



How Much Do Exports Matter?
*Evaluating the Economic Contributions of
U.S. Grain Exports on State and
Congressional District Economies*

Prepared For:



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Acronyms

CGF	Corn Gluten Feed, an ethanol co-product
DDGS	Dried Distillers Grains with Solubles, an ethanol co-product
FAS	Foreign Agricultural Service
GDP	Gross Domestic Product
NASS	USDA National Agricultural Statistics Service
USDA	United State Department of Agriculture



I. EXECUTIVE SUMMARY

A long history of economic work has proven the value of export markets for the agricultural industry. The vast majority of agricultural producers and businesses relating to agriculture readily recognize the economic value of export markets and support policies that will encourage continued exports. What is less well known is how these same agricultural exports benefit the U.S. economy, or even state or congressional district economies.

This study examined the economic contributions provided by exports of barley, sorghum, corn, ethanol, dried distillers grains with solubles, corn gluten feed, and the corn equivalent of meat on the U.S. economy. Specifically, the economic contributions provided by each U.S. state and 52 selected congressional districts are analyzed individually with the goal of quantifying the degree to which state, and congressional district economies rely upon and benefit from grain exports.

Results from the analysis show that the \$19.4 billion in grain and grain products exported generated total economic output of \$82 billion in 2014. In other words, access to international export markets for U.S. grains generated an *additional* \$62.6 million in business sales during 2014. Moreover, the export of grain products increased U.S. GDP by \$32.9 billion over what would have occurred without such exports. Finally, the number of full-time equivalent jobs linked directly or indirectly to grain exports totaled 371,536.

Further analysis shows that for every 1 job directly involved in the export of grain and grain products, an additional 6.9 jobs are created in the U.S. economy. Additionally, every \$1 of grain product exports generates, through indirect and induced business activities, an additional \$3.23 in business sales across the United States.

The positive effects of grain export activities extend well beyond the agricultural industry. Indeed, the top ten industries (as ranked by GDP gained) benefiting from grain exports include wholesale trade, real estate, oil and natural gas production, and banking and financial institutions. As ranked by the number of jobs created by grain exports the full- and limited-service restaurants, hospitals, employment services, real estate, and wholesale trade industries are in the top-ten industries benefiting from job growth.

The above results highlight the important role grain and grain products play in the U.S. economy. Fair and transparent access to international markets creates economic benefits that extend well beyond the nations' farmlands, with the benefits reaching nearly every sector of the U.S. economy.



II. INTRODUCTION

It is well known that exports of agricultural products provide significant economic benefits to the agricultural industry and to states producing agricultural goods. Exports to international markets represent additional demand for agricultural products that would not exist otherwise and effectively shift the demand curve for U.S. grains outward. As a result, U.S. grain and grain products producers are able to market higher quantities of grain at higher prices directly because of the export demand. Accordingly, exports are critically important to the agricultural industry and to farmers and ranchers.

What is less widely known is how exports of agricultural products impact the rest of the U.S. economy. While agricultural industries clearly benefit from exporting products to international markets, it is less clear the degree to which other industries benefit from these same exports. Economic theory suggests that increased demand for U.S. grain products increases production of U.S. grains. This, in turn, would raise demand for inputs into grain product production (like fertilizer, farm machinery, etc.) and would result in a positive economic gain for these industries as well. This work quantifies the economic benefits grain product exports provide to the U.S. economy and its various sectors.

This study was commissioned by the U.S. Grains Council and the National Corn Growers Association to quantify the holistic economic contributions that exports of grains (barley, sorghum, and corn), ethanol and its co-products (dried distillers grains with solubles, or DDGS, and corn gluten feed), and the corn equivalent of meat provide to the U.S. economy. Furthermore, this study quantifies the economic contributions that the exports of grains and grain products provide to each individual state in the USA and to selected congressional districts in those states. The objective of this work is to clearly demonstrate the degree to which individual states and congressional districts benefit from exports of agricultural products that are produced within their borders.

The economic benefits shown in this study include those that are gained in industries linked to industries producing grain and grain-related products, like the fertilizer industry that is linked to the corn farming industry. By determining the benefits that accrue along the entire value chain linked to grain and grain product exports, a clearer picture of grain exports true economic importance emerges.

This report first identifies the value of grain product exports originating from each U.S. state and from the selected congressional districts. Subsequently, a description of the specific data and methodologies used in the analysis is provided; followed by the results from the IMPLAN economic input-output models.



Per the request of the U.S. Grains Council and the National Corn Growers Association, 52 congressional districts were included in this analysis. The selected congressional districts were included due to the importance of agriculture in the district's economy. The complete list of the 52 selected congressional districts is shown in Exhibit 1.

Exhibit 1: Selected Congressional Districts Included in Study

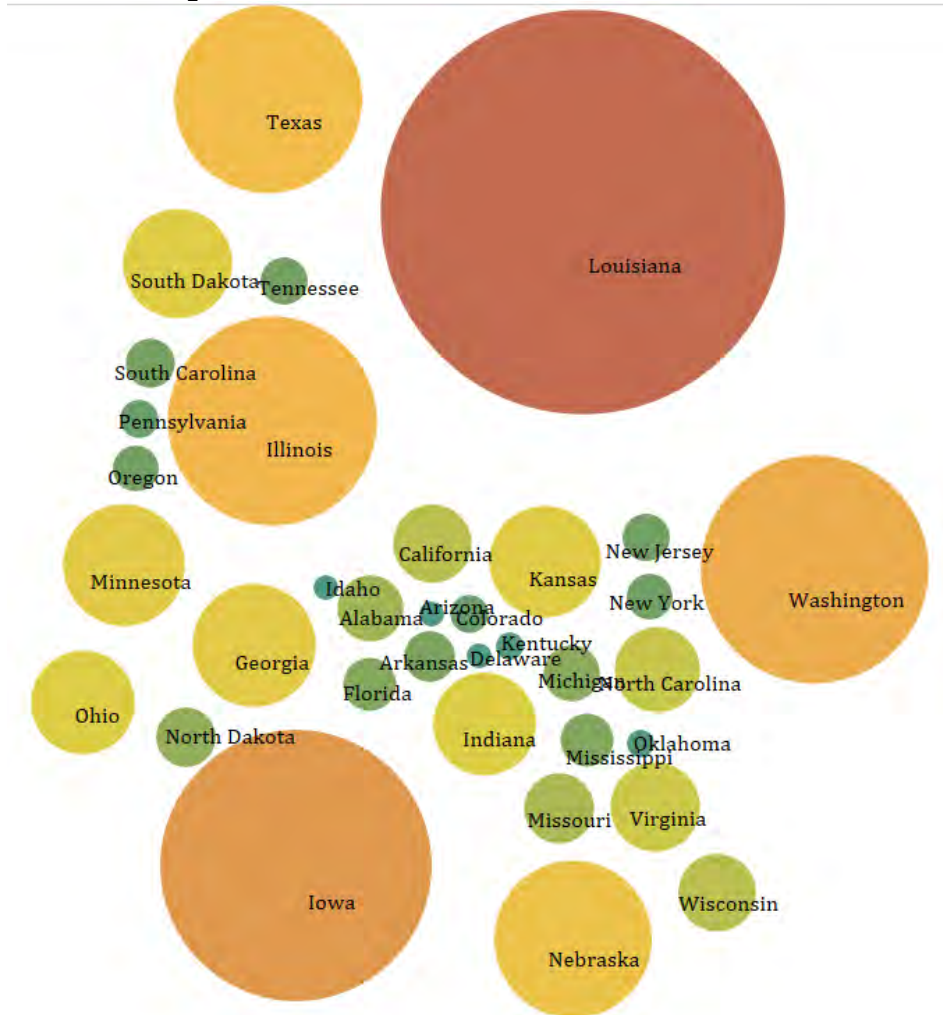
State	Congressional District
California	Sixteenth Congressional District
Colorado	Fourth Congressional District
Illinois	Twelfth Congressional District
Illinois	Thirteenth Congressional District
Illinois	Fifteenth Congressional District
Illinois	Sixteenth Congressional District
Illinois	Seventeenth Congressional District
Illinois	Eighteenth Congressional District
Indiana	Second Congressional District
Indiana	Third Congressional District
Indiana	Fourth Congressional District
Indiana	Fifth Congressional District
Indiana	Sixth Congressional District
Indiana	Eighth Congressional District
Indiana	Ninth Congressional District
Iowa	First Congressional District
Iowa	Second Congressional District
Iowa	Third Congressional District
Iowa	Fourth Congressional District
Kansas	First Congressional District
Kansas	Second Congressional District

