Analysis of Rural Infrastructure and Remedial Recommendations for the Eleven STC Member States

informa economics

Prepared for:

SOY TRANSPORTATION COALITION

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Acronyms

3P	Public Private Partnerships
4R	Railroad Revitalization and Reform Act
AASHTO	American Association of State Highway and Transportation Officials
ADT	Average Daily Traffic Count
ARRA	American Recovery and Reinvestment Act
CAGR	Compound Annual Growth Rate
DOT	Department of Transportation
DDHS	Delta Development Highway System
EDA	Economic Development Administration
EISA	Energy Independence & Security Act
FHWA	Federal Highway Administration
GARVEE	Grant Anticipation Revenue Vehicles
HBRRP	Highway Bridge Replacement and Rehabilitation
HTF	Federal Highway Trust Fund
IEDC	Indiana Economic Development Corporation
IM	Interstate Maintenance
IRSF	Indiana Industrial Rail Service Fund
IWIF	Inland Waterways Trust Fund Program
LRFA	Local Rail Freight Assistance
LTAP	Local Technical Assistance Program
NHS	National Highway System
NRDP	National Rural Development Partner
SAFETEA-LU	Safe Accountable Flexible Efficient Transportation Equity Act – A Legacy for Users
SRDC	State Rural Development Council
STIP	Statewide Transportation Improvement Program
STP	Surface Transportation Program
TIFIA	Transportation Infrastructure Finance and Innovation Act
T-WORKS	Transportation Works for Kansas
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
WPA	Works Progress Administration

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I. RURAL INFRASTRUCTURE BACKGROUND

A. Defining Rural Agriculture and Its Key Components

Transportation has provided a critical pathway for the development of American agriculture, and for the economic growth of the United States. As agriculture was central to the development of the U.S., transportation paved the way for this growth. Emerging markets for agricultural production—including both domestic and international markets—have additionally contributed to forming new transportation patterns.[1] Sufficient transportation and efficient transportation are critical to rural areas. While agriculture is responsible for less than 10% of rural jobs, it is capital-intensive and generates economic activity above that of the jobs it creates. In additional to agriculture, the U.S. manufacturing sector also relies, critical to the industry's well-being, on rural transportation infrastructure. Manufacturing employs 15% of the rural workforce (a 42-percent larger share of total employment than in urban areas).[2]

The three transcontinental modes of rail, truck, and barge currently account for all grain and soybean transportation in the United States. U.S. railroads, the first of which was completed in 1830, allowed for both the development of rural, previously inaccessible areas and the transport of agricultural products to markets. Meanwhile, the U.S. waterways system was created before the railroads, and is currently the most economical and energy efficient way of transporting goods from one point on the system to another. While rail and inland water transportation are more efficient and lower-cost movers of bulky shipments over long distances, trucks are currently the primary mode of transporting agricultural products over short distances due to their flexibility of routes and low fixed costs.[3] With the growth of Midwestern farms and Eastern cities, the U.S. developed an efficient system of not only transportation, but also of storage—primarily warehouses and grain elevators—which played a major role in the development of the nation.

From 1978 to 2010, the most notable trends in U.S. grain handling were a 112% increase in the overall quantity of grain handled and an increasing share of truck as a transportation mode in U.S. grain handling, moving grain to final market position. The primary drivers of the two trends include an overall increase in U.S. grain production and emerging off-farm

[1] *Transportation of U.S. Grains: A Modal Share Analysis, 1978-2010*, AMS, found at http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5097327
[2] *Study of Rural Transportation Issues,* USDA, found at http://www.ams.usda.gov/AMSv1.0/ruraltransportationstudy
[3] Ibid.

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markets for grain—in particular for corn, such as in the case of ethanol biorefineries, where trucks became the major mode of transport.[4]

1. The Development of U.S. Transportation Infrastructure for Agriculture

(a) Rail

The development of U.S. railroads has been closely tied to agriculture, and the development of U.S. agriculture has been profoundly aided by the railroads. The U.S. railroads and agriculture were developed interdependently, and continue to be interdependent to this day; agriculture is both dependent on the railroads, and is a source of revenue for the railroads.[5] The first railroad, the Baltimore and Ohio Railroad, was completed in early 1830, and by 1850, 9,000 miles of railroad were in operation.[6] The mileage of railroads in the U.S. peaked in 1916, and in 1917, 240,000 miles of railroad were in operation under 1,500 railroads.

While the railroads expanded rapidly in the decades leading up to World War I, intense regulation of the railroad industry caused a long decline of the industry's financial condition. In addition, following the war, competition from both highways and waterways added pressure to the railroad industry financially.[7] In the 1950s and 1960s, the government spent tens of billions of dollars toward inland highways and inland waterways. As a result of the increased competition from these two modes, regulatory stringency in the railroad industry, and changes in shipping patterns, in 1949 rail traffic had fallen 28% from 1944, and in the 1970s, bankrupt railroads accounted for more than 21% of the railroad's mileage.

In response to the declining state of the railroad industry, Congress passed the Staggers Act in 1980, which allowed the railroads to operate as a "profit-driven business", which they have since done. The Staggers Act served to deregulate railroads economically, which increased the competition between shippers and allowed for rail rates to follow the market.[8]

[4] *Transportation of U.S. Grains: A Modal Share Analysis, 1978-2010*, AMS, found at http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5097327
[5] *Study of Rural Transportation Issues,* USDA, found at http://www.ams.usda.gov/AMSv1.0/ruraltransportationstudy
[6] *A Short History of U.S. Railroads*, Association of American Railroads, found at http://www.aar.org/~/media/aar/Background-Papers/A-Short-History-of-US-Freight.ashx
[7] Ibid.
[8] *Study of Rural Transportation Issues,* USDA, found at http://www.ams.usda.gov/AMSv1.0/ruraltransportationstudy

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(b) Barge

The inland transportation system in the U.S. also played a significant role in the development of the country. While early pioneers carved paths that connected settlements, towns, and coastal areas, the inland waterways allowed for the productive capacity of the United States to reach markets. The inland waterways were developed before railroads, and railroads often served as feeders to the waterways. Today the inland waterways both complement and compete with other modes for the transport of agricultural goods, and thanks to government investment, the waterways allow for goods from far inland areas to compete in global markets due to their relatively low costs per ton-mile.[9]

2. The Current U.S. Grain and Soybean Handling System

The current structure of grain handling in the United States is both competitive and complementary between modes (i.e. truck, rail, and barge). As grains and soybeans as the major crops travel from the farm to final market destination, it is likely that they will have traveled via at least two modes. Whether the product is destined for a domestic market or for export may also determine the mode employed for transport. While the primary mode of transport for grain and soybeans to final market position within the domestic market is by truck, rail currently holds the largest share of grains and soybeans to export position. This has been the case since 2005, before which, barge transport was the principal mode for moving grains and soybeans to export positions. Each of those commodities has experienced barge shares that were slowly shrinking and whose traffic has been declining.[10]

From 1978 to 2010, grain handling increased rather consistently, year-on-year, and grew 112% over the entire time period. Grain handled by each of the three modes similarly increased, including:

- Large growth in trucking for grain movement, with truck tonnages increasing from 74 million tons to 297 million tons with a compound annual growth rate (CAGR) of 4.4 percent.
- Growth in rail movements from 117 million to 151 million tons (0.1 CAGR).
- Growth in barge movements from 51 million to 65 million tons (0.7% CAGR).[11]

[9] Ibid.
[10] *Transportation of U.S. Grains: A Modal Share Analysis, 1978-2010*, AMS, found at http://www.ams.usda.gov/AMSv1.0/getfile?dDocName=STELPRDC5097327
[11] Ibid.

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In relative terms, from 1978 to 2010 the share of trucks used to handle grain rose dramatically, surpassing the shares of grain handled by truck and barge in 1993 (Exhibit 1). The increasing dominance of truck as a share of grain transported can likely be attributed to structural shifts in livestock production and the flexibility of this mode in transporting grains and soybeans to new markets such as to local ethanol and soybean crushing facilities.

The share of grain handled by truck, rail, and barge demonstrated the following trends from 1978 to 2010:

- The truck share increased from 31 percent to 58 percent.

- The rail share decreased from 48 percent to 29 percent.

The barge share decreased from 21 percent to 13 percent.[12]

[12] Ibid.

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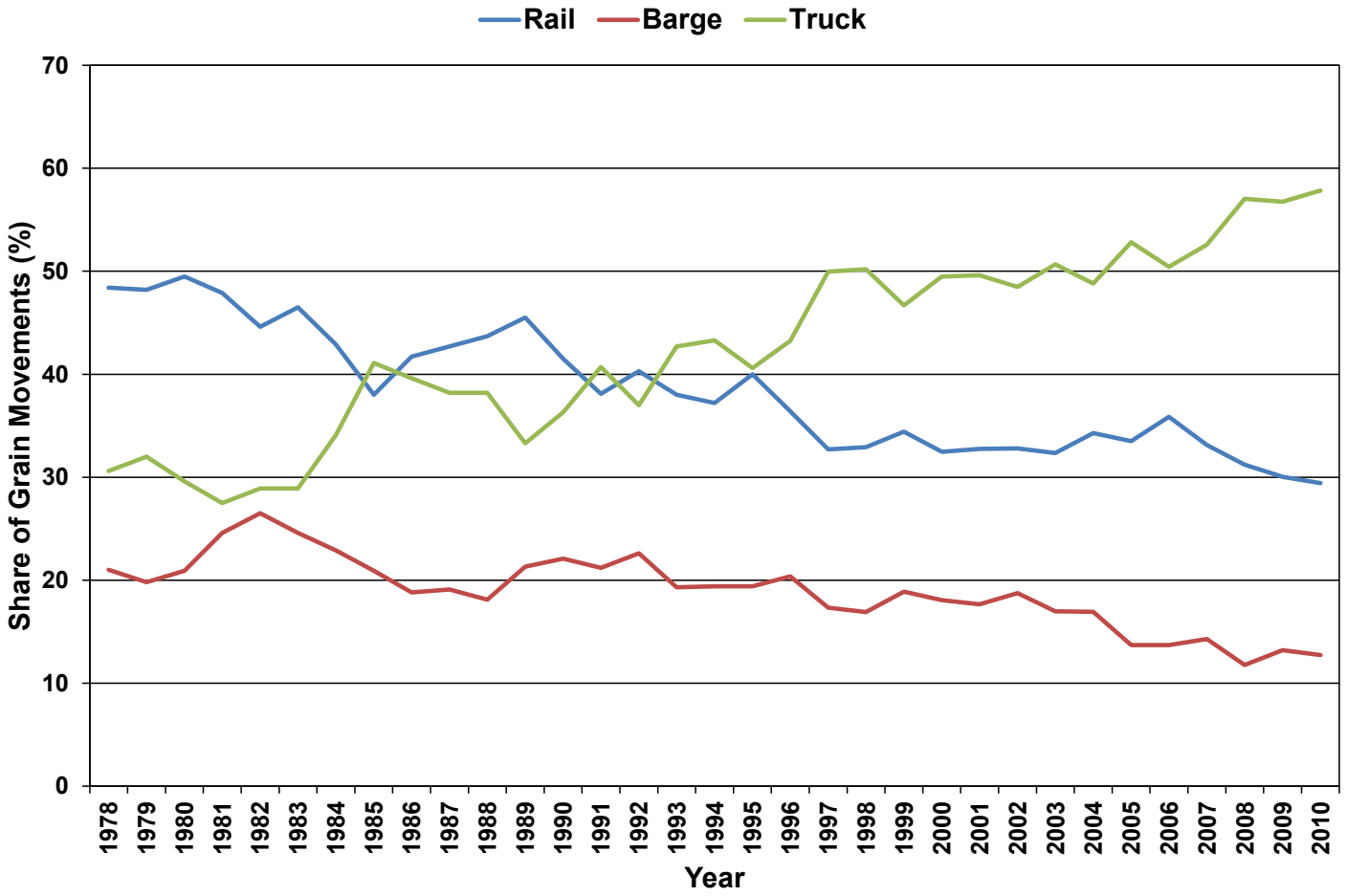
Exhibit 1: U.S. Grain Modal Shares, 1978-2010



