth of state and local economic activity.

Table A.1 provides an overview of the influences of food and other spending on community and economic development. Broadly speaking, the multiplier effect of Prestage Farms spending is a combination of direct, indirect, and induced impacts on local economies.

The direct impact is the economic activity generated by Prestage Farms' purchases. Direct expenditures include a wide range of goods and services ranging from wages to processing equipment. These purchases generate further expenditures, or indirect impacts, within the economy. As suppliers and local vendors spend income received from Prestage Farms, businesses derive further benefit upstream and downstream.

Moreover, wages are paid to employees as a result of the direct and indirect expenditures. The wage income then exerts an increase in expenditures via the local consumption of goods and services. These effects are called induced impacts. The sum of the direct, indirect, and induced impacts is the total economic impact.

Table B.1: Impact of Prestage Farms on Mid Iowa Region

Issue	Measurement	Community Impact
Direct payments	Wages paid to Prestage employees	Increases sense of collective identity; builds social capital; learning opportunities; creates "quality jobs"; encourages the in-migration of trained, educated workers.
Purchase inputs/ equipment	Payments to processing equipment vendors	Encourages the startup and/or relocation of businesses to surrounding counties to supply products and services
Philanthropic and government support	Donated services	Businesses and community leaders provide valuable "free" services and donated assets to the community
"Brain gain"	Educated, high human capital individuals	Direct plus matching funds assist in bringing trained, well-paid individuals to the region

Source: Goss & Associates

Appendix C: Types of Economic Impacts

Direct economic impacts. Spending by Prestage Farms has direct economic effects on the local economy through expenditures for goods and services and employee salaries. The most obvious direct expenditures are wages paid employees and to vendors used by Prestage such as equipment providers, and construction firms.

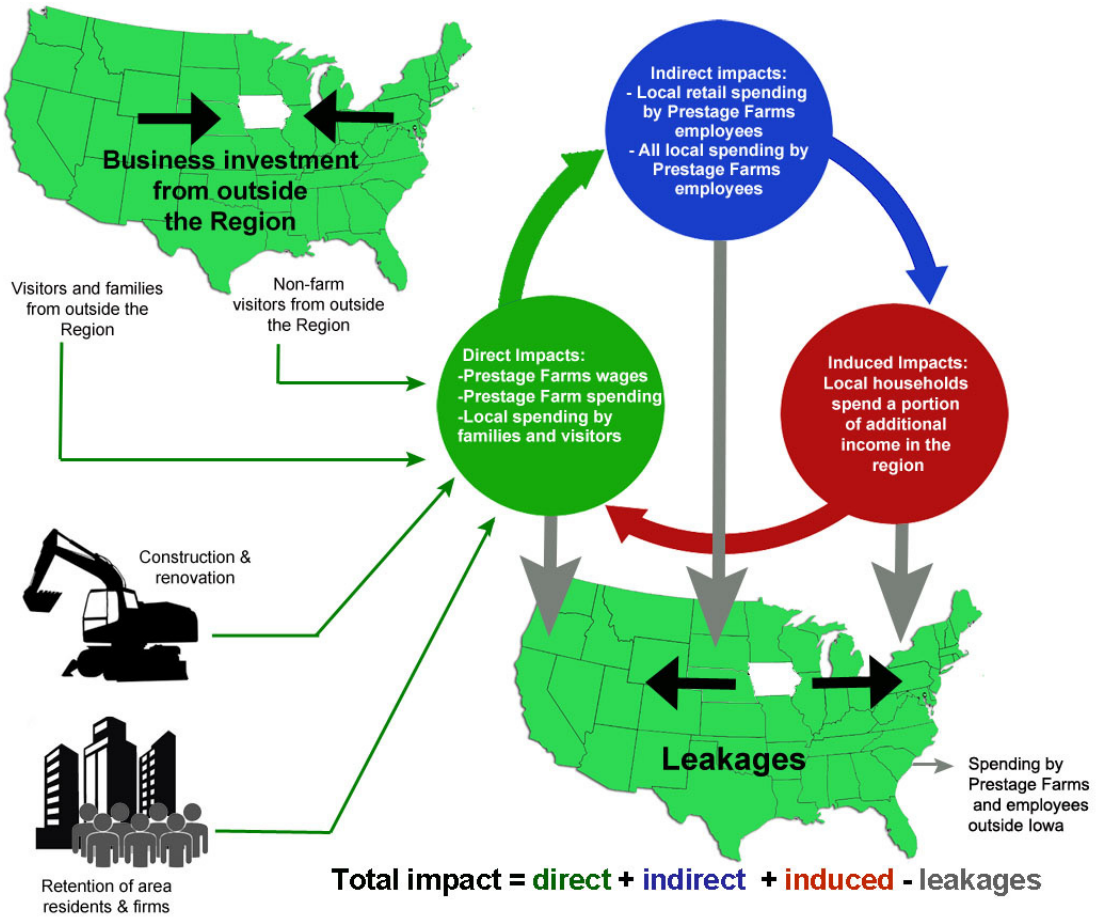
In addition, expenditures by visitors to their facilities and programs produce direct impacts on the region. Direct economic impacts are color coded green in Figure C.1.