Kansas	Fourth Congressional District
Kentucky	First Congressional District
Maryland	Fifth Congressional District
Maryland	Sixth Congressional District
Michigan	Fourth Congressional District
Michigan	Sixth Congressional District
Michigan	Seventh Congressional District
Minnesota	First Congressional District
Minnesota	Second Congressional District
Minnesota	Seventh Congressional District
Missouri	Fourth Congressional District
Missouri	Fifth Congressional District
Missouri	Sixth Congressional District
Missouri	Eighth Congressional District
Nebraska	First Congressional District
Nebraska	Second Congressional District
Nebraska	Third Congressional District
North Carolina	Seventh Congressional District
Ohio	Fourth Congressional District
Ohio	Fifth Congressional District
Ohio	Eighth Congressional District
Ohio	Tenth Congressional District
Ohio	Fifteenth Congressional District
Texas	Eleventh Congressional District
Texas	Thirteenth Congressional District
Texas	Fifteenth Congressional District
Washington	Eighth Congressional District
Wisconsin	First Congressional District
Wisconsin	Third Congressional District
Wisconsin	Sixth Congressional District
Wisconsin	Seventh Congressional District



To graphically show the relative importance of each state's exports relative to other states, Exhibit 2 shows the value of grain and grain products exports from each state. From this, it becomes clear that while all states contribute some form of grain and grain product exports, a handful of states control a significant portion of the overall value of grain exports.

Exhibit 2: Relative Size of U.S. States Grain and Grain Product Exports Value

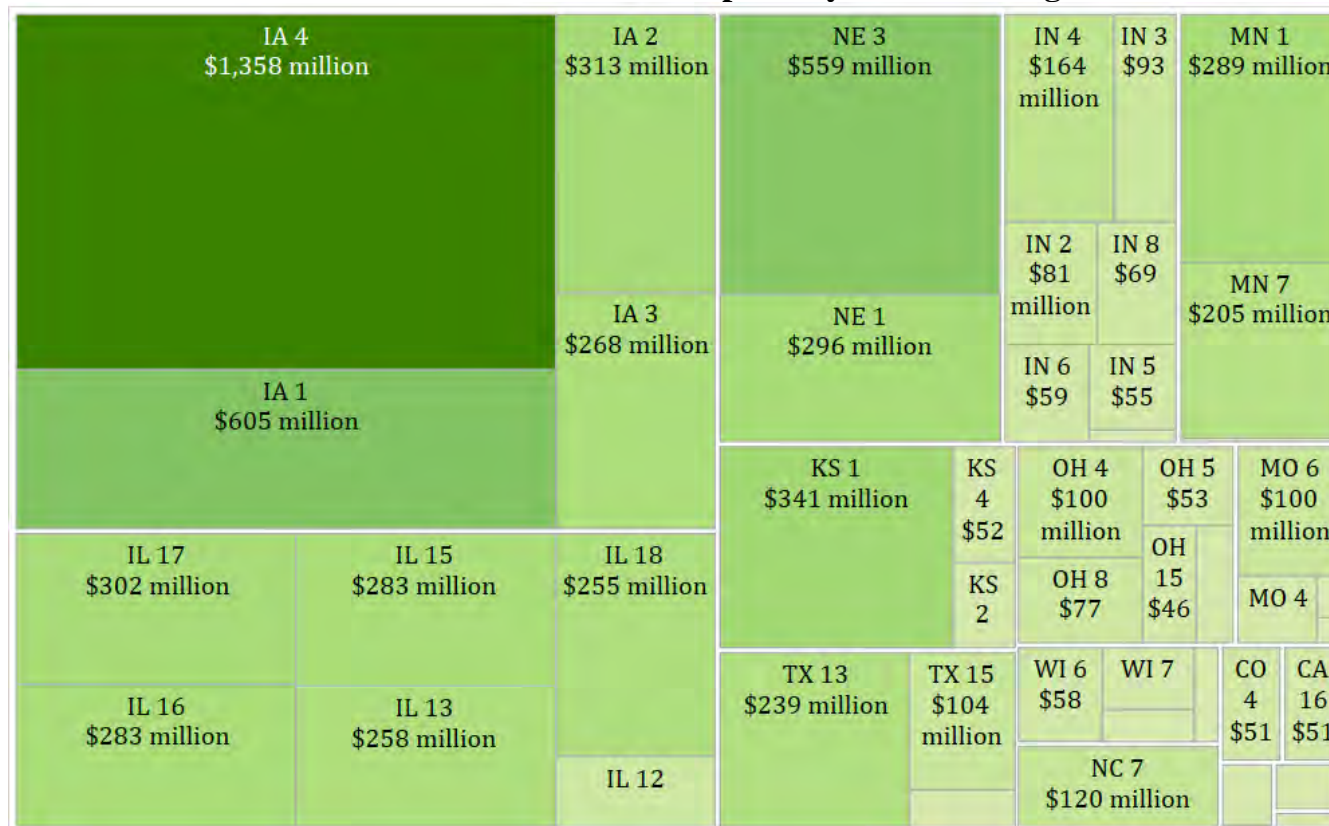


Note: Bubble size represents exports value in million \$USD
 Note: Only the 35 states with more than \$10 million in in 2014 grain and grain products exports are shown
 Source: USDA NASS, GATS, and Informa Economics IEG



Again, for comparison of one congressional district relative to the others in the report, Exhibit 3 shows the relative value of grain and grain product exports from each congressional district in the study.