Source: USDA

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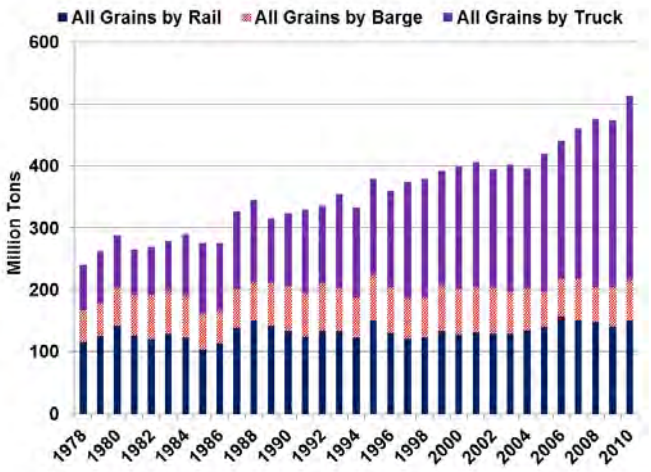
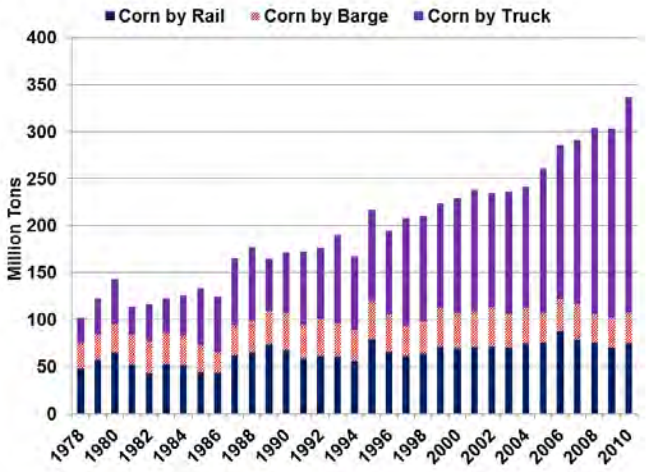
Exhibit 2: U.S. All Grain Movement by Mode



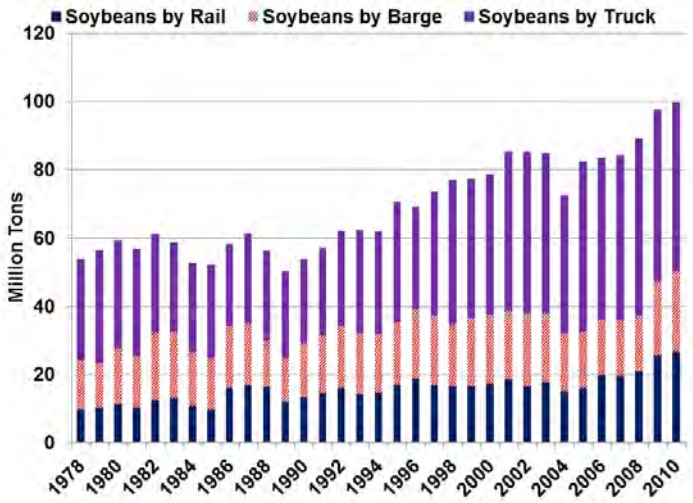
Source: USDA

Exhibit 3: U.S. Corn Movement by Mode



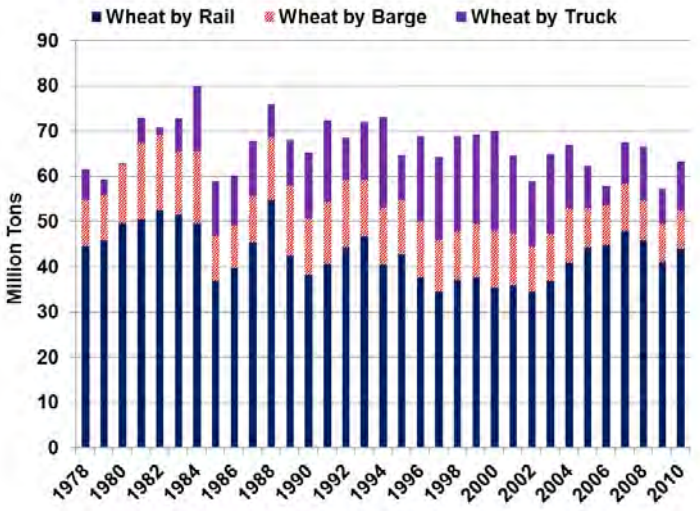
Source: USDA

Exhibit 4: U.S. Soybean Movement by Mode



Source: USDA

Exhibit 5: U.S. Wheat Movement by Mode



Source: USDA

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The movements of all grain (corn, wheat, soybeans, sorghum, and barley) are given in Exhibit 2. The three largest commodity drivers of these movements (corn wheat, and soybeans) are also presented in Exhibit 3, Exhibit 4, and Exhibit 5, respectively. As these exhibits depict, the most critical overall shift in the grain handling industry since the late 1970s has been an increase in the use of trucks for hauling grain. This is true to a large extent in corn and a more moderate extent in soybeans. However, wheat production occurs largely in areas where the distance of the haul makes it infeasible to move the production by truck, and thus U.S. wheat is still moved predominantly by rail.

(a) The Current State of Three Modes for Agricultural Product Movement

Rail

As a result of changes in the way grain is marketed and increases in rail rates, in recent years the share of grain transported by rail has been shrinking. While railroads carry the most ton-miles of total freight in the U.S., railroads generally have higher rates than trucks for intercity short hauls. For these intercity segments, therefore, railroads only carry 13% to 15%% of total freight revenue. With respect to *total* rail movements, farm products, food, and related products account for more than 15% of total rail movements, with coal accounting for the largest share of total rail movements. However, for certain railroad segments, agricultural products and food can account for up to 80% of rail movements.

As more unit trains are employed, smaller shippers have been losing shipping alternatives due to higher rates. As railroads play an important role in the transport of agricultural products, tension has arisen between these smaller shippers and carriers.[13]

Barge

As of 2008, five companies controlled 75% of covered barges (those that move grain). Now, in 2012, the top five carriers maintain an 80% market share. The U.S. barge rate structure is generally considered free and competitive. However, with such increasing consolidation, the operations continue to operate under Jones Act rules and regulations in the national interest. The U.S. barge fleet is not aging as much as it had been in recent years. Just 13.4 years is the average age of covered hopper barges, whereas just two years ago, in 2009 the average age stood at 15.1 years, an age 12.6% higher than today. The average barges now older than 25 years—some well beyond or but at least within five years of their expected life span, stands at 1,964 units, and comprises 18.05% of the jumbo covered hopper fleet. Barges are, in the most recent full year of construction, 2011, increasing as a fleet more than they are being retired, an addition of a net

[13] *Study of Rural Transportation Issues,* USDA, found at http://www.ams.usda.gov/AMSv1.0/ruraltransportationstudy

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133 unit increase in the barge fleet overall. Yet since 1998 the number of covered barges on the Mississippi River decreased nearly 18%, from 12,706 to 10,769 being operated currently.

Truck

Trucks handle the largest portion of grain and soybeans for domestic use, as they are especially suitable for short-hauls—generally 300 miles or less. With the increasing use of short line rail, however, this number has been decreasing. Their flexibility has additionally proven valuable in port areas, as trucks are increasingly making more long-distance movements to ports and grain terminals. Trucks have the ability to link farmers and ranchers to grain elevators, ethanol plants, processors, feedlots, markets, and ports, and trucks additionally developed as feeders to the waterways.

The U.S. highway system currently has 4 million miles of public roads, 46,000 of which comprise the interstate highway system that carries most U.S. ton-miles. Combined, interstate highways and rural "arterial"—mostly State highways—account for 15% of total vehicle miles. Meanwhile, local roads account for 80% of road miles, but due to the lower density of use in rural areas, they handle less than 40% of traffic.

Somewhat similar to the history of railroads following their privatization, the more recent history of the trucking industry has been characterized by mergers, bankruptcies, and restructuring. Some trucking capacity has been exiting the industry, with 3,000 trucking firms leaving the industry in recent years,[14] and without replacement of the capital assets.

3. Outlook for Grain and Soybean Handling in the U.S.

The outlook for rural transportation infrastructure for grain and soybean handling in the U.S. will depend on the funding and upkeep of the nation's railroads, waterways, and highway systems. Increasing scale of the agricultural sector implies increasing efficiencies and necessitates continued maintenance of infrastructure for all three modes. For example, since the 1990s, railroads have shifted to the use of larger-capacity grain cars in order to reduce costs. Increasing use of the railroads has contributed to rail congestion. Meanwhile, agricultural interests, among other commodity and industry groups, would like to see increased truck loading weights to a ninety-seven thousand pound gross vehicle weight rating with an additional axle from the current level of eighty thousand pounds to increase efficiency. A six-axle 97,000 pound tractor semi-trailer has been found to cause the same or less road damage than the five-axle 80,000 pound tractor

[14] Ibid.

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semitrailer[15]. While 12,000 miles of waterways are currently used commercially, existing locks often do not meet the requirements of modern tows, significantly slowing barge traffic and increasing the cost of barge movements.

Freight demand in the U.S. is expected to continue growing, and could even double by 2035 (from 2010)[16]. Yet, investment in the railroad industry is not expected to keep up with demand, and the balance of the Inland Waterway Trust Fund, which finances 50% of most of the inland waterways' capital costs, has been declining since 2002, with expenditures increasing and revenues declining[17]. These factors, coupled with an overall declining condition and increased congestion of the U.S. highway system, create an uncertain outlook for the future capacity of the rural agricultural transportation system.

[15] *Heavier Semis: A Good Idea?*, Soy Transportation Coalition, found at http://soytransportation.org/whatsnew/semiweightlimitreportJune09.pdf
[16] *Study of Rural Transportation Issues,* USDA, found at http://www.ams.usda.gov/AMSv1.0/ruraltransportationstudy
[17] Ibid.

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B. Programs Supporting Rural Infrastructure

Key issues. A few key issues emerge from analysis of the programs supporting rural infrastructure. These issues are explained briefly below.

- **Continued declines in traditional revenue sources.** This trend is seen at the federal, state, and local levels on a per-capita basis for government-funded infrastructure. Traditional funding from government sources is expected to continue to decline in the future as governing bodies restrict their spending, and this will drive the need for programs focused on efficiency and leveraging of existing resources.
  - Current fuel tax structures are unsustainable in many states, with funding not indexed for inflation nor structured to account for improving vehicle fuel efficiency.

- **Two key issues for localities and rural infrastructure: funding and finance.**
  - **Funding of rural infrastructure**. With aging infrastructure and years of underinvestment in maintenance and construction, the funding for maintaining and improving infrastructure to better meet the needs of local communities has become even more critical. Localities will be expected to play an important role in solving the transportation funding crisis.
  - **Financing of rural infrastructure**. While innovative options such as GARVEE[18] bonds, Build America Bonds, State Infrastructure Banks and their metropolitan analogs such as the Chicago Infrastructure Trust[19], as well as public-private partnerships, exist for financing infrastructure and have become increasingly common in states across the U.S. in recent years, the rural financing options still require that the state or local government is ultimately able to pay for that infrastructure through to full liquidation of the debt.
  - **Thus, both funding and financing are key parts** of the financial picture for developing and leveraging funds for improvements to rural infrastructure.

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[18] http://www.fhwa.dot.gov/ipd/finance/tools_programs/federal_debt_financing/garvees/index.htm

Particular to highways, GARVEE is used as a term for a debt instrument that has a pledge of future Title 23 Federal-aid funding. Bonds commonly serve as the debt instrument. The issuer may be a state, political subdivision, or a public authority. A GARVEE is authorized for Federal reimbursement of debt service and related financing costs. States can receive Federal-aid reimbursements for various debt-related costs incurred, connected with eligible debt finance instruments such as notes, certificates, mortgages, bonds, or leases. Proceeds are used to fund an eligible project under Title 23. These instruments are considered a GARVEE when backed by future Federal-aid highway funding. As cited in Section 122 of Title 23, debt financing instrument-related costs eligible for Federal-aid reimbursement include interest paid, retirement of principal, and other costs incidental to sales of eligible debt issued.

[19] http://www.cityofchicago.org/content/city/en/depts/mayor/press_room/press_releases/2012/march_2012/mayor_emanuel_announceschicagoinfrastructuretrusttoinvestintrans.html

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- **Transportation cost structures will continue to influence the use of rural infrastructure**. Historically, tradeoffs among different modes of infrastructure have been weighed by users of rural infrastructure in making transportation decision. One example was the increase in rail rates during the 1970s that resulted in increased use of road transportation. The transportation cost structures based on road, rail, barge, and ocean vessels and their relative transportation efficiencies are expected to continue to influence their use, and changes in cost structures by the implementation of usage fees, taxes, or other strategies could be expected to have ripple effects through other transportation sectors.

1. Historical Perspective

Historically, much of the funding for rural infrastructure has come from federal sources. However, state and local governments also play important roles in funding rural infrastructure. Now these more parochial jurisdictions account for the majority of infrastructure funding; much of this funding is generated through taxes, user fees, and bonds, as well as funding supplements supplied by federal agencies.[20]

Federal assistance for rural infrastructure was jump started by the creation of the Works Progress Administration (WPA) in 1935. Over the following eight years, the WPA played a critical role in shaping the development of rural infrastructure. The agency provided jobs for a peak level of employment amounting to 3.5 million workers and over 8 million workers throughout the tenure of the WPA. Funding at the time, of $11 billion, was directed through the WPA, which built an estimated 78,000 bridges and 651,000 miles of roads, not to mention other programs that focused on building, airports, and the arts.[21] With the developments surrounding World War II, employment stimulus programs were not as urgently needed and the WPA was wound down in 1943.