Indirect Economic Impacts. Prestage Farms spending also produces indirect economic effects on the area economy. For example, spending generates indirect effects by increasing (a) the number of firms drawn to the community; (b) the volume of deposits in local financial institutions and; (c) economic development. Examples of indirect economic impacts are color coded blue on Figure B.1.

Induced Economic Impacts. Induced impacts in the region occur as the initial spending feeds back to industries in the region when workers in the area purchase additional output from local firms in a second round of spending. That is, Prestage Farms spending increases overall income and population, which produces another round of increased spending adding to sales, earnings and jobs for the area. Examples of induced economic impacts are color coded red in Figure C.1.

On the following page, Figure C.1 depicts examples of the flow of funds into and out of Iowa as a result of Prestage Farms. As indicated, the total impact is the sum of direct (green arrows), indirect (blue arrows) and induced (red arrows) impacts minus leakages (gray arrows). Leakages represent expansion contractor spending outside of the area. Input-output multiplier systems are used to estimate each of the impacts in Figure C.1 by industry.

Figure C.1: Schematic of Impacts



Source: Goss & Associates, 2017

Appendix D: Detailed Impacts by Industry First Year of Operations (3-digit NAICS)

For the 10-County Region:

Industry	Sales	Wage & Salary Income	Employment
Crop production	$8,667,342	$1,167,562	14.4
Animal production	$365,672,950	$92,777,014	1,119.5
Fishing, hunting and trapping	$14,570	$2,129	0.4
Support activities for agriculture and forestry	$3,612,943	$2,036,871	69.2
Oil and gas extraction	$138,123	$14,123	1.9
Mining (except oil and gas)	$334,219	$80,539	1.1
Utilities	$8,439,231	$807,815	6.9
Construction of buildings and maintenance	$3,699,744	$1,157,434	25.0
Food manufacturing	$774,058,043	$108,527,937	935.4
Beverage and tobacco product manufacturing	$126,043	$11,742	0.2
Textile, apparel leather and allied products manufacturing	$7,340	$1,063	0.0
Wood product and paper manufacturing	$327,605	$48,286	0.8
Printing and related support activities	$183,027	$48,636	1.2
Petroleum and coal products manufacturing	$484,251	$389,171	0.0
Chemical manufacturing	$825,978	$109,873	0.6
Plastics and rubber manufacturing	$8,831	$1,471	0.0
Nonmetallic mineral product manufacturing	$155,868	$26,337	0.4
Primary metal manufacturing	$130	$25	0.0
Fabricated metal manufacturing	$19,190	$3,570	0.1
Machinery manufacturing	$1,389,299	$152,848	2.3
Computer, electrical equipment and component manufacturing	$53,741	$8,364	0.1
Transportation equipment manufacturing	$105,435	$18,356	0.3
Furniture and related product manufacturing	$1,259	$400	0.0
Miscellaneous manufacturing	$40,919	$30,559	0.2
Wholesale trade	$33,113,881	$10,357,678	150.5
Motor vehicle and parts dealers	$1,942,037	$903,870	19.8
Furniture and home furnishings stores	$407,865	$151,871	4.3
Electronics and appliance stores	$200,407	$132,047	3.5
Building material and garden equipment stores	$1,363,902	$532,537	15.2
Food and beverage stores	$2,592,440	$1,080,481	43.5
Health and personal care stores	$758,721	$353,645	9.7
Gasoline stations	$777,113	$357,035	15.6
(Continued on next page)			

APPENDIX D: TOTAL IMPACT BY INDUSTRY FIRST YEAR OF OPERATIONS (3-DIGIT NAICS)