Exhibit 3: 2014 Grain and Grain Product Exports by Selected Congressional District



Source: USDA NASS, GATS, and Informa Economics IEG

Having identified the value of exports from each state and congressional district in this study, the remainder of this report is dedicated to explaining the methods used to quantify the economic contributions of grain exports and to exploring the results of the analysis.



III. METHODOLOGY

To estimate the economic impact of corn, barley, sorghum, ethanol, DDGS, corn gluten feed, and meat exports on individual states and congressional districts two key pieces of information were needed: grain and grain product exports and grain and grain product production for each state and congressional district. Data on grain and grain products exports by U.S. state are readily available from USDA FAS and from proprietary databases. This study used in the information from the Global Trade Atlas database to obtain exports of barley, corn, sorghum, ethanol, DDGS, corn gluten feed, and meat (beef, pork, and poultry) export by state. Formulas provided by the U.S. Grains Council were used to convert meat exports into the corn equivalent of meat (a measure that estimates the volume of corn used to produce a pound of meat) units.

A. State Exports

Estimating the volume and value of grain and grain product exports by state was arguably the simplest step in this analysis. The USDA FAS maintains an excellent database of U.S. agricultural product exports by state and many proprietary databases and services do as well. For this analysis, information contained in the proprietary Global Trade Atlas database was used to build grain and grain exports by state.

B. State Production

The USDA National Agricultural Statistics Service (NASS) maintains data on crop and other agricultural product production by state. Additionally, the Census of Agricultural (conducted every 5 years) provides detailed information of production and other economic variables by county. Both datasets (county level production and state level production were used for this report. However, 2014 crop (barley, sorghum, and corn) production was acquired from the USDA NASS website and was subsequently used in this analysis.

Production for ethanol and its co-products (DDGS and corn gluten feed) and meat production, due to data constraints, was estimated using slightly different methods.

Informa Economics IEG maintains a database of ethanol production facilities along with their estimated production capacity and geographic information. This study leverages this database to build “from the ground up” state ethanol, DDGS, and



corn gluten feed production by state and congressional district. Informa Economics IEG's data on production by plant was aggregated into county and state production data.

Information on beef, pork, and poultry meat production was estimated by using different dataset and different approaches. Such methods were necessary due to limited information on production of meats by state. The methods used to estimate state meat production are as follows:

- Beef production was created by estimating the share of total U.S. slaughter capacity held by each known plant and aggregating the packing plant specific data to the state level. U.S. total beef production (Informa Economics IEG estimates) was then allocated to each state according to the state's share of U.S. slaughter capacity.
- US pork production was estimated on the county level by taking a county's share of US hog sales¹ (measured in dollars) and multiplying by Informa's estimated 2014 pork production. County shares of total U.S. hog sales were estimated by taking dividing a county's 2012 sales as reported in the national Agricultural Census by the national total hog sales for 2012. The county shares based on 2012 data were multiplied by 2014 NASS-reported U.S. hog sales to estimate individual county sales for 2014. The estimated 2014 county-level sales were subsequently aggregated into state-level data.
- Similarly, poultry production (broiler and turkey) was estimated by taking U.S. broiler and turkey production (2014 NASS data) multiplied by a state's share of U.S. broiler and turkey sales. State shares of broiler and turkey sales were estimated by aggregating individual county shares of state sales based on the 2012 Agricultural Census data.

The differing approach used for beef production (allocation based on slaughter capacity rather than sales) is due to two factors 1) the highly limited nature of state or congressional specific data and 2) the nature of transportation distances in the beef industry. Regarding the first point, due to consolidation in the beef industry limits the data that the USDA can disclose; leaving large holes in state reported data. The second point is relevant because fed cattle are often transported over significant distances from the feedlot to the packing plant whereas pork and poultry are shipped from finishing operations to slaughter plants in often much smaller distances. In essence, most sales of hogs and poultry occur within the same congressional district as they are slaughtered which is often not the case with beef production.

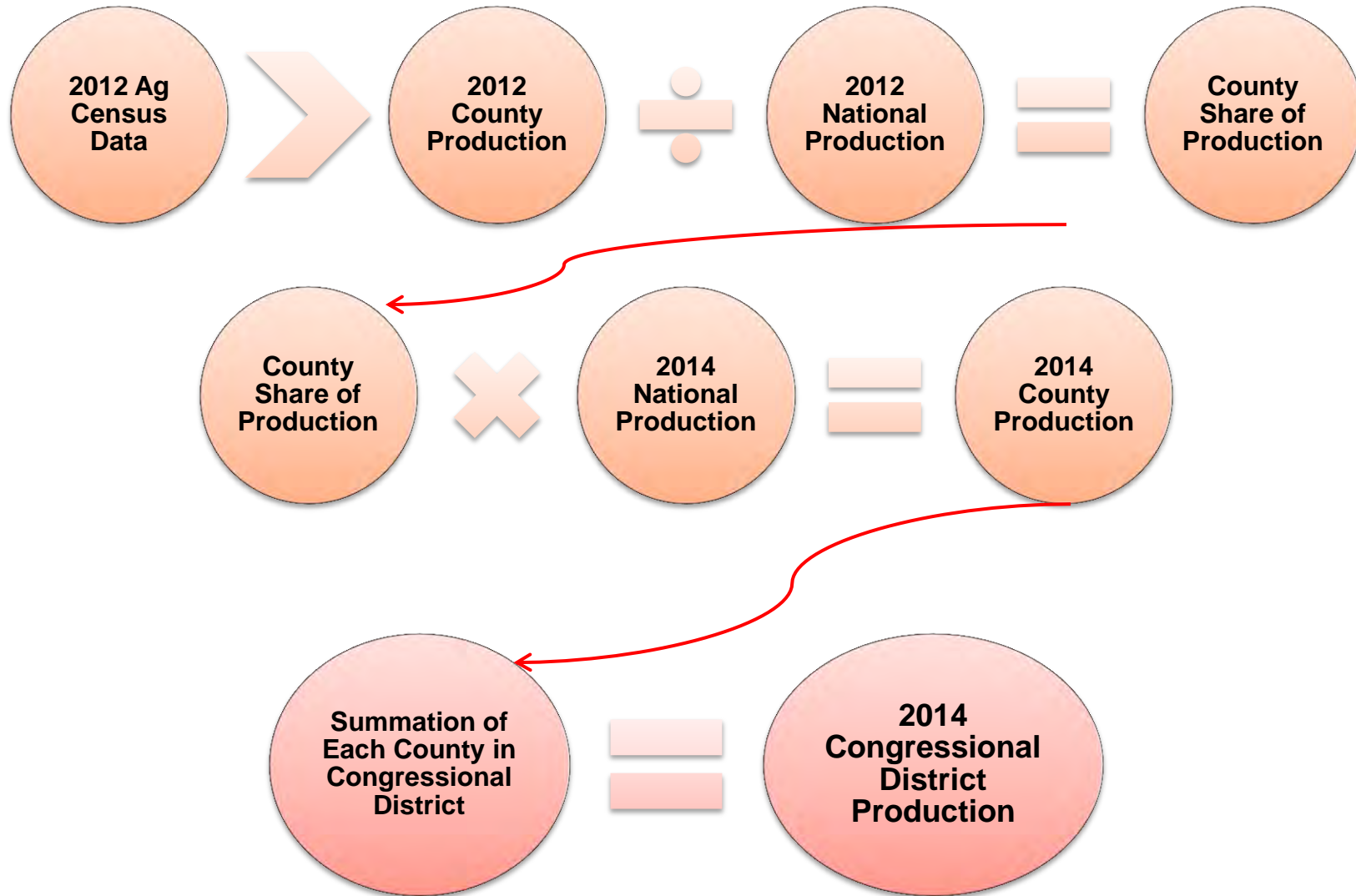
¹ Obtained from USDA NASS.