Money for infrastructure programs was mostly limited until the mid-1950s, when federal assistance to state and local governments was $3.2 billion (10% of state and local expenditures), but had grown to $77.9 billion by 1978, representing 26.8% of state and local expenditures for infrastructure. This was facilitated by increases in fuel taxes and other transportation user fees, which were relatively uncontroversial at the time.

However, in 1984 with an agricultural depression and financial difficulties looming in the agriculture industry, expenditures for infrastructure programs were $97.5 billion but represented 21.2% of total expenditures and reached a 15-year low. Similar patterns were seen at the local government level, with states providing $7.4 billion and 29.1% of local general

[20] U.S. General Accounting Office, *Rural Development—Availability of Capital for Agriculture, Business, and Infrastructure*. May1997.
[21] *The Columbia Electronic Encyclopedia,* 6th Ed. 2007.

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revenue through intergovernmental aid to local governments. In contrast, in 1978, states provided $67.3 billion (34.5% of revenue) and $108.4 billion (33.5% of revenue) in 1984.

Problems in rural America have historically resulted in problems for rural infrastructure. For example, in the 1980s an agricultural recession was characterized by major challenges for farmers, loss of rural population, poverty in rural areas, and a lack of resources available to local governments. In 1985, the following five federal programs provided 85% of the federal aid received by 36,000 small local governments[22]:

- General Revenue Sharing;
- Wastewater Construction Grants;
- Community Development Block Grants;
- Loans and Grants for Water, Wastewater and Community Facilities; and
- Public Works Grants EDA

These programs experienced a 24% decline in funding between 1980 and 1985, falling from approximately $4.6 billion to approximately $3.5 billion in just 5 years.

Key shifts in the purposes of federal aid occurred in the purposes of federal aid to state and local governments, as seen in Exhibit 6. These shifts were the sources of dramatic changes for rural areas, coupled with the challenges that farmers were already facing.

[22] Hackett, J.C. et al. *Managing Rural Infrastructure: State Assistance to Small and Rural Government for Public Works.* Council of State Governments. December 1986.

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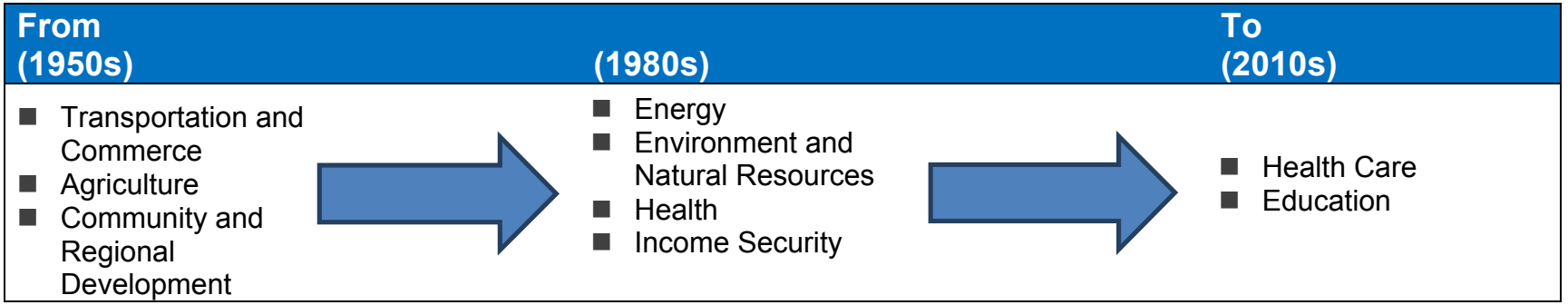
Exhibit 6: Shifts in the Focus of Federal-Aid from 1950s to 2010s



Source: Council of State Governments, U.S. Census Bureau.

Similar changes were seen in the allocations from state to local governments; in 1957 the top categories for state expenditures were education and highways and in 1984 education remained the top expenditure but public welfare moved to the second highest expenditure, with the percentage allocated to highways cut by two-thirds.

Sometimes, it was not appropriations issues that were influential in changes to rural infrastructure. The *Staggers Rail Act of 1980* deregulated the rail industry in response to troubled economic times for railroads as they faced increasing competition for freight and passenger traffic from the trucking industry. The *Motor Carrier Act* of 1980 also partially deregulated the trucking industry. Regulation of trucking and rail industries had previously provided some insulation to the barge industry as well.

2. Current Perspective and Programs[23]

Responsibilities for generating revenue and allocating funding for U.S. roads and surface infrastructure are shared among federal, state, and local agencies, although state and local agencies own and operate the majority of this infrastructure. The program structures are diverse at each level of governance, and there are many instances of intergovernmental transfers that characterize the system of transportation programs.

Rural infrastructure governance stakeholders. Another important consideration in a focus on rural infrastructure is a clear understanding of who the stakeholders in transportation governance are. Examples of modern-day stakeholders in

[23] The descriptions of road finance and funding draw on information in the Federal Highway Administration Statistics User Guide, 2010.

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transportation governance include those listed below. The role that each of these stakeholders can play can be important for the implementation and success of any changes to rural infrastructure programs.

- Federal
  - Congress
  - U.S. Department of Transportation
  - U.S. Department of the Interior
  - U.S. Department of Energy
  - U.S. Army Corps of Engineers (Department of Defense)
  - U.S. Department of Commerce
  - U.S. Environmental Protection Agency
  - U.S. Department of Agriculture
  - Many other federal departments and agencies

- State
  - Executive branches (including Governors)
  - Legislative branches (including state legislatures and committees)
  - State Departments of Transportation
  - Other state agencies (Departments related to agriculture, labor, commerce, environmental protection, etc.)

- Regional transportation planning organizations for urban (383 metropolitan planning organizations) and rural (180 regional planning organizations) areas

- Local government groups, including over 3,000 counties, over 16,000 townships, and over 750 highway special districts

- Additional transit agencies and other agencies

Overlapping responsibilities for infrastructure systems. As an example, consider the ownership of roads across the U.S. The parties that own the greatest portion of these miles varies from state to state, and it also varies from rural to urban areas. The following graphics in Exhibit 7 and Exhibit 8 illustrate the difference in road mile ownership among urban and rural areas.

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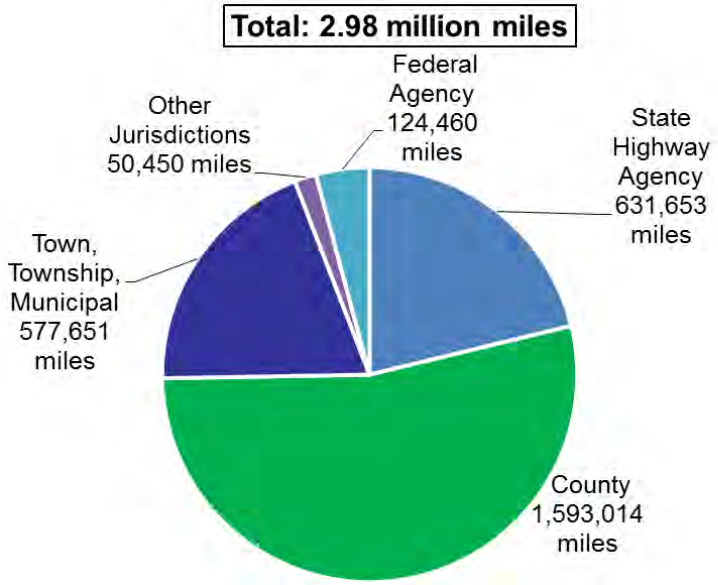
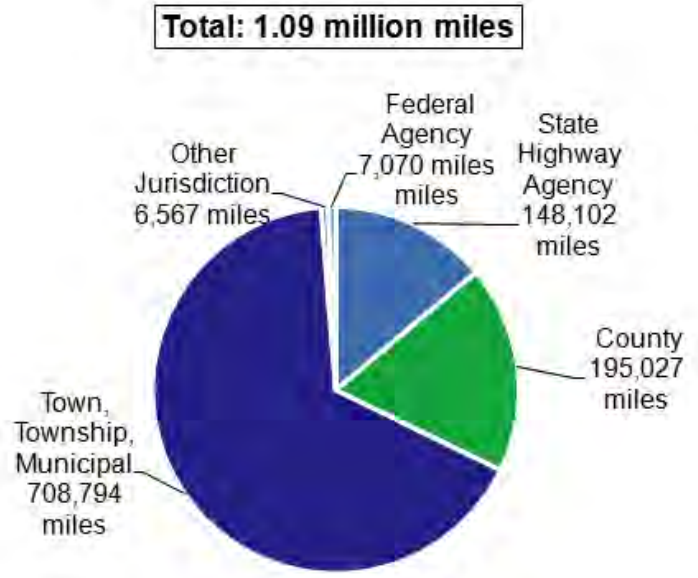
Exhibit 7: U.S. Rural Road Ownership by Miles Owned, 2010



Source: Federal Highway Administration, U.S. DOT

Exhibit 8: U.S. Urban Road Ownership by Miles Owned, 2010



Source: Federal Highway Administration, U.S. DOT

This difference in ownership structure can sometimes create challenges for agencies that are working together across both urban and rural areas. Further, it often indicates that the challenges faced by urban and rural areas in funding infrastructure may be different, with roads being a prime example of this. This necessitates an understanding of the programs that are in place at the federal, state, and local levels to fund infrastructure.

(a) Federal Programs

A number of federal programs are targeted at specific portions of infrastructure, by transport mode. There has also been legislation in recent years targeted at economic recovery that have authorized funding for infrastructure projects, such as the American Recovery and Reinvestment Act (ARRA, 2009).

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Roads

Federal programs provide approximately 20% of transportation funding for surface roads and highways. The majority of this funding is through the Federal-aid system of funding, authorized by surface transportation authorization legislation and described in more detail below.

The average annual change in spending by the federal Department of Transportation has been an increase of $2.14 billion per year from 2000 to 2011. However, federal DOT spending declined by $17.2 billion from 2010 to 2011 to $60.3 billion. Coming federal budget reduction measures are expected to reduce this amount further in future years.

The FHWA and its oversight. The Federal Highway Administration (FHWA) oversees 160,000 miles of the Interstate System and other roads that comprise the National Highway System and is also responsible for distributing funds to states and localities for building or maintaining bridges and roads. The budget of the FHWA was an estimated $41.5 billion for FY 2012.[24] An estimated 1 million miles of roads (urban and rural) are eligible for federal aid funding. This funding is financed by motor-fuel and other highway-related excise taxes that are deposited into the Federal Highway Trust Fund. These federal funds are then distributed to the states.

Federal-aid and systems of highways. Federal assistance began to be provided uniformly to all states to develop an integrated highway system in 1916. Beginning in 1921, this aid was limited to a connected system of primary roads (the Federal-aid Primary Highway System). In 1944, provisions allowed for the use of federal aid funding for a Federal-aid Secondary System, primarily for farm-to-market and feeder roads; changes made the same year also authorized funds specifically for urban extensions of the Primary system and in 1954, for urban extensions of the secondary system. Parts of the funding were specifically earmarked for urban areas with populations of over 200,000. Despite the designation of a system of highways, substantial funding was not made available until 1956 with the Federal Highway Act of 1956 (and subsequent amendments). This act made the Eisenhower System of Interstate Defense Highways a key component of the Federal-aid Highway Program and specified that funding be provided on a 90% federal, 10% state matching basis. In 1995, the Interstate system and associated funding was incorporated into the National Highway System (NHS) and the Interstate Maintenance (IM) program. The current surface transportation authorization is the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU, 2005).

Funds for road renewal. In 1976, Interstate funds were designated for funding resurfacing, restoration, and rehabilitation; in 1981, the program was extended to include reconstruction. Funding for resurfacing, restoration, and

[24] U.S. Department of Transportation, Fiscal Year 2013 Budget Highlights

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rehabilitation was incorporated into the Interstate Maintenance program with the same legislation that created the National Highway System in 1991.[25] At that time, the Surface Transportation Program was also created for roads and streets other than local or rural minor collector roads, for bridges on any public road, and for transit capital projects.

Federal Highway Trust Fund. Funding for the Federal-aid highway program comes from the Federal Highway Trust Fund (HTF). Revenues for the HTF are from federal excise taxes on highway users. FHWA estimates receipts attributable to highway users in each state based on highway fuel consumption. Further detail on the payments into the Highway Trust Fund and apportionments and allocations received from the Fund are given in Exhibit 9.