Industry	Sales	Wage & Salary Income	Employment
(continued from previous page)			
Clothing and clothing accessories stores	$536,025	$140,059	8.1
Sporting goods, hobby, musical instruments and book stores	$222,165	$85,772	4.9
General merchandise stores	$2,130,823	$809,543	33.1
Miscellaneous store retailers	$724,664	$366,517	21.1
Nonstore retailers	$2,270,669	$220,090	31.2
Air transportation	$388,566	$84,828	1.0
Rail transportation	$1,510,073	$318,398	2.8
Water transportation	$0	$0	0.0
Truck transportation	$63,588,571	$21,197,954	388.6
Transit and ground passenger transportation	$104,281	$40,815	2.0
Pipeline transportation	$0	$0	0.0
Scenic & sightseeing transportation & support activities for transportation	$1,282,874	$415,848	9.4
Couriers and messengers	$1,710,500	$439,448	21.2
Warehousing and storage	$1,798,432	$762,633	19.4
Publishing industries	$2,094,142	$514,582	12.7
Motion picture and sound recording	$136,799	$14,833	0.8
Broadcasting	$550,797	$178,135	2.9
Telecommunications	$2,904,379	$400,087	6.9
Data processing, hosting and related services	$552,862	$97,454	2.3
Other information services	$116,164	$7,632	0.2
Monetary authorities -- central banks	$8,157,941	$2,576,893	45.8
Non-depository credit intermediation and related services	$555,004	$237,776	3.6
Securities, commodity contracts & other financial investment services	$4,167,625	$542,156	38.1
Insurance carriers and related activities	$5,328,786	$951,302	20.2
Funds, trusts and other financial vehicles	$1,188,848	$208,972	3.8
Real estate and rental leasing (includes owner-occupied housing)	$27,026,655	$598,646	56.8
Professional, scientific and technical services	$5,606,262	$2,540,125	58.6
Management of companies and enterprises	$2,016,118	$864,372	10.9
Administrative and support services	$3,885,376	$1,935,679	75.1
Waste management and remediation services	$610,731	$151,121	3.5
Educational services	$831,625	$457,361	20.1
Healthcare services (including dentists and outpatient care)	$11,890,789	$6,448,446	93.5
Nursing and residential care facilities	$2,397,710	$1,315,529	40.9
Social assistance	$1,768,717	$876,762	52.5
Performing arts, spectator sports and related industries	$498,490	$51,601	11.8
Museums, historical sites and similar institutions	$14,420	$4,279	0.2
Amusement, gambling and recreation industries	$1,129,128	$211,394	18.5
Accommodation	$69,103	$17,120	0.8
Food services and drinking places	$7,105,391	$2,154,520	132.8
Repair and maintenance services	$3,935,477	$2,143,953	39.2
Personal and laundry services	$1,686,004	$926,090	38.8
Religious, grantmaking, civic, professional and similar organizations	$1,323,971	$230,871	12.7
Private households	$96,027	$95,975	13.0
Public administration	$4,022,151	$2,205,036	32.8
Total:	**$1,387,457,579**	**$275,131,891**	**3,834.7**

Source: Goss & Associates from IMPLAN System

Appendix E: Researchers' Biographies

Ernie Goss is the Jack MacAllister Chair in Regional Economics at Creighton University and is the initial director for Creighton's Institute for Economic Inquiry. He is also principal of the Goss Institute in Denver, Colo. Goss received his Ph.D. in economics from The University of Tennessee in 1983 and is a former faculty research fellow at NASA's Marshall Space Flight Center. He was a visiting scholar with the Congressional Budget Office for 2003-2004, and has testified before the U.S. Congress, the Kansas Legislature, and the Nebraska Legislature. In the fall of 2005, the Nebraska Attorney General appointed Goss to head a task force examining gasoline pricing in the state.

He has published more than 100 research studies focusing primarily on economic forecasting and on the statistical analysis of business and economic data. His book Changing Attitudes Toward Economic Reform During the Yeltsin Era was published by Praeger Press in 2003, and his book Governing Fortune: Casino Gambling in America was published by the University of Michigan Press in March 2007.

He is editor of Economic Trends, an economics newsletter published monthly with more than 11,000 subscribers, produces a monthly business conditions index for the nine-state Mid-American region, and conducts a survey of bank CEOs in 10 U.S. states. Survey and index results are cited each month in approximately 100 newspapers; citations have included the New York Times, Wall Street Journal, Investors Business Daily, The Christian Science Monitor, Chicago Sun Times, and other national and regional newspapers and magazines. Each month 75-100 radio stations carry his Regional Economic Report.

Scott Strain is a senior research economist at Goss & Associates. He has worked as an economist and statistician for more than 20 years providing forecasts and analysis across a wide-range of industries. Scott served as an industry economist, working in new product development regarding both quantitative and qualitative research. Scott was Senior Director of Research for an economic development agency, providing economic impact and tax incentive analysis to both private businesses and government entities. He served on the business advisory committee that worked with Nebraska state senators and the director of the state's Economic Development Department to develop the Nebraska Advantage Act – a comprehensive package of business incentives that has helped to add more than $6 billion in new capital investment and over 13,000 new jobs in the state of Nebraska since the Act's inception in 2006.

Jackson Blalock is a research assistant at Goss & Associates, studying Finance and Economics at Creighton University.