Exhibit 4 provides a graphic depiction of how various data were used in the construction of state and congressional district production and export estimates.



Exhibit 4: Methodology for Estimating Select State and Congressional District Production and Export Values



C. Congressional District Production

For crop production by congressional district, 2014 county-level production (estimated by taking 2012 county share of state production and multiplying by 2014 state production data) data were aggregated into the appropriate congressional districts. Information on specific counties and which congressional district they fall within were available from the U.S. Census Bureau².

Following the same methods used for estimating state ethanol, DDGS, and corn gluten feed production; county-level production estimates from Informa Economics IEG were aggregated to the congressional district level.

Meat production by congressional district followed the same approach that was outlined in section III.B of this report (Methodology: State Production). County-level production estimates were aggregated into the appropriate congressional districts.

When crop production and hog or poultry sales were not available for an individual county in the 2012 Agricultural Census dataset, values were interpolated by dividing the difference between the state's total production less the sum of reported counties' production by the number of counties with non-reported or missing values.

D. Congressional District Exports

To estimate barley, sorghum, and corn exports by congressional district, the county share of production was multiplied by the state-level exports. For ethanol, DDGS, and CGF; county shares of state production were multiplied by the reported state-level exports. Finally, meat exports at the congressional district were estimated by a two-step process. First, state meat exports were multiplied by a county's estimated meat production share (defined in section III.B) to obtain an estimate of county-level meat exports. County-level exports were subsequently aggregated into the appropriate congressional districts.

E. Corn Equivalent of Meat Exports

Due to the high volume of corn included in livestock feeding rations, it can be easily argued that meat production and exports are actually the production and export of corn in a valued-added form. Accordingly, formulas provided by the U.S. Grains Council were used to convert volume and value of U.S. beef, pork, and poultry production into corn equivalent units. In

² U.S. Census Bureau. *Congressional Districts Relationship Files (State-Based)*. Available here: https://www.census.gov/geo/maps-data/data/cd_state.html



essence, the formulas estimate how many pounds of corn were used to create one pound of U.S. meat exports. Such transformation allows for the analysis of the entire role that corn plays in the U.S. economy.

F. IMPLAN Economic Models

To estimate the “ripple effects” of U.S grain and grain product exports have on the entire U.S. economy, IMPLAN® economic input-output software was used. Information gathered in previous chapters was used to quantify the economic impact of grain and grain product exports on the U.S. economy. Results from the models provide insight into the number of full time equivalent (FTE) jobs, Gross Domestic Product (GDP) and output (industry sales) created via three different impacts. The different impacts estimated by IMPLAN are: direct, indirect, and induced and each impact is defined below:

- **Direct impacts** reflect the economic activity that occurs in the industries in which investments are made or changes occur. In the current case, the direct impacts are those that occur at the farm, ethanol production, or meat packing levels. For example, if a congressional district exports \$1 million in corn, the direct impact to that district is \$1 million in added economic output (that would not have been realized if exports did not occur), along with, say, \$750 thousand in GDP added and 10 farming jobs.
- **Indirect impacts** are the additional economic impacts that occur to industries linked to the industry that was directly impacted. For example, increased corn production due to high export sales creates indirect (and positive) impacts on the farm equipment and fertilizer sales industries.
- **Induced impacts** are those impacts created by changes in the spending of labor income and profits generated by the direct and indirect impacts. In the case of corn exports, wages for the jobs directly supported by corn exports are spent on housing, medical treatments, groceries, etc. The spending in these industries creates induced (and positive) impacts for the housing, medical, and grocery store industries, along with other such industries.

For each state and congressional district included in the study, an IMPLAN model was created for each product in the study. Accordingly, it is possible to assess the relative importance of each commodity to an individual state and to assess each state or congressional district’s importance in the export of a single commodity. Individual commodity, congressional district, and state results are shown in individual reports that are separate from this document while the national results are presented here.



IV. RESULTS

A. United States Economic Contributions

Results from IMPLAN models examining the contributions of grain and grain product exports confirm the importance of international markets to the U.S. national economy. In 2014, the U.S. exported \$19.4 billion of grain and grain products to international destinations. **The direct economic contributions of these exports were 47,213 jobs and \$2.8 billion in GDP** that was created solely because of grain and grain product exports (Exhibit 5). From this analysis of the direct impacts, it becomes clear that grain and grain products exports are large contributors to the U.S. economy, even before the economic “ripple effects³” are accounted for. If U.S. grain and grain product exports were suddenly halted, the figures in Exhibit 5 indicate that over 47,000 jobs and \$2.8 billion in GDP would be lost at the farm, ethanol production, and meat production levels alone, *before* accounting for losses in linked industries.

In 2014, U.S. exports of grain and grain products totaled \$19.4 billion and supported over 47,000 jobs.

Exhibit 5: Direct Economic Contributions of U.S. Grain and Grain Product Exports

Commodity	Jobs	Labor Income (\$ millions)	GDP (\$ millions)	Output (\$ millions)
Barley	207	\$6	\$10	\$62
Corn	31,984	\$958	\$1,491	\$9,603
Sorghum	5,652	\$169	\$264	\$1,697
Ethanol	938	\$115	\$238	\$2,065
DDGS CGF	1,448	\$177	\$367	\$3,187
Corn Equiv. Meat Exports	6,985	\$289	\$423	\$2,733
Total	47,213	\$1,715	\$2,792	\$19,347

Source: USDA NASS, GATS, IMPLAN, and Informa Economics IEG

The total economic contributions (direct, indirect, and induced contributions) created by the export of grain and grain products show the true importance of grain exports to the U.S. economy. By including the impacts to industries that are linked (either by

³ The indirect and induced impacts.



indirect or induced spending) to grain exports **the 2014 U.S. grain export value of \$19.4 billion is magnified to a figure of \$82 billion in economic output** (Exhibit 6). That is, the total economic impact of U.S. grain exports is 3.2 times as large as the value of grain exports. Another way to think of these effects is that for every \$1 of grain and grain product exports, another \$3.23 in economic output (industry sales) is generated across the United States.

For every \$1 in grain and grain product exports an additional \$3.23 is added to the U.S. economy.

Of course, the economic contributions of grain exports are not limited solely to economic output. As shown in Exhibit 6, **the total impact of grain and grain product exports supported 371,536 jobs across the U.S. and \$33 billion in GDP in 2014.** For every job directly created by the export of grain and grain products, an additional 6.9 jobs were created in the U.S.