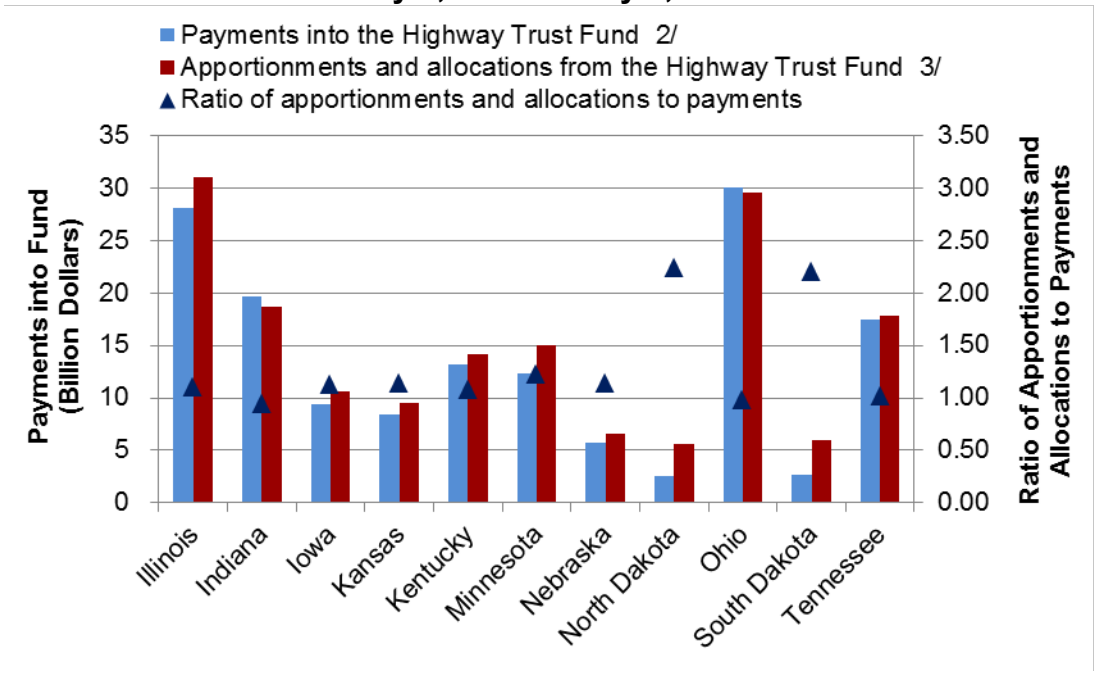
Specific current federal-aid highway programs include:

- National highway system (NHS) program
- Interstate maintenance (IM) program
- Bridge program
- Surface transportation program (STP)
- Congestion Mitigation and Air Quality Improvement (CMAQ) Program
- Highway Safety Improvement Program
- A range of targeted infrastructure programs
- A range of other special programs

All of the STC member states under review generate payments into the Federal Highway Trust Fund. Only two of these states have made cumulative payments over the 55 year period from 1956 to 2011 that were greater than the apportionment and allocations back from the fund.

[25] *Inter-modal Surface Transportation and Efficiency Act of 1991* (ISTEA)

Exhibit 9: Cumulative Payments Into and Out of the Federal Highway Trust Fund, July 1, 1956 to July 1, 2011



1/ Payments into the Fund include only the net highway user tax receipts and fines and penalties deposited in the Highway Account of the Federal Highway Trust Fund. The $14,700,000,000 transfer from the General Fund to the Highway Trust Fund is not included in the data. Excluded are motor fuel tax amounts transferred to: the Mass Transit Account of the Highway Trust Fund; and the Leaking Underground Storage Tank Trust Fund. In addition, amounts representing motor boat use of gasoline are transferred to the Aquatic Resources Trust fund and the Land and Water Conservation Fund.
2/ Total Federal Highway Trust Fund receipts (for apportionment purposes only) are reported by the U.S. Department of the Treasury. Payments into the Highway Trust Fund attributable to highway users in each State are estimated by the Federal Highway Administration.
3/ Includes all funds apportioned or allocated from the Highway Trust Fund except where FHWA does not directly allocate the funds to the States, e.g., portions of Indian Reservation Roads and safety programs.
Source: Federal Highway Administration, U.S. DOT.

Bridges. Under the Highway Bridge Replacement and Rehabilitation Program (HBRRP), federal funds are allocated to assist state and local governments in inspections, repairs, and replacement of bridges. In 1978, the U.S. Congress determined that the number of bridges that were classified as either "structurally deficient" or "functionally obsolete" had reached a crisis level, and as a result created many of the bridge safety programs that are still in place, such as the

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National Bridge Inventory and the National Bridge Inspection Standards. Under current practices, the FHWA defines structurally deficient bridges as those that "have been restricted to light vehicles, require immediate rehabilitation to remain open, or, are closed." In contrast, functionally obsolete bridges are those that no longer support the roads they serve based on factors such as height clearance or lane width. Of the two categories, structurally deficient bridges are considered most likely to suffer from structural failure.

Inland Waterways

Navigation was the earliest Civil Works mission of the U.S. Army Corps of Engineers ("Corps"), dating back to legislation as early as 1824. The Corps operates and maintains locks that are important components of rural infrastructure, particularly for the movement of grain and oilseeds by barge. For example, in the Mississippi River Basin, construction of a series of locks and dams was authorized in 1930 to facilitate navigation on the river. In total, the Corps is responsible for the operation and maintenance of 236 lock chambers at 191 lock sites on 41 waterways and maintenance of 926 coastal, Great Lakes, and inland harbors. The Corps is responsible for nearly 12,000 miles of inland and intracoastal shallow draft (9 to 14-foot depth draft) and 13,000 miles of deep draft (greater than 14-foot draft) waterways.[26]

The Corps' funding is authorized through the Energy and Water Development Appropriations bill. Recent earmark moratoriums have altered the way the Corps will be funded; historically, up to 85% of the Corps budget was allocated to projects, with some of that allocation via earmarks. The Corps' budget also includes allocations of funding for new projects, "New starts", and ongoing projects. However, there is an estimated backlog of $11 billion to $80 billion for authorized, but unfunded, new starts. Besides regular appropriations, additional Corps activities have historically been funded since 1986 by the Harbor Maintenance Trust Fund (currently has a surplus balance) and since the 1980s by the Inland Waterways Trust Fund (facing a budget shortfall). The Inland Waterways Trust Fund (IWTF) allows for 50/50 financing of inland waterways by the federal government and users of the inland waterways through a fuel tax on vessels engaged in commercial transportation on inland waterways.[27]

Railroads

Throughout their early history in the U.S., railroads relied on the government as a source of funding. In later years, regulation of the railroad industry that had initially been established to curb abuse of the rate setting powers of the railroads became a hindrance to the industry as competition from truck and barge transportation took market share. Railroads were able to maintain much of their market share for bulk commodities because they were able to charge low

[26] U.S. Army Corps of Engineers. http://www.usace.army.mil
[27] *Energy and Water Developments: FY 2012 Appropriations.* C.E. Nehrens. Congressional Research Service. August 2011.

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rates and receive low rates of return. However, by the 1970s the railroads were in troubling shape. The *Railroad Revitalization and Reform Act* (4R) of 1976 provided a mechanism for shared funding of railroads by federal and state governments as the federal subsidy for railroads stepped down gradually year by year. State agencies developed funding programs to participate in what came to be known as the Local Railroad Freight Assistance (LRFA).

Since the rail system in the U.S. is now for the most part privately owned, the role of government investment is much less as a part of overall investment in the sector's infrastructure than in other areas of rural infrastructure. Generally, federal transportation program authorization requires states to include rail in their multimodal transportation plans, but some states take on much larger roles and provide funding for development of particular rail lines. The railroads, according to their own pronouncements were themselves responsible for investing more than $20 billion in rail infrastructure investments for 2011.[28]

Rail, however, lacks a dedicated federal funding source. Any federal funding programs for rail are discretionary and awarded on a competitive basis. No state has a guarantee of receiving federal rail funding.[29] Still, there are federal programs that involve rail, including the highway-rail crossing program that receives funds through the Highway Trust Fund for projects with the objective of improving safety for intersections of roadways and railroads. The Rail Line Relocation and Improvement Capital Grant Program receives funding from the Federal Railroad Association that can be granted to states for construction projects that meet particular requirements. USDA's Community Facilities Program provides funding support targeted at essential community facilities; rail spurs that serve industrial parks, yards, siding, and mainline tracks may be eligible, and grants for rail projects in economically distressed areas are available through the U.S. Department of Commerce Economic Development Administration. The *SAFETEA-LU (2009)* and subsequent extensions (currently through to June 30, 2012) have authorized rail assistance through various programs, including some that have been mentioned here.

(b) State Programs

States provide nearly half of all surface transportation funding. Further, in approximately half the states, the main source of highway funds is the state motor vehicle tax. Some states have motor vehicle taxes that are indexed, based on either the consumer price index or some other index. While only 5 states and the District of Columbia have funds flowing directly from a revenue source to a department of transportation without legislative appropriation, 26 states have constitutional or statutory provisions that restrict the use of state fuel tax revenues to highway and road purposes.

[28] "Railroad Infrastructure Investment," Association of American Railroads, 2012. http://www.aar.org/KeyIssues/Infrastructure-Investment.aspx.
[29] University Transportation Center for Mobility (UTCM), Texas Transportation Institute.

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However, while at least six states directly prohibit diversion/transfer of transportation revenue and 35 states have provisions that direct the use of the funds or accounts where transportation revenues are deposited, legislative diversions of transportation funds is not uncommon.[30]

States' interaction with federal programs. For states to receive federal-aid highway funds, they must develop plans, issue contracts, and supervise construction and improvement of rural and urban infrastructure. Roads that federal-aid funds are applied to remain under the control of the state or local government. As mentioned previously, federal-aid funding is provided through the Federal Highway Trust Fund. Funding to states through the IM program is generally done via 90% federal funding with a 10% state funding match. In FY2010, federal Department of Transportation grants to states and local governments totaled $63.9 billion.[31]

States and bridge programs. States are eligible to receive funds through federal bridge programs based on the state's share of the total cost to repair all structurally deficient bridges nationwide. States have latitude in the spending of these funds, and they may be dedicated solely to bridge inspection, maintenance, and repair or may be used for traditional highway construction projects. Many states also allocate a portion of their own highway budgets to bridge repair and maintenance.

State programs. Many states collect revenue via highway user fees; these are frequently in the form of a tax on motor fuel, but other revenue sources include tolls, motor-vehicle registration and other motor-vehicle fees. Many states have used legislation to dedicate portions of highway-user revenues to specific purposes, including both highway related and non-highway related uses.

Declining fuel tax revenues. However, fuel tax revenues are declining in their effective value as inflation and increases in construction costs have been coupled with less driving and more fuel efficient vehicles. It has been 11 years since the average state had its last gasoline tax increase, reflecting a 20% average decrease in the cost-adjusted tax rate since the last increase in fuel tax rates. For diesel, those values are 10 years and an 18% decrease in the cost-adjusted tax rate since the last increase for the average state in the U.S.[32]

[30] *Transportation Governance and Finance: A 50-State Review of State Legislatures and Departments of Transportation.* The National Conference of States Legislatures and the AASHTO Center for Excellence in Project Finance. May 2011.
[31] United States Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau. *Federal Aid to States for Fiscal Year 2010*. September 2011.
[32] Institute on Taxation and Economic Policy. *Building a Better Gas Tax: How to Fix One of State Government's Least Sustainable Revenue Sources.* December 2011.

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State funding. A range of state funding programs are utilized for surface transportation, with fuel taxes and vehicle registrations as very common means of generating revenue across states. Many states rely on debt to finance infrastructure projects, but Iowa, Nebraska, and North Dakota are exclusively pay-as-you go and do not allow bonding. The state programs for funding surface transportation for the eleven selected states are given in Exhibit 10.

Direct assistance to local governments. Although the primary means of assistance from state to local governments for road programs is funded through highway-user revenue, many states also transfer other state revenues or pass federal funds on to local governments. Some states actually engage in the road work for roads under the jurisdiction of local governments. All 11 states of the Soy Transportation Coalition have state statutes that allow for the sharing of state-collected highway-user revenue with local governments. States also sometimes make direct transfers to local governments for construction or maintenance on state highways and for reimbursements or local roads added to the state highway system.

Other assistance to local governments. Other types of state programs may include advisory services and engineering assistance, aid-in-kind, assumption of maintenance responsibilities, joint work on state-local road projects, and direct work by the state on locally controlled roads.