Exhibit 6: Total Economic Contribution of U.S. Grain and Grain Products Exports

Commodity	Jobs	Labor Income (\$ millions)	GDP (\$ millions)	Output (\$ millions)
Barley	1,366	\$65	\$112	\$259
Corn	211,541	\$10,099	\$17,309	\$40,083
Sorghum	37,383	\$1,785	\$3,059	\$7,083
Ethanol	25,250	\$1,570	\$2,968	\$8,870
DDGS CGF	38,978	\$2,424	\$4,581	\$13,692
Corn Equiv. Meat Exports	57,018	\$2,790	\$4,925	\$12,053
Total	371,536	\$18,733	\$32,954	\$82,040

Source: USDA NASS, GATS, IMPLAN, and Informa Economics IEG

For every job directly supported by grain and grain product exports, an additional 6.9 jobs are added across the U.S.

The largest contributions by a single grain or grain product are those made by the export of corn. Corn exports, which totaled over \$1.6 billion in 2014, directly supported over 31,000 farm jobs across the United States and generated \$958 billion in salaries and wages for those same farmers and their employees. Corn exports also generated \$2.72 billion in direct GDP for the United States economy. By the time the indirect and induced effects of corn export are included; corn exports supported 211,541 jobs in the United States and added \$17.3 billion in GDP through increased economic output of \$40 billion (Exhibit 6).



As measured by GDP, the corn equivalent of meat exports is the second most significant contributor to the U.S. economy. The export of U.S. meats supported 57,018 jobs in the United States and added \$4.9 billion in GDP and increased economic output by \$12 billion in 2014.

On a national level, none of the crops or products included in this study supports less than 1,000 jobs. Moreover, the export of each commodity supported at least \$112 million in GDP, indicating that each commodity in and of its own is a significant contributor to the U.S. economy.

The impact of grain and grain product exports does not benefit all industries to the same degree. Exhibit 7 shows the top ten (ranked by employment gains) IMPLAN industries that benefit from the export of grains and grain products. As expected, a number of agriculturally-related industries rank near the top of the list for jobs supported by grain and grain product exports.

Exhibit 7: Top Ten Industries, Ranked by Employment Gains, Benefiting from Export of Grains and Grain Products

IMPLAN Sector	Description	Jobs	Labor Income (\$ millions)	GDP (\$ millions)	Output (\$ millions)
19	Support activities for agriculture and forestry	48,073	\$1,613	\$1,966	\$2,534
2	Grain farming	40,003	\$1,199	\$1,865	\$12,011
440	Real estate	14,374	\$334	\$2,086	\$2,828
395	Wholesale trade	13,735	\$1,158	\$2,167	\$3,347
11	Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	11,043	\$270	\$676	\$1,398
501	Full-service restaurants	7,289	\$166	\$180	\$327
502	Limited-service restaurants	6,583	\$125	\$296	\$526
482	Hospitals	6,268	\$473	\$541	\$931
464	Employment services	5,693	\$218	\$316	\$380
92	Poultry processing	5,590	\$217	\$275	\$1,624

Source: USDA NASS, GATS, IMPLAN, and Informa Economics IEG

As shown in Exhibit 8, many industries outside of agriculture benefit from the export of grain and grain products. The total GDP generated by industries linked (indirectly or through induced spending) benefits the wholesale trade, real estate, banking, and other such industries. Across the U.S., the wholesale trade industry gained an additional \$2.2 billion in GDP because of



grain and grain products exports in 2014. Similarly, \$713 million in GDP was added to banking and other financial institutions (IMPLAN industry 433) due to business and financial activities related to the production and export of grain and grain products. Such findings highlight the importance of grain exports and access to export markets for industries beyond agriculture.

Exhibit 8: Top Ten Industries, Ranked by GDP Gains, Benefiting from Export of Grains and Grain Products

IMPLAN Sector	Description	Jobs	Labor Income (\$ millions)	GDP (\$ millions)	Output (\$ millions)
395	Wholesale trade	13,735	\$1,158	\$2,167	\$3,347
440	Real estate	14,374	\$334	\$2,086	\$2,828
19	Support activities for agriculture and forestry	48,073	\$1,613	\$1,966	\$2,534
2	Grain farming	40,003	\$1,199	\$1,865	\$12,011
441	Owner-occupied dwellings	0	\$0	\$1,174	\$1,778
20	Extraction of natural gas and crude petroleum	2,423	\$314	\$749	\$1,139
433	Monetary authorities and depository credit intermediation	3,250	\$261	\$713	\$932
165	Other basic organic chemical manufacturing	2,773	\$339	\$703	\$6,103
11	Beef cattle ranching and farming, including feedlots and dual-purpose ranching and farming	11,043	\$270	\$676	\$1,398
461	Management of companies and enterprises	4,483	\$557	\$669	\$1,057

Source: USDA NASS, GATS, IMPLAN, and Informa Economics IEG

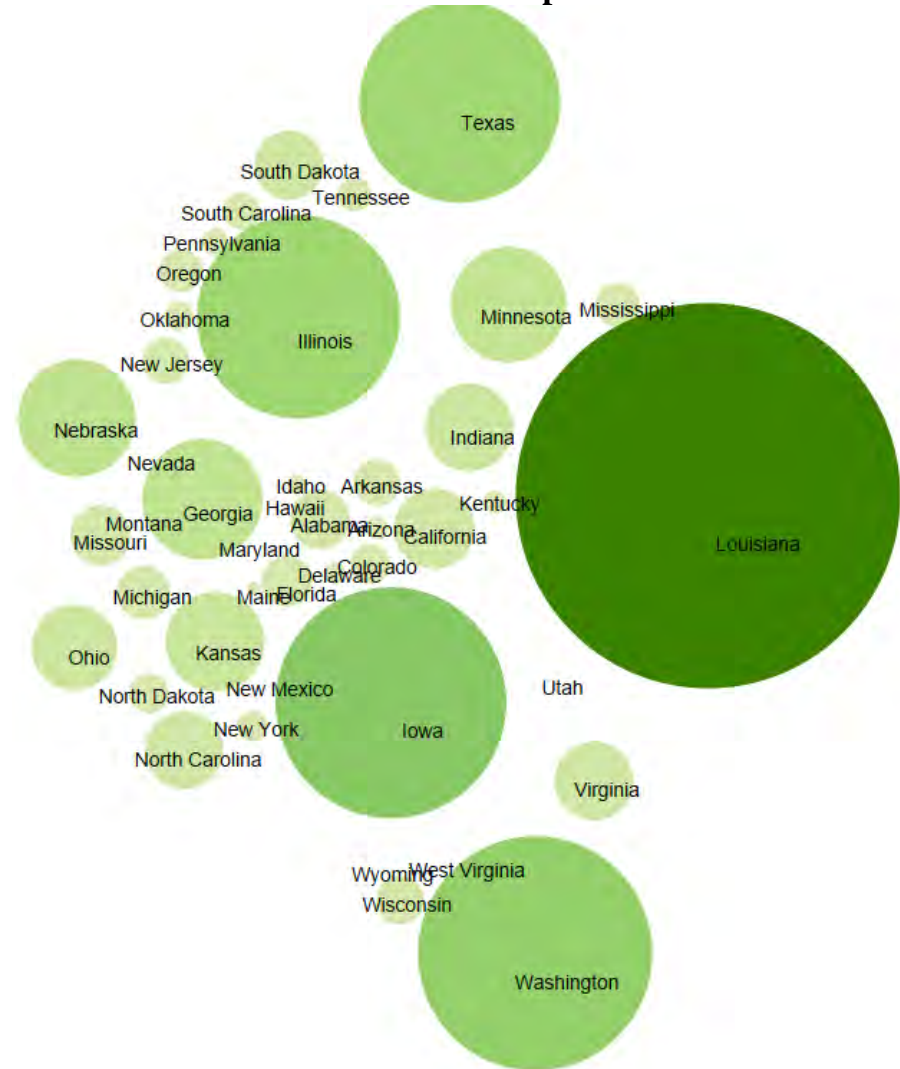


B. State Economic Contributions

Exhibit 9 shows the total (direct, indirect, and induced) GDP that was created across the United States in 2014 from the export of grains and grain products.

Specific and more detailed information on the economic contributions exports of grain and grain products can be found in the individual state handouts associated with this report and in the state economic contribution ranking tables in section IV.D of this report.

Exhibit 9: Total GDP Created by State from Grain and Grain Product Exports



Note: GDP results for Louisiana may be overstated due to the high volume of commodities exported from the Port of New Orleans

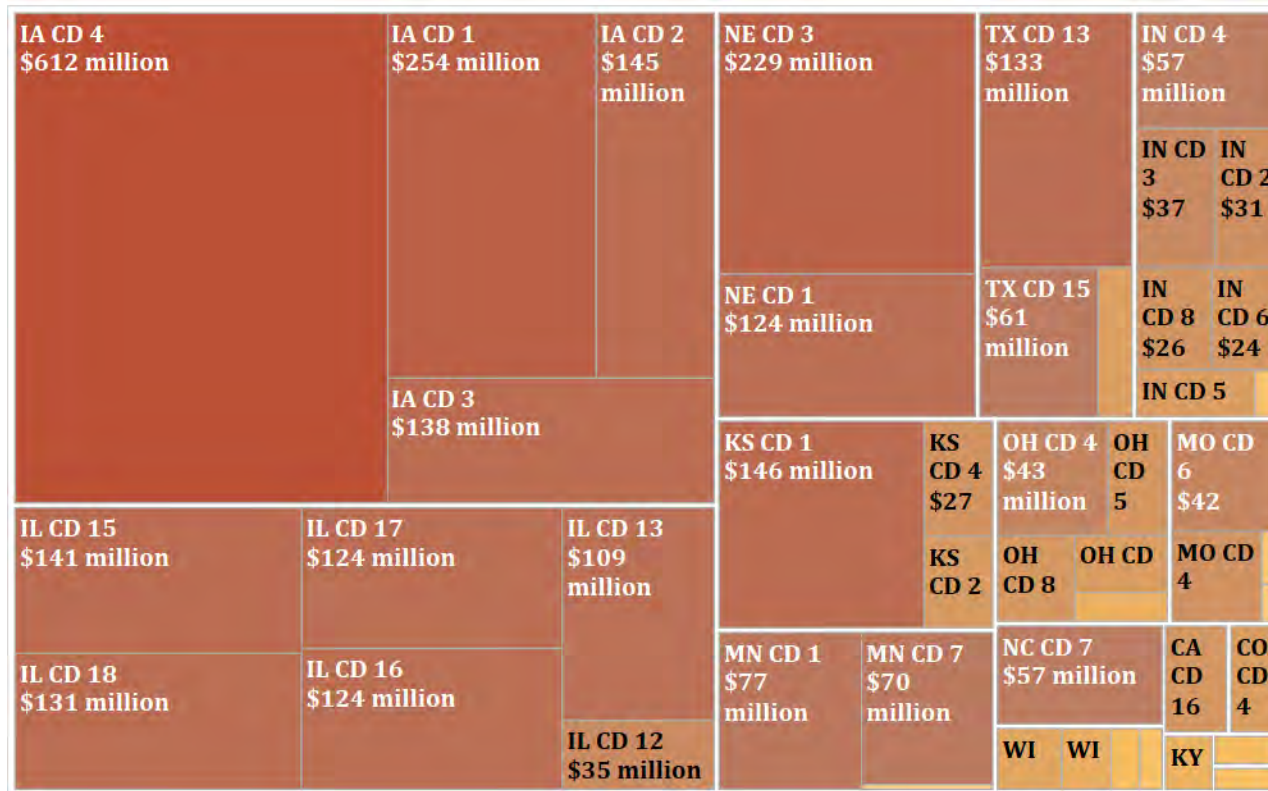
Source: IMPLAN and Informa Economics IEG



C. Congressional District Economic Contributions

The results from our analysis show the total GDP generated by exports of grain and grain products totals at least \$100,000 for each congressional district included. On the top end, Iowa’s Fourth Congressional District generated \$612 million in GDP in 2014 from its grain and grain product exports (Exhibit 10).

Exhibit 10: Total GDP Created by Exports of Grain and Grain Products by Selected Congressional Districts



Source: IMPLAN and Informa Economics IEG

Specific and more detailed information on the economic contributions exports of grain and grain products can be found in the



individual congressional district handouts associated with this report and in the district economic contribution ranking tables in section IV.D of this report.

D. State and Congressional District Rankings

The tables shown in Exhibit 11 through Exhibit 18 rank the states and congressional districts included in this study by total grain and grain products exports in 2014 and the total economic output, jobs, and GDP created from the export of grains and grain products.



**Exhibit 11: Grain and Grain Product Exports
by State, 2014.**

Rank	State	Exports (\$ millions)
1	Louisiana	\$5,650.15
2	Iowa	\$2,545.07
3	Washington	\$1,795.22
4	Illinois	\$1,510.55
5	Texas	\$1,219.02
6	Nebraska	\$855.76
7	Georgia	\$524.34
8	Minnesota	\$512.82
9	Kansas	\$431.17
10	South Dakota	\$411.15
11	Ohio	\$371.59
12	Indiana	\$366.36
13	Virginia	\$276.25
14	North Carolina	\$250.40
15	California	\$211.99
16	Wisconsin	\$207.79
17	Missouri	\$169.27
18	Alabama	\$150.76
19	North Dakota	\$122.12
20	Michigan	\$109.57
21	Florida	\$99.53
22	Mississippi	\$97.29
23	Arkansas	\$89.39
24	South Carolina	\$83.19
25	Tennessee	\$77.32
26	New Jersey	\$74.27
27	Oregon	\$72.32
28	New York	\$70.77
29	Colorado	\$52.44
30	Pennsylvania	\$50.32
31	Oklahoma	\$25.96
32	Kentucky	\$25.41
33	Delaware	\$21.58
34	Idaho	\$21.10
35	Arizona	\$20.28
36	Maryland	\$7.86
37	West Virginia	\$1.65
38	Wyoming	\$0.69
39	Utah	\$0.67
40	Maine	\$0.64
41	Hawaii	\$0.30
42	New Mexico	\$0.15
43	Montana	\$0.03
44	New Hampshire	\$0.03
45	Massachusetts	\$0.03
46	Nevada	\$0.03
47	Connecticut	\$0.01
48	Alaska	\$0.01
49	Vermont	\$0.01
50	Rhode Island	\$0.00