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Exhibit 10: Revenue Sources for Roads, Bridges, Rail, and Transit: Selected States

State	Fuel Taxes	Sales Taxes on Gasoline	Motor Vehicle or Rental Car Sales Taxes	Vehicle Registration, License, or Title Fees	Vehicle or Truck Weight Fees	Traffic Camera Fees	Tolls	General Funds	Interest Income	Other
Illinois	✓			✓	✓	✓	✓ (a)	✓	✓	Impact fees, logo signing, licenses/permits/fees
Indiana	✓	✓		✓			✓			Sales tax, situs tax, rail service funds, railroad property tax, impact fees, Indiana Toll Road lease fees
Iowa	✓ Variable/ Indexed (b)		✓	✓		✓ (only local)			✓	Taxes on mobile homes/other vehicles, casino taxes, licenses/permits/fees
Kansas	✓			✓	✓		✓	✓		Sales tax, compensating use tax
Kentucky	✓ Variable/ Indexed (c)		✓	✓	✓			✓	✓	Weight-distance tax and licenses/permits/fees
Minnesota	✓		✓ (d)	✓	✓			✓	✓	Licenses/permits/fees, fines, congestion pricing
Nebraska	✓ Variable/ Indexed (e)		✓	✓				✓	✓	Licenses/permits/fees, investment income, train-mile tax for grade separation projects
North Dakota	✓		✓	✓	✓			✓	✓	Net obligated balance
Ohio	✓			✓	✓	✓	✓ (f)	✓	✓	Licenses/permits/fees, right-of-way, logo signing, loan repayments, loan servicing fees, private contributions, special turnpike income for turnpikes only
South Dakota	✓	✓	✓	✓	✓			✓	✓	Licenses/permits/fees, Railroad Board Fund
Tennessee	✓	✓		✓	✓					N/A

Source: National Conference of State Legislatures, AASHTO 2011.

Notes: (a) Illinois toll revenues are retained by the Illinois Toll Highway Authority.
(b) Iowa has a variable excise tax based on a distribution percentage.
(c) Kentucky fuel taxes are a variable excise tax based on the average wholesale price.
(d) Up to 60% of the motor vehicle sales tax starting in FY2012
(e) Nebraska fuel taxes are variable based on state debt service and appropriations.
(f) The Ohio Turnpike Agency is not appropriated state funds but manages the turnpike using toll revenues

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States and railroads. For railroads, the Local Rail Freight Assistance (LRFA) program provides financial support to states for the continuation of rail service on abandoned light density lines. Many states have rail plans developed and fund those plans via the state's general fund. [33]

Example state rail programs. For example, in Indiana there are specific programs established to meet state rail needs subsequent to its involvement in financial assistance to railroads since the 1970s. Programs include the Indiana Industrial Rail Service Fund (IRSF) to help upgrade Class II and Class III railroads, the state-funded Railroad Grade Crossing Fund, and the Indiana Economic Development Corporation (IEDC) Industrial Development Grant Fund to make infrastructure investments in conjunction with projects creating jobs and generating capital investment.

(c) Local Programs

Local government groups provide approximately 30% of total surface transportation funding, but own about three-fourths of all the nation's roadway miles. States provide funding to localities as well, with at least 27 states providing these funds based on specific criteria, and 19 more states distribute funds to localities using a blend of statutory formulas and legislative appropriations.[34]

Wide range for local responsibility for infrastructure. The extent of local programs is often influenced by the balance between state and local roles in infrastructure ownership and upkeep. These range from highly centralized programs with no county road departments to highly decentralized programs with an emphasis on local agencies that have jurisdiction over the vast majority of state road miles.

Methods of funding for local governments. The most common way for local governments to receive funding from states is through statutory formulas as is the case in 27 states; these may be based on equal allocation, road mileage, population, or other factors. Other states combine statutory allocations and state appropriations, while still others provide funds through the discretion of the state transportation organization (DOT, etc.).[35]

Authority granted to localities regarding infrastructure. Many local governments are constrained by state statute to collect revenue primarily via the taxation of real and personal property. However, many states share revenues with local governments. In recent years more state governments have permitted local governments to collect their own highway-

[33] University Transportation Center for Mobility (UTCM), Texas Transportation Institute.
[34] *Transportation Governance and Finance: A 50-State Review of State Legislatures and Departments of Transportation.* The National Conference of States Legislatures and The AASHTO Center for Excellence in Project Finance. May 2011.
[35] Ibid.

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revenue fees via local option taxes on motor fuel, which are levied in addition to the state tax and often administered along with the state tax.

3. Program Examples and Strategies

Innovations. In an era of austere budgets and legislative gridlock over many issues, states and local governments are turning increasingly to new means of financing transportation infrastructure projects. Examples of innovation in finance include a number of means to greater leverage traditional funding sources, such as public-private partnerships (P3's), bonding and debt instruments, and assistance from the federal government through debt financing, credit assistance, and fund management tools. States and local governments may take advantage of federally-promoted programs, such as those developed alongside the U.S. DOT Federal Highway Administration innovative Program Delivery office. Alternatively, states and local governments may focus on solving their own rural infrastructure programs by adjusting sales taxes on fuels, developing finance entities such as the Colorado Statewide Bridge Enterprise, or securing passage of long-term transportation program authorization such as the T-WORKS (2010 program in Kansas, estimated as a 10-year, $8.2 billion program).

State financing options. Financing options currently in use and/or authorized in statute are provided for selected states in Exhibit 11. This table highlights that general obligation or revenue bonds and state infrastructure banks are the most common financing means among these states. Further, options like public-private partnerships in which private stakeholders have a greater opportunity to participate in the delivery and financing of transportation projects.

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Exhibit 11: Transportation Infrastructure Financing Mechanisms for Selected States

State	General Obligation or Revenue Bonds	GARVEE Bonds	Private Activity Bonds (PABs)	Build America Bonds (BABs)	TIFIA Federal Credit Assistance	State Infrastructure Bank	Public-Private Partnerships (P3s)	Design-Build	Other
Illinois	✓		✓	✓			✓ (a)	✓ (b)	
Indiana	✓					✓	✓ (c)		
Iowa	✓					✓			
Kansas	✓			✓		✓		(d)	Special tax districts
Kentucky	✓	✓		✓				(Authorized in statute)	
Minnesota	✓					✓	(Authorized in statute)	✓	
Nebraska	✓					✓			
North Dakota	✓	✓				✓		(e)	
Ohio	✓	✓		✓		✓		(Authorized in statute)	
South Dakota				✓		✓			
Tennessee						✓	(f)	(Authorized in statute)	

Source: National Conference of State Legislatures, AASHTO. 2011.
Notes: (a) Illinois authorizes P3s in statute for high-speed rail and selected other projects.
(b) Illinois authorizes design-build for regional transportation authorities.
(c) Indiana uses P3's for the Indiana Toll Road.
(d) Kansas authorized design-build for one demonstration project only.
(e) North Dakota has authorized design-build in statute for 2 pilot projects.
(f) Tennessee authorizes P3s in statute with a legislative approval requirement.

State economic growth, local financing ability as key issues. Challenging budget situations for rural infrastructure are not new. One example of a strategy by a Council of State Governments even as far back as 1986 suggests that the rural infrastructure challenges for states that are having overall financial difficulty may be greater than those that are expected to have financial growth within the state, because states with expectations of economic growth can also expect tax revenues to grow. Past experiences with the successes and failures of programs to support local infrastructure suggest that full, cost-effective financing is an issue inherent to any infrastructure project's success. Programs to make states better able to finance rural infrastructure improvement projects must be fully evaluated to optimize every cost component

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from the tax consequences through to the administrative efficiency of the program. Even in the 1980s, there were calls for states to objectively assess the existing infrastructure and the degree to which it was being utilized. One suggested approach was for states with overcapacity in some areas of transportation infrastructure might make more efficient use of overall resources by focusing on the most critical infrastructure needs and then diverting labor, capital and time among other precious finite public sector resources away from maintaining and improving the portions of that infrastructure that represent excess capacity. In that way, the broader transportation system needs could be addressed through allocation of resources to the parts of the transport system that were in some material ways constrained.

C. Historic and Current Agricultural Production

The shape that rural infrastructure has taken has been influenced by the crops grown in the U.S., whether they were destined for consumption on farm, or were destined for off farm consumption in the United States or abroad. Upon review, changes in agricultural production, storage, and processing are instructive in developing an understanding of the simultaneous changes in rural infrastructure since the 1930s.

1. Crops

- Exhibit 12 provides a graphical comparison of the trends in acres planted and harvested for corn, soybeans, and wheat in the United States.
  - **Corn**. Despite recent discussions of the growth in corn acres planted, putting these acres in a historical perspective reveals that even though 2012/13 corn plantings are expected to match the acres planted in 1944. U.S. corn acreage actually peaked in 1932 with 113 million planted acres and 97 million harvested acres.
  - **Soybeans**. Soybean production was just starting to gain acres in the U.S. compared to corn and wheat, but the shortage of oils and fats in the U.S. caused by World War II drove rapid expansion in the soybean industry, and harvested soybean acres increased by 68% in just the one year from 1941 to 1942. Area planted continued on a relatively steady uptick though 1979.
  - **Wheat**. Wheat acres over the last 80 years have shown cyclical up and down trends but overall have moved sideways. Wheat acres reached a peak in 1981, which was also the peak for the total combined planted acres of corn, soybeans, and wheat of 240 million planted acres and 221 million harvested acres.

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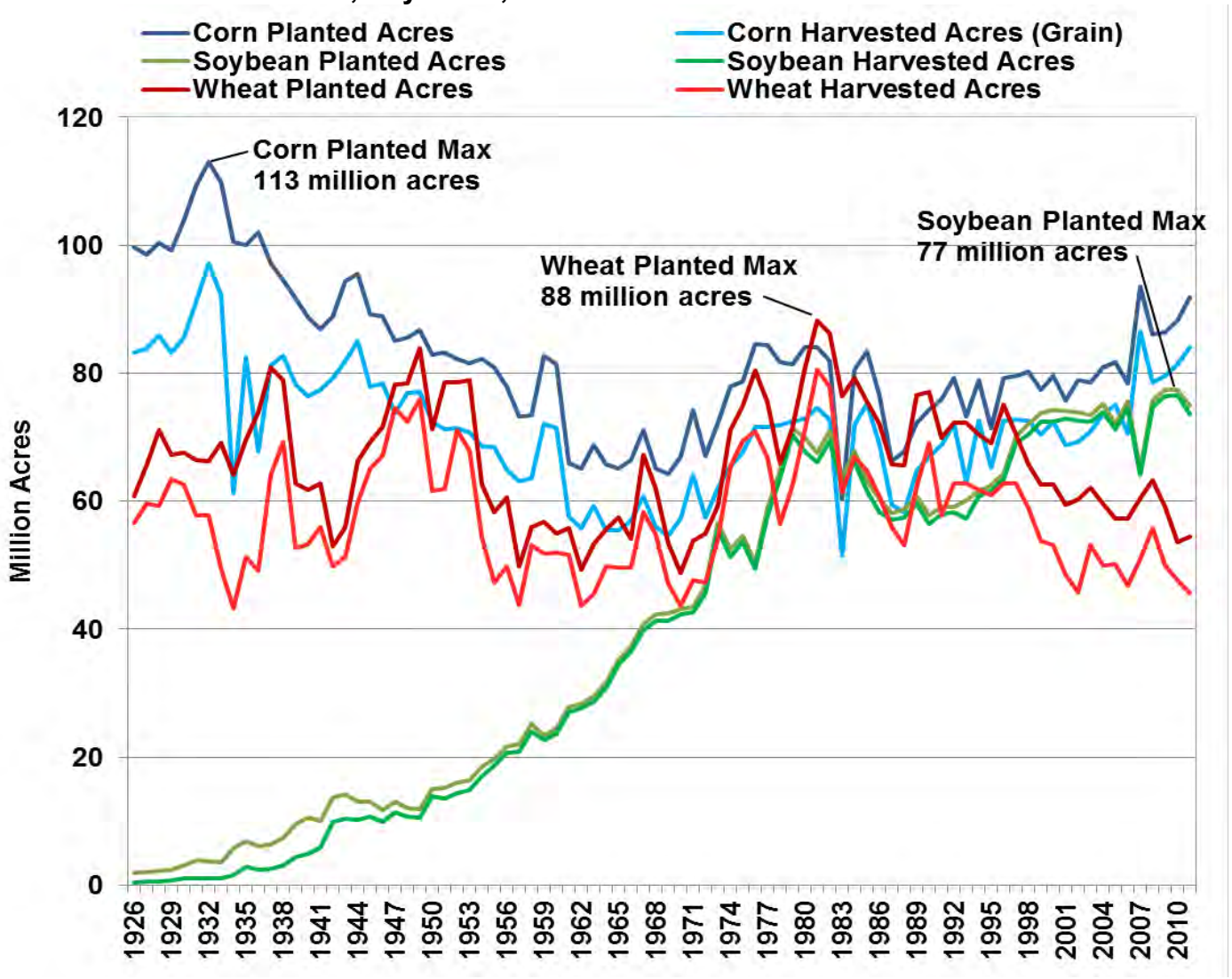
Exhibit 12: U.S. Corn, Soybeans, and Wheat Acres Planted and Acres Harvested