**Exhibit 12: Total Economic Output Created
by Grain and Grain Product Exports by State**

Rank	State	Total Output (\$ millions)
1	Louisiana	\$12,052
2	Iowa	\$4,904
3	Washington	\$4,021
4	Illinois	\$3,211
5	Texas	\$3,025
6	Nebraska	\$1,382
7	Georgia	\$1,271
8	Minnesota	\$1,170
9	Kansas	\$873
10	Indiana	\$705
11	Ohio	\$676
12	South Dakota	\$600
13	North Carolina	\$521
14	Virginia	\$512
15	California	\$490
16	Alabama	\$322
17	Missouri	\$317
18	Wisconsin	\$302
19	Michigan	\$282
20	Florida	\$219
21	Mississippi	\$194
22	Arkansas	\$193
23	North Dakota	\$178
24	New Jersey	\$158
25	Oregon	\$147
26	Colorado	\$141
27	South Carolina	\$140
28	Tennessee	\$123
29	New York	\$103
30	Pennsylvania	\$80
31	Oklahoma	\$66
32	Arizona	\$50
33	Kentucky	\$48
34	Idaho	\$41
35	Delaware	\$40
36	Maryland	\$14
37	West Virginia	\$3
38	Utah	\$1
39	Wyoming	\$1
40	Maine	\$1
41	Hawaii	\$1
42	New Mexico	\$0
43	Montana	\$0
44	Nevada	\$0
45	New Hampshire	\$0
46	Massachusetts	\$0
47	Connecticut	\$0
48	Vermont	\$0
49	Alaska	\$0
50	Rhode Island	\$0



Exhibit 13: Total GDP Created by Grain and Grain Product Exports by State

Rank	State	Total GDP (\$ millions)
1	Louisiana	\$4,212
2	Washington	\$1,563
3	Iowa	\$1,516
4	Illinois	\$1,175
5	Texas	\$1,149
6	Georgia	\$413
7	Nebraska	\$395
8	Minnesota	\$382
9	Kansas	\$280
10	Indiana	\$221
11	Ohio	\$210
12	California	\$185
13	Virginia	\$178
14	North Carolina	\$173
15	South Dakota	\$137
16	Missouri	\$103
17	Alabama	\$101
18	Michigan	\$82
19	Florida	\$74
20	Wisconsin	\$66
21	New Jersey	\$62
22	Arkansas	\$61
23	Mississippi	\$56
24	Oregon	\$53
25	North Dakota	\$46
26	Colorado	\$43
27	South Carolina	\$40
28	Tennessee	\$32
29	New York	\$27
30	Oklahoma	\$24
31	Pennsylvania	\$21
32	Kentucky	\$15
33	Arizona	\$14
34	Delaware	\$13
35	Idaho	\$11
36	Maryland	\$5
37	West Virginia	\$1
38	Utah	\$0
39	Maine	\$0
40	Wyoming	\$0
41	Hawaii	\$0
42	New Mexico	\$0
43	Montana	\$0
44	Nevada	\$0
45	Massachusetts	\$0
46	New Hampshire	\$0
47	Connecticut	\$0
48	Vermont	\$0
49	Alaska	\$0
50	Rhode Island	\$0

Exhibit 14: Total Jobs Created by Grain and Grain Products Export by State

Rank	State	Total Jobs
1	Louisiana	77,172
2	Washington	22,167
3	Texas	17,486
4	Iowa	16,382
5	Illinois	13,399
6	Georgia	5,403
7	Minnesota	3,988
8	Nebraska	3,558
9	Virginia	3,476
10	Ohio	3,131
11	Kansas	3,119
12	Indiana	2,575
13	North Carolina	2,092
14	California	1,796
15	Missouri	1,661
16	Alabama	1,546
17	South Dakota	1,436
18	New Jersey	1,374
19	Florida	1,190
20	Michigan	1,089
21	Oregon	931
22	Arkansas	864
23	Mississippi	757
24	Wisconsin	744
25	South Carolina	652
26	Colorado	501
27	Oklahoma	427
28	Tennessee	417
29	North Dakota	363
30	Pennsylvania	234
31	New York	232
32	Kentucky	214
33	Arizona	187
34	Delaware	155
35	Idaho	134
36	Maryland	81
37	West Virginia	13
38	Maine	11
39	Utah	7
40	Hawaii	6
41	Wyoming	5
42	New Mexico	2
43	Montana	0
44	Massachusetts	0
45	New Hampshire	0
46	Nevada	0
47	Connecticut	0
48	Vermont	0
49	Alaska	0
50	Rhode Island	0



Exhibit 15: 2014 Exports of Grain and Grain Products by Congressional District

Rank	State	Cong. District	Exports (\$ millions)
1	Iowa	4	\$1,358.22
2	Iowa	1	\$605.25
3	Nebraska	3	\$559.20
4	Kansas	1	\$341.40
5	Iowa	2	\$313.49
6	Illinois	17	\$301.70
7	Nebraska	1	\$295.69
8	Minnesota	1	\$289.07
9	Illinois	16	\$282.95
10	Illinois	15	\$282.57
11	Iowa	3	\$268.12
12	Illinois	13	\$258.41
13	Illinois	18	\$255.26
14	Texas	13	\$238.93
15	Minnesota	7	\$204.92
16	Indiana	4	\$164.45
17	North Carolina	7	\$120.18
18	Texas	15	\$103.79
19	Missouri	6	\$100.21
20	Ohio	4	\$99.88
21	Indiana	3	\$92.79
22	Indiana	2	\$81.42
23	Illinois	12	\$80.71
24	Ohio	8	\$76.78
25	Indiana	8	\$69.47
26	Indiana	6	\$58.98
27	Wisconsin	6	\$58.43
28	Indiana	5	\$55.26
29	Ohio	5	\$52.68
30	Kansas	4	\$51.71
31	Colorado	4	\$51.12
32	California	16	\$50.67
33	Ohio	15	\$46.05
34	Wisconsin	7	\$43.21
35	Missouri	4	\$39.63
36	Kansas	2	\$37.94
37	Ohio	10	\$31.55
38	Texas	11	\$27.89
39	Michigan	7	\$23.80
40	Kentucky	1	\$21.66
41	Wisconsin	3	\$21.61
42	Wisconsin	1	\$17.00
43	Washington	8	\$8.27
44	Missouri	5	\$7.24
45	Indiana	9	\$6.91
46	Missouri	8	\$4.54
47	Minnesota	2	\$3.02
48	Maryland	5	\$1.34
49	Nebraska	2	\$0.88
50	Maryland	6	\$0.87
51	Michigan	6	\$0.47
52	Michigan	4	\$0.12

Exhibit 16: Total Jobs Created from Grain Exports by Congressional District, 2014