Note: Maximums given are for time period included in chart.
Source: USDA

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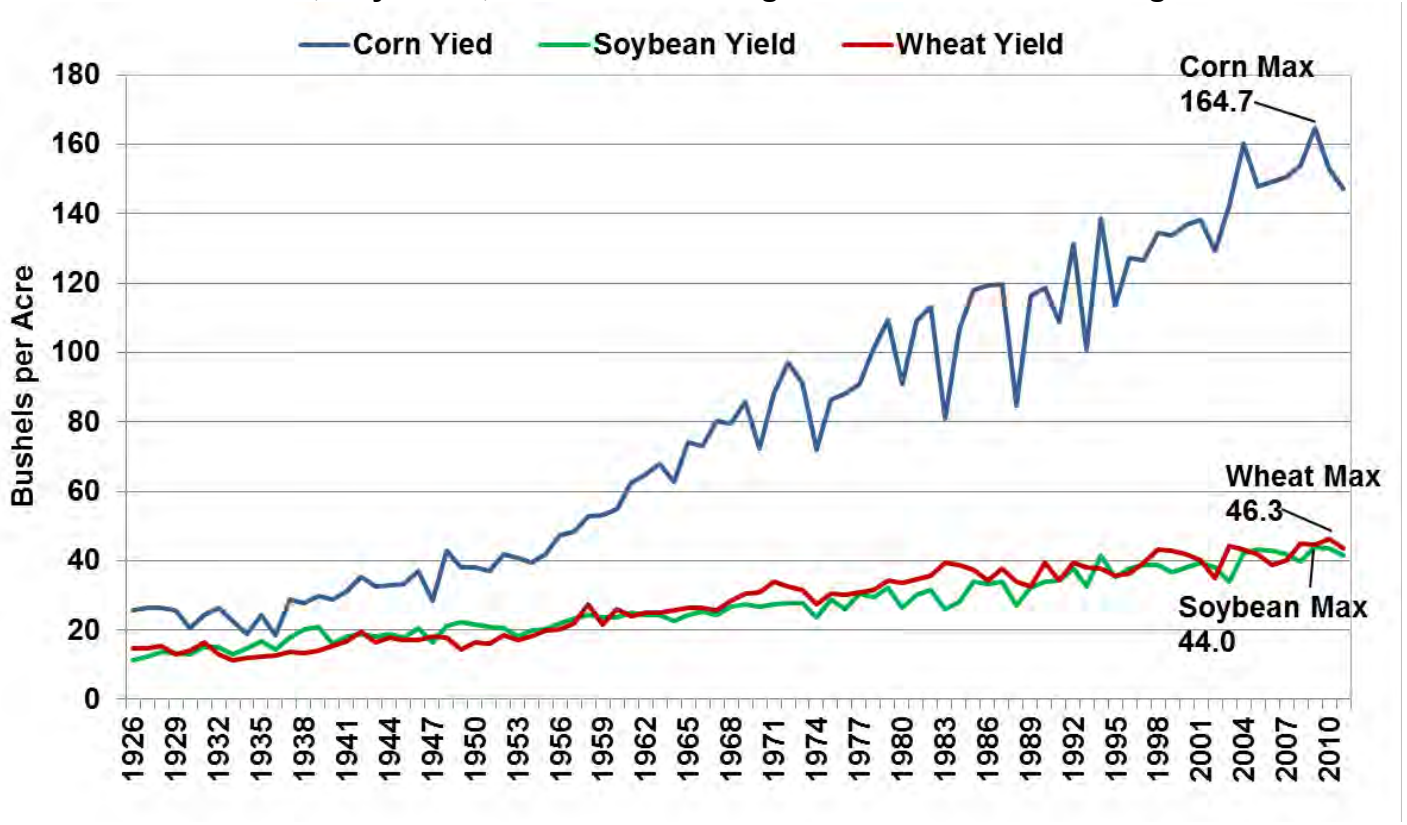
- **Yield increases for soybeans and wheat, but even more dramatic increases for corn**. While the improvements in U.S. wheat yields that have approximately tripled and U.S. soybean yields that have nearly quadrupled from 1926 to 2011 are no small matter, they are dwarfed by the dramatic increase in U.S. corn yields over the same time period. These trends, as well as the maximum yield achieved in the U.S. to date by crop, are given in Exhibit 13.

Exhibit 13: U.S. Corn, Soybeans, and Wheat Average Yields and Peak Average Yields to Date



Note: Maximums given are for time period included in chart.
Source: USDA

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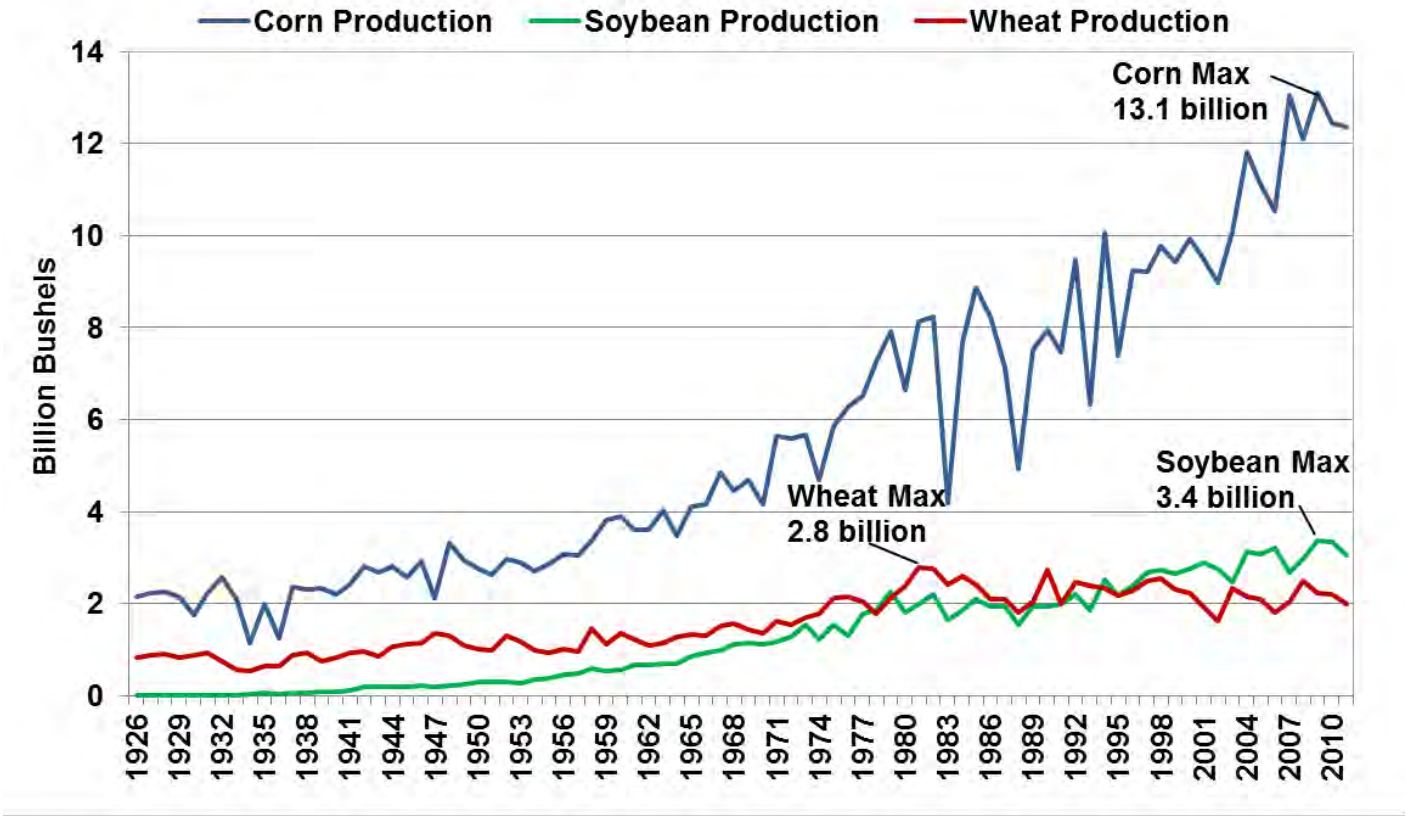
Exhibit 14: U.S. Corn, Soybeans, and Wheat Production



Note: Maximums given are for time period included in chart.
Source: USDA

- As illustrated in Exhibit 14, it is the increases in yield, and to a lesser extent, acres, that have driven the changes in production for corn and wheat. The increases in acres and yields for soybeans have both been critical in the long-term changes in production.

- The steady increases in production for these three crops over the 1950s through the 1970s came as changes were also occurring to U.S rural infrastructure as funding for roads was emphasized and many railroads struggled.

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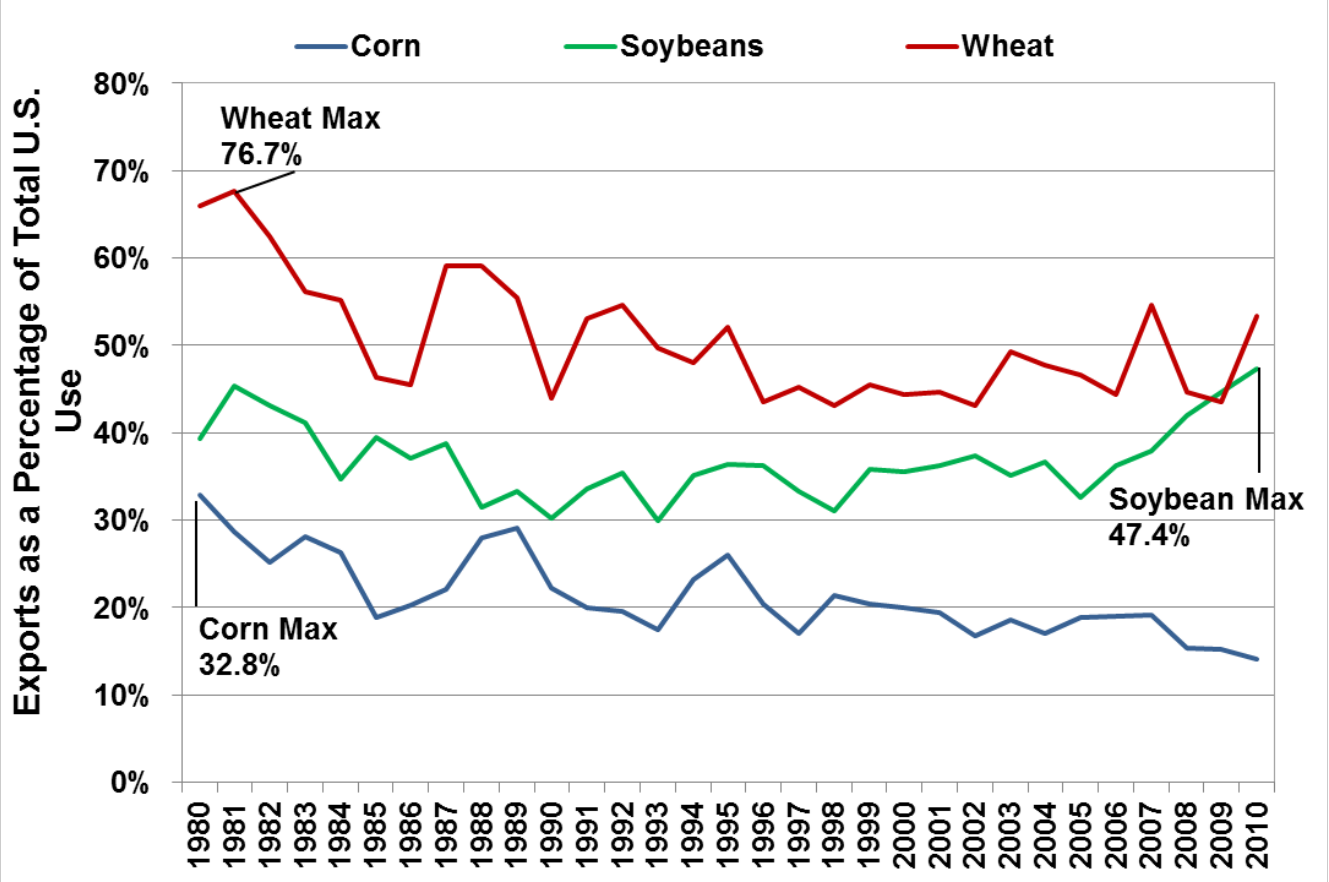
- In contrast to acreage, the peak in total production for these three crops came recently, when in 2009 over 18 billion bushels of corn, soybeans, and wheat were produced in the United States.
- Since 1980, exports have played a decreasingly important role for some crops, such as corn.

- For other crops, such as soybeans, exports have played an increasingly important role in disappearance. This is evidenced by the exports as a percentage of supply given in Exhibit 15.