Rank	State	Cong. District	Total Jobs
1	Iowa	4	6,118
2	Iowa	1	2,735
3	Illinois	15	2,467
4	Nebraska	3	2,072
5	Illinois	16	1,768
6	Kansas	1	1,737
7	Illinois	18	1,714
8	Iowa	2	1,703
9	Texas	15	1,696
10	Iowa	3	1,561
11	Illinois	17	1,540
12	Texas	13	1,508
13	Illinois	13	1,463
14	Nebraska	1	1,101
15	Minnesota	1	910
16	Minnesota	7	887
17	Illinois	12	832
18	North Carolina	7	633
19	Missouri	6	630
20	Indiana	4	543
21	Missouri	4	526
22	Ohio	4	505
23	Texas	11	461
24	Indiana	3	436
25	Ohio	5	370
26	Ohio	15	350
27	Indiana	6	344
28	Indiana	2	342
29	Ohio	8	335
30	Kansas	2	335
31	Indiana	8	332
32	Kansas	4	332
33	California	16	286
34	Colorado	4	191
35	Indiana	5	183
36	Ohio	10	163
37	Wisconsin	6	161
38	Kentucky	1	144
39	Wisconsin	7	134
40	Indiana	9	86
41	Washington	8	84
42	Wisconsin	3	80
43	Michigan	7	73
44	Missouri	5	61
45	Missouri	8	52
46	Wisconsin	1	49
47	Minnesota	2	31
48	Maryland	5	27
49	Maryland	6	10
50	Michigan	6	4
51	Nebraska	2	3
52	Michigan	4	1



Exhibit 17: Total GDP Created from Grain Exports by Congressional District, 2014

Rank	State	Cong. District	Total GDP (\$ millions)
1	Iowa	4	\$612
2	Iowa	1	\$254
3	Nebraska	3	\$229
4	Kansas	1	\$146
5	Iowa	2	\$145
6	Illinois	15	\$141
7	Iowa	3	\$138
8	Texas	13	\$133
9	Illinois	18	\$131
10	Illinois	17	\$124
11	Nebraska	1	\$124
12	Illinois	16	\$124
13	Illinois	13	\$109
14	Minnesota	1	\$77
15	Minnesota	7	\$70
16	Texas	15	\$61
17	North Carolina	7	\$57
18	Indiana	4	\$57
19	Ohio	4	\$43
20	Missouri	6	\$42
21	Indiana	3	\$37
22	Illinois	12	\$35
23	Indiana	2	\$31
24	Missouri	4	\$28
25	Kansas	4	\$27
26	Indiana	8	\$26
27	Indiana	6	\$24
28	California	16	\$24
29	Ohio	5	\$23
30	Ohio	8	\$23
31	Kansas	2	\$22
32	Colorado	4	\$19
33	Ohio	15	\$19
34	Indiana	5	\$19
35	Texas	11	\$17
36	Wisconsin	6	\$14
37	Wisconsin	7	\$11
38	Ohio	10	\$9
39	Kentucky	1	\$9
40	Michigan	7	\$7
41	Wisconsin	3	\$6
42	Washington	8	\$5
43	Wisconsin	1	\$5
44	Indiana	9	\$4
45	Missouri	5	\$4
46	Missouri	8	\$2
47	Minnesota	2	\$2
48	Maryland	6	\$1
49	Maryland	5	\$1
50	Michigan	6	\$0
51	Nebraska	2	\$0
52	Michigan	4	\$0

Exhibit 18: Total Economic Output Created from Grain Exports by Congressional District, 2014

Rank	State	Cong. District	Total Output (\$ millions)
1	Iowa	4	\$2,230
2	Iowa	1	\$957
3	Nebraska	3	\$893
4	Kansas	1	\$604
5	Iowa	2	\$501
6	Illinois	15	\$491
7	Texas	13	\$490
8	Illinois	17	\$473
9	Nebraska	1	\$471
10	Illinois	16	\$470
11	Iowa	3	\$452
12	Illinois	18	\$435
13	Illinois	13	\$432
14	Minnesota	1	\$416
15	Minnesota	7	\$318
16	Indiana	4	\$233
17	North Carolina	7	\$193
18	Ohio	4	\$193
19	Texas	15	\$190
20	Missouri	6	\$160
21	Indiana	3	\$149
22	Illinois	12	\$137
23	Indiana	2	\$130
24	Indiana	8	\$112
25	Ohio	8	\$110
26	Kansas	4	\$96
27	Ohio	5	\$94
28	Indiana	6	\$91
29	California	16	\$87
30	Missouri	4	\$84
31	Colorado	4	\$83
32	Wisconsin	6	\$81
33	Indiana	5	\$80
34	Ohio	15	\$75
35	Kansas	2	\$74
36	Wisconsin	7	\$70
37	Texas	11	\$52
38	Ohio	10	\$44
39	Michigan	7	\$41
40	Kentucky	1	\$38
41	Wisconsin	3	\$32
42	Wisconsin	1	\$24
43	Washington	8	\$14
44	Indiana	9	\$13
45	Missouri	5	\$12
46	Missouri	8	\$8
47	Minnesota	2	\$6
48	Maryland	5	\$2
49	Maryland	6	\$2
50	Nebraska	2	\$1
51	Michigan	6	\$1
52	Michigan	4	\$0



V. CONCLUSIONS

This work examines and quantifies the economic contributions and benefits that are provided to each U.S. state and selected congressional districts through the export of barley, sorghum, corn, DDGS, corn gluten feed, and the corn equivalent of meats. By analyzing the impacts to individual states and congressional districts, it is possible for policy makers, businesses, and residents of a specific state or congressional district to know how much their economy benefits from and depends upon grain exports.

By using export sales, state and country crop production data, and IMPLAN economic input-output models, the number of jobs, GDP, and economic output (business sales) that are supported by grain exports was estimated. Economic input-output models were created for each commodity and each state/congressional district in the study. Additionally, a national model was created for the U.S. economy to determine the holistic impact grain exports have on the U.S. economy.

The results from this study indicate a total of \$80 billion in economic output was generated from the \$19.4 billion in grain exports that occurred during 2014. The GDP generated by these exports reached \$32.9 billion and 371,536 full-time equivalent are supported by grain exports.

For every 1 job directly supported by grain exports, and additional 6.8 jobs are supported throughout the U.S. economy. For every \$1 of grain exports, the economic “ripple effects” add \$3.23 to the economy.

The positive impacts of grain exports extend well beyond the agricultural industry. Some of the industries receiving the greatest economic benefit and contribution from grain exports are the wholesale trade, real estate, oil and natural gas production, and banking and financial industries. Also receiving significant economic contributions from grain exports are the full- and limited-service restaurants, hospitals, employment services, real estate, and wholesale trade industries.

Agriculture plays a vital role in the U.S. economy in every state and congressional district. Exports of grains and grain products provide economic benefits to these regions as well. The results of this report help quantify the true economic contributions of exports and export markets to U.S. state and congressional district economies. Realization of the importance of export markets to state and regional economies is the first step to fair and consistent access to international export markets for U.S. grain products. In turn, the economic impacts of grain exports will extend beyond the farmlands and benefit nearly all sectors of state and regional economies.





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