Exhibit 15: Exports as a Percentage of U.S. Total Use for Selected Crops



Note: Maximums given are for time period included in chart.
Source: USDA

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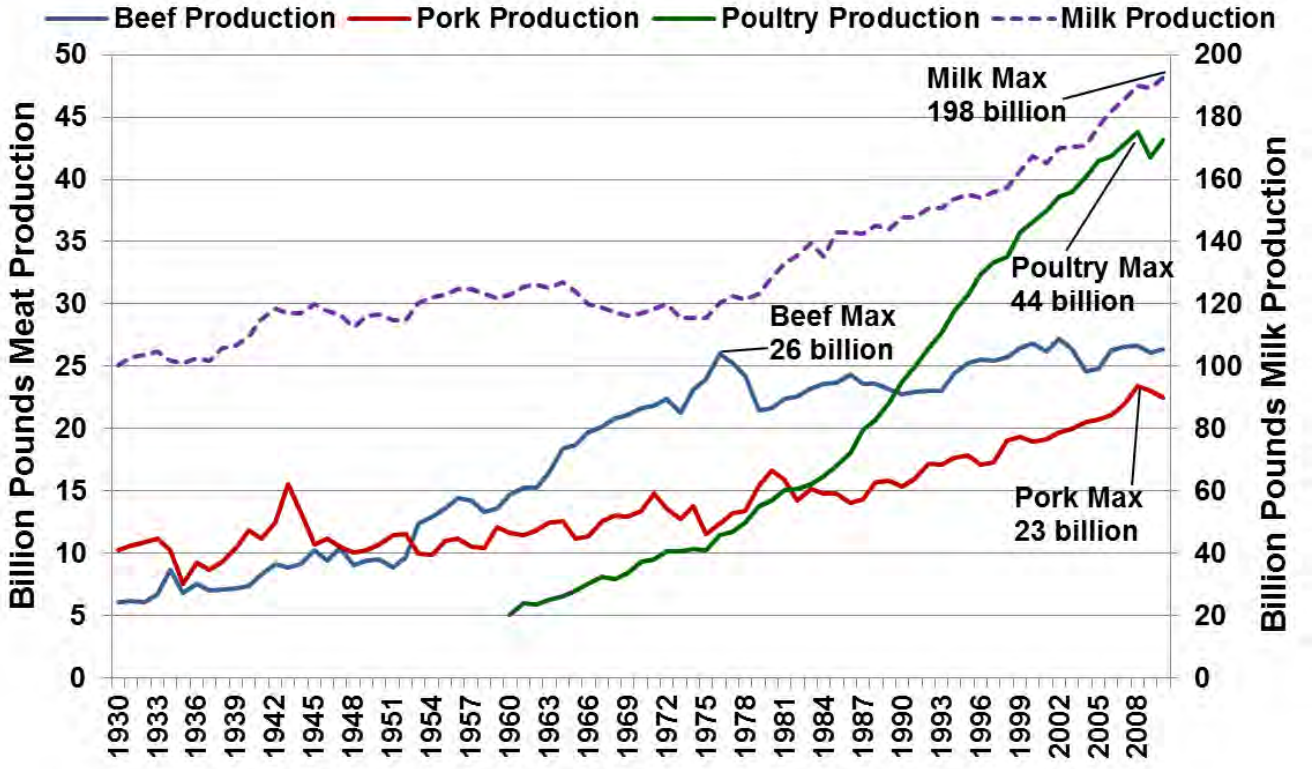
2. Historic Meat and Dairy Production

As incomes in the U.S. have risen, so too has the ability to purchase meats instead of cereals. Transportation developments have played an important role in these markets over their history, with many markets being sited near available infrastructure to source feed and deliver a final product after processing. More detail is provided in regard to the particular segments, namely beef, pork, poultry and an evaluation of per capita consumption.

Exhibit 16: Historic U.S. Meat and Dairy Production



Note: Maximums given are for time period included in chart.
Source: USDA

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- **Beef**. The U.S. beef industry production increased steadily through the mid-1970s, until the trend rate of increase slowed to the present day. By the mid-1950s, corn began to play an increasingly important role as a component of finishing rations for cattle.[36] While cow-calf-production is widespread across many regions of the U.S., finishing of beef cattle has become more concentrated in regions of high feed availability.

- **Pork**. Pork production has been trending steadily upward, and exports have become an increasingly important component of pork disappearance. The pork industry has relied heavily on the growth of corn, soybean, and more recently DDGS production in the U.S.

- **Poultry**. Much of the U.S. poultry production occurred on small family farms from the 1800s through the 1940s, and this production also served the role of providing food for the farmers who produced it. Vertical integration became more common throughout the 1940s and 1950s, and by the mid-1960s, 90% of the broilers produced came from integrated operations.[37]

- **Per capita consumption**. Over time, per-capita consumption of red meats, including beef and pork, has been pressured by the increases in per-capita consumption of poultry. While pork per capita consumption has been declining since the 1940s, beef per capita consumption did not peak until 1977, but has generally been declining since that time. Further detail is provided in Exhibit 17.
  - Beef consumption has faced increasing competition from poultry and steady competition from pork over the last four decades.
  - Most recently, the per capita availability of meat has declined in response to decreasing overall consumption and strong exports, which resulted in higher prices and came at the same time as U.S. consumers faced difficult economic conditions. The result was generally lower per capita consumption in the U.S. This trend is expected to be reversed within five years for chicken, beef, and pork, although the improvement in per capita consumption will be very moderate.

[36] Corah, L.C. *Development of a Corn-Based Beef Industry.* Certified Angus Beef.
[37] National Chicken Council. *U.S. Chicken Industry History*.

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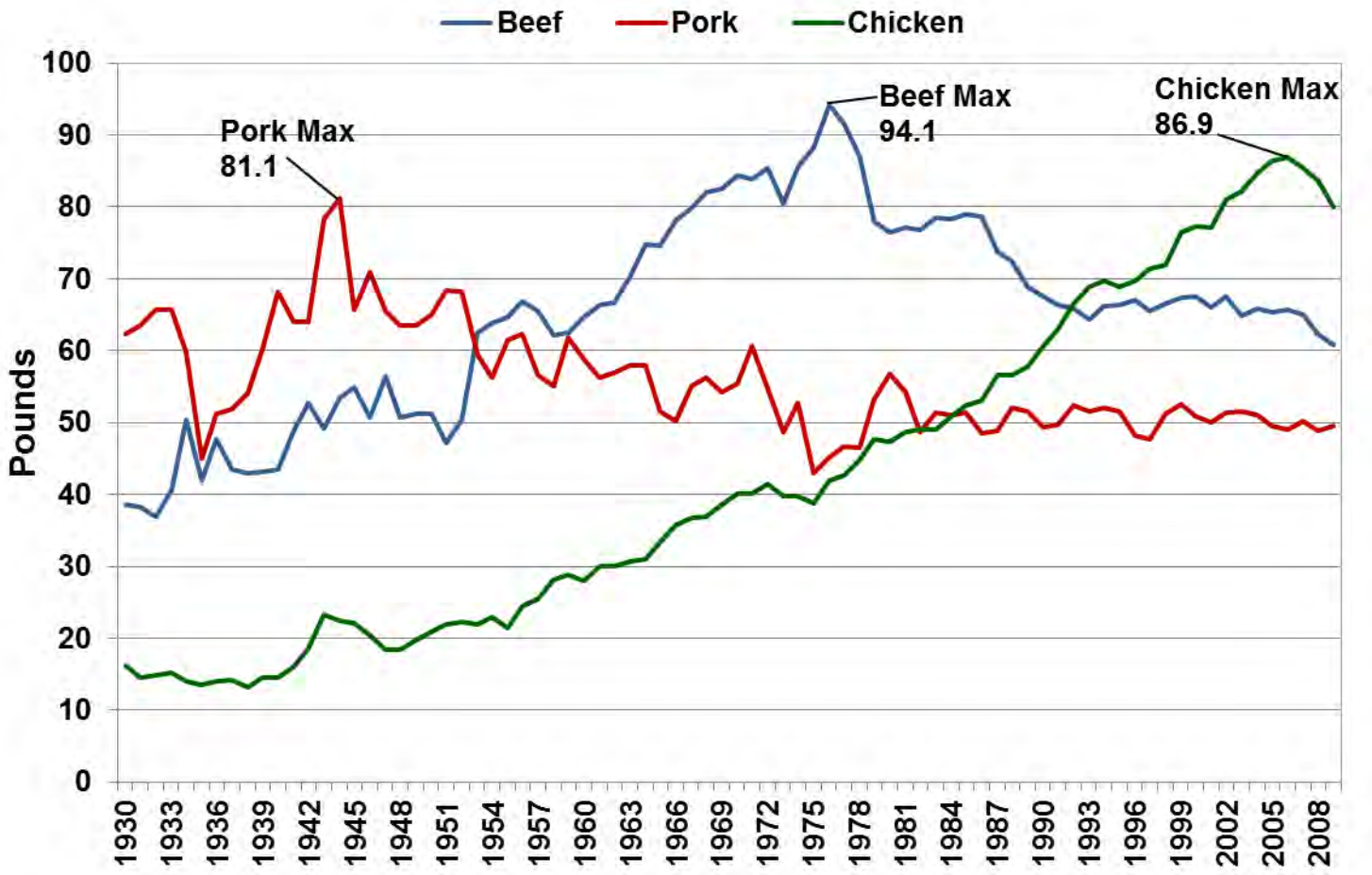
Exhibit 17: Red Meat and Poultry Per Capita Consumption



Note: Maximums given are for time period included in chart; per capita consumption is based on per capita availability.
Source: USDA

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3. Crop Processing

(a) Soybean Crushing[38]

- In the early years of soybean crushing in the U.S. (1920s), the demand for soybeans to crush exceeded the available soybean production, although this is not surprising given the low level of soybean production at the time.

- World War II caused a dramatic shift in the U.S. soybean industry. Besides spurring soybean production, the war also shifted soy crushing from importing to exporting. Since World War II, the soybean crushing industry has evolved from 200 small, rather inefficient multipurpose oilseed mills to 130 industrial complexes in the early 1970s. Today, there are approximately 70 soy crushers in the U.S.

- The changes in the soybean crushing industry have not only been in the number of soybean crushers. The process technology that they utilize has also changed substantially since the 1940s.
  - In 1947, 70% of soybeans were processed using mechanical oil extraction to remove the oil from the soybeans and just 30% of extraction utilized chemical solvents.
  - Most of the industry converted to solvent (hexane) processing through the 1950s due to the lower costs and greater efficiency of oil recovery using this solvent processing method.

- The locations of soybean crushing facilities were influenced by their geographic proximity to sources of soybeans and off farm transportation rate structures at the time of construction.

- As the soybean industry in the U.S. has evolved, the processing capacity per mill and the total U.S. capacity have also increased.
  - From 1951 to 1969, soybean crushing capacity more than doubled from 310 million bushels per year to 770 million bushels per year. Today, U.S. soybean crushing capacity is much larger still, at over 1.6 billion bushels per year.
  - Even more striking is the growth in the average size of a soybean crusher. In 1951, the average mill could process 1.6 million bushels per year, while in 1971 the size had more than tripled such that the average soybean crusher could process 5.8 million bushels per year. Today, the average soy crusher can process over 24 million bushels per year.

[38] Historic data of soybean crushing drawn from Houck, J.P., M.E. Ryan, A. Subotnik. *Soybeans and their Products: Markets, Models, and Policy.* University of Minnesota. 1972.

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(b) Ethanol Production

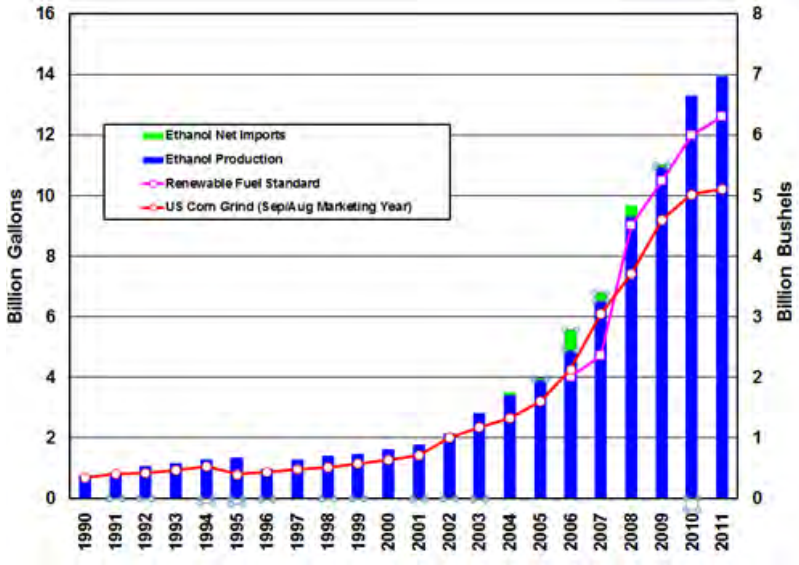
- Corn refining has existed in the U.S. since the time of the Civil War, and the production of ethanol by corn refiners began following World War II. Major quantities were not manufactured until the late 1970s.[39]

- The U.S. had long been a net importer of ethanol, but ethanol production in the U.S. started to grow steadily in the late 1990s when it began to be used as a fuel additive.

- Since the federal Energy Policy Act of 2005 established the Renewable Fuel Standard (RFS) program, ethanol production has increased exponentially. The RFS program is the main policy shaping the use of ethanol as a fuel blend, and requires that a certain volume of renewable fuel is used in gasoline and diesel.

- In 2007, the RFS program was revised and expanded under the Energy Independence and Security Act (EISA), and is now referred to as RFS2. This program requires a certain volume, increased from RFS levels, of all gasoline and diesel fuels sold or used by motorists be renewable fuel.

Exhibit 18: U.S. Production of Fuel Ethanol



Source: EIA, Informa

[39] Corn Refiners Association. http://www.corn.org

- In response to the Energy Policy Act of 2005 (RFS1) and the Energy Independence and Security Act of 2007 (RFS2), biorefineries that produced corn-based ethanol expanded production and improved their efficiency using new technologies. This can be seen in Exhibit 18 along with the Renewable Fuel Standard and the corn grind for ethanol. Imports over this period have been minimal in most years, and the U.S. is currently a net exporter of ethanol.

(c) Milling

- As the U.S. was settled, mills often were established in small communities to provide flour for bread making and other uses.

- As is the case with many other agricultural industries, there has been a trend towards consolidation within the wheat milling industry in the U.S., with the average mill size increasing by over 40% between the 1960s and 1990s.[40]

- The current U.S. wheat milling industry handles over 900 million bushels of grain per year.[41] This corresponds with an even larger capacity of over 1.5 billion bushels for wheat and durum millers in the U.S.

- Mills can be utilized to make flour for human consumption. Alternatively, feed mills are often utilized to produce a mixed ration that is fed to livestock.

- Considerations for locating a feed mill include the source and distance from production for the grain inputs utilized by the mill, as well as the location of the potential buyers of the products. For feed mills, this would imply a close proximity to the users of feed, livestock producers. For wheat mills, plants located nearer consumer markets have an advantage.

4. Grain Storage

- Since the 1980s, on farm grain storage first demonstrated a decline and has since 2003/2004 shown year-on-year modest increases, while off farm storage capacity has actually increased as well in the several years since that period.

- Meanwhile, the number off farm storage facilities would tell a different story with a decline from over 14,000 off farm facilities in 1983 to less than 9,000 off farm grain storage facilities today.

[40] Stiegert, K., and O. Carton. "Increasing Concentration in the U.S. Hard Wheat Milling Industry: Efficiency Gains or Market Power?" 1998.
[41] North American Millers' Association. http://www.namamillers.org

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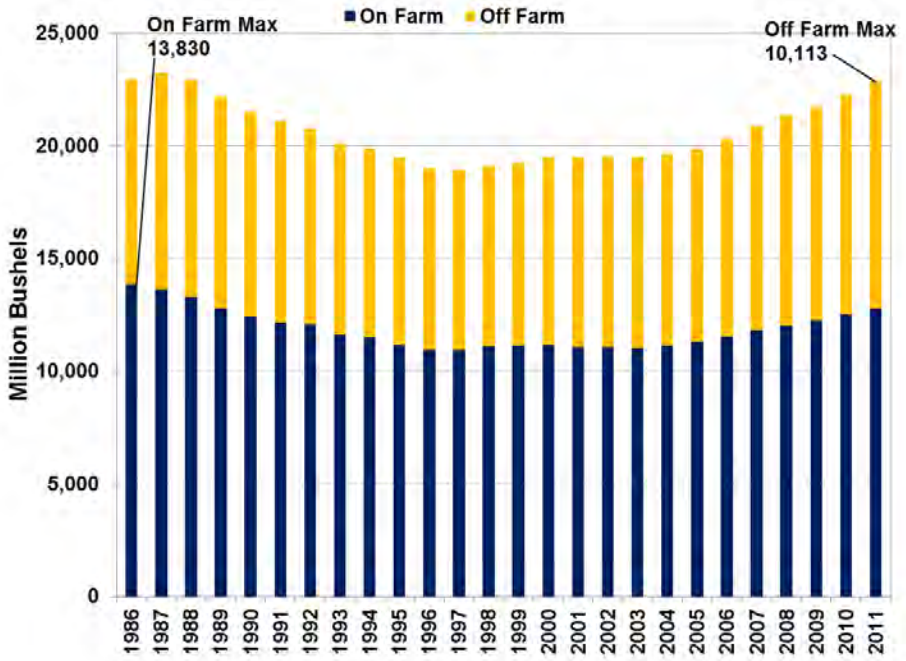
- New facilities are substantially larger in capacity than the smaller, older facilities that are being retired and replaced.

Exhibit 19: U.S. December 1 Grain Storage Capacity



Source: USDA, Informa

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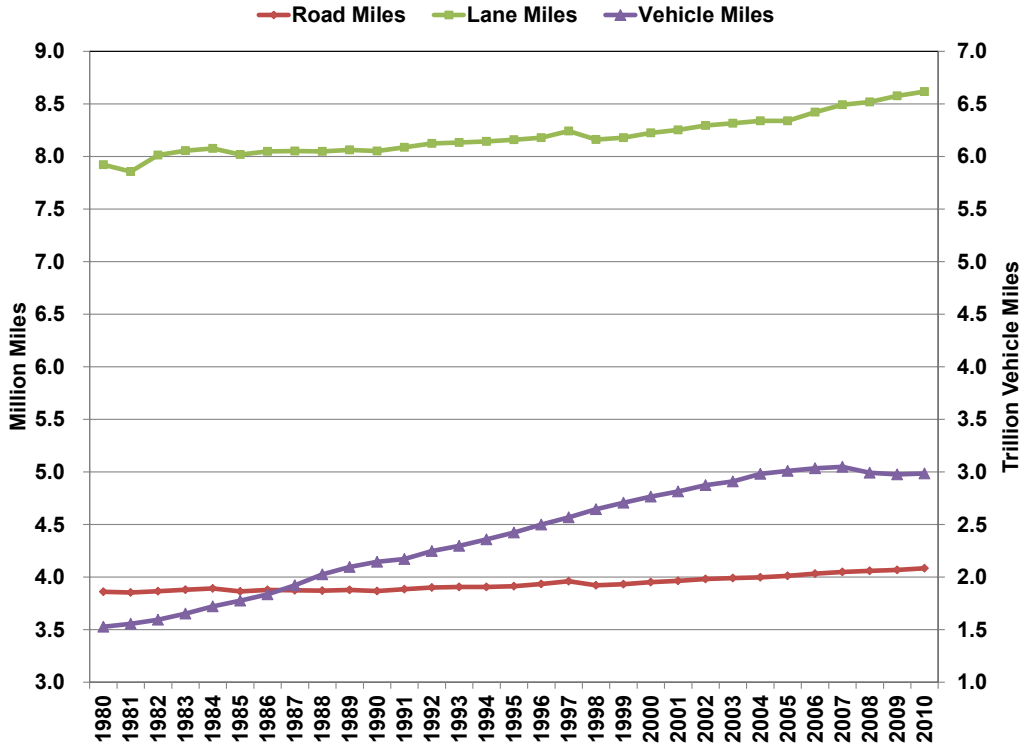
II. RURAL INFRASTRUCTURE FUNDING MODEL FOR AGRICULTURE

A. Perspective

In 2010, the U.S. had 4.1 million miles of road or 8.6 million lane miles that accommodated 3.0 trillion vehicle miles as shown in Exhibit 20. The streak of annual increases in vehicle miles was ended in 2008 by the recession. Fuel taxes are the main method of funding transportation projects, which means a reduction in vehicle miles and an increase in fuel mileage has led to shortfalls in the baseline budget. This begs the question, how will the difference in funding be closed?

Less than 25% of roads are owned by the state governments as shown in Exhibit 21. Interstates are included within the State Highway Agency. Federal-AID Highways funds over 70% of the mileage under the State Highway agency and less than 15% of Local government roads. Local governments are experiencing budget shortfalls and are reducing employment. With this backdrop, county engineer interviews suggest new funding sources are required to prevent the local roads from deteriorating and/or eventually some paved roads will have to revert to gravel and cropland.

Exhibit 20: Road Miles, Lane Miles and Vehicle Miles



Source: BTS

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State government transportation plans have accommodated the increase in vehicle miles by turning two lane state highways into four lane state highways. The transportation answer for many industries is to locate on high volume four lane roads and on Class I railroads, but agricultural volumes are tied to the land. As a result, crop production needs transportation to move along the supply chain to market position. This section will explore the costs associated with maintaining the roads and Section III investigates local funding options.

Exhibit 21: Number of Miles by Ownership for Selected States (2008)

State	State Highway Agency	County	Town, Township, Municipal	Other Jurisdiction[1]	Federal Agency[2]	Total
Illinois	16,040	16,367	106,131	707	247	139,492
Indiana[3]	11,215	66,096	18,302	0	0	95,613
Iowa	8,895	89,564	15,095	549	123	114,226
Kansas	10,369	113,338	15,725	238	939	140,609
Kentucky	27,574	39,459	10,475	312	929	78,749
Minnesota	11,893	44,876	77,397	4,073	0	138,239
Nebraska	9,959	60,949	22,227	249	231	93,615
North Dakota	7,384	10,067	67,825	23	1,543	86,842
Ohio	19,258	28,987	73,043	1,136	549	122,973
South Dakota	7,836	35,308	35,774	1,059	2,172	82,149
Tennessee	13,881	57,188	19,492	339	1,273	92,173
United States	**779,735**	**1,788,041**	**1,286,445**	**57,017**	**131,530**	**4,042,768**

[1] Includes state park, state toll, other state agency, other local agency, and roadways not identified by ownership.

[2] Roadways in federal parks, forests, and reservations that are not part of the state and local highway systems.

[3] Excludes 788 miles of Federal agency owned roads.

Source: U.S. Department of Transportation, Federal Highway Administration, Highway Statistics 2008 (Washington, DC: 2009), table HM-10

B. Programs

Future highway funding remains uncertain, which is a major issue because states rely heavily on federal funding for its highway construction program. The existing federal highway funding program, safe, accountable, flexible, efficient transportation equity act: a legacy for users (SAFETEA-LU) expired on September 30, 2009. Congress has instituted short term extensions of SAFETEA-LU but federal funding levels are unknown.

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Almost three quarters of the nation's 4 million miles of roads are classified as rural while over 82% of the nation's communities depend solely on trucking for the delivery of goods. Traffic congestion is increasing at twice the rate in rural areas than it is in urban areas, and one-third of rural interstates and highways need repair. Associated entities, designed to accommodate a range of program and policy changes are already in place to facilitate the kinds of changes required and contemplated for such a program to be successful. Programs exist to serve as advocates and as conduits to the management of the future

As an example, governors across three of the Soy Transportation Coalition states have participated in the Delta Regional Authority's multi-jurisdictional transportation investment initiatives. Kentucky, Illinois and Tennessee joined with Louisiana, Mississippi, Missouri, Arkansas and Alabama to share goals and objectives, to shore up the transportation infrastructure across the Mississippi Basin. For the purpose of overcoming shortfalls in resources to support rapid traffic growth in the face of declining infrastructure investments and in many other respects, the Delta Regional Authority was established to serve as a collective effort that will bring states together to pursue a Congressionally-mandated goal of improving transportation infrastructure in the region. This is being accomplished through the States' Economic Development Assistance program and the Delta Development Highway System (DDHS). In 2007 the DDHS was developed in collaboration with the Delta Regional Authority eight state Departments of Transportation (DOTs). All of these DOTs approved the system's corridors, projects, priorities, and planning-level costs, a remarkable inter-jurisdictional approach. Structured to encompass 3,843 miles of improved facilities with an estimated total system investment of $18.5 billion, the effort will take a strategic view given the more than 20 year planning horizon. In a climate where collaboration and similar situations arise, leverage for attracting scarce resources can be accomplished through innovative cooperation agreements.

It is expected that upon the targeted work plan being completed, overall economic impact on the multistate region by DDHS will include more than 130,000 additive full-time equivalent jobs. From its creation in 2000 up to the present, the Delta Regional Authority has already funded around 139 transportation projects, investing $25 million, with the economic development goals of getting nearly 26,000 jobs to be created and retained, based on economic impact assessments. The annual increase in income of approximately $3.5 billion in additional income (in 2006 dollars) will add value to the region and the national economy. The DDHS is directed toward addressing and responding to the most serious infrastructure deficiencies across the geographic region. The efforts and expenditures will expand capacity and improve transportation facilities throughout the region's eight states.[42]

[42] http://www.dra.gov/initiatives/transportation-study.aspx

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Federal Highway Administration Funds are allocated to a state through numerous categories. A perspective on how diverse the transportation programs are is important in understanding why and how county officials select projects. The ability to obtain funding for a project is as important as the benefit from the project. To illustrate this point, the major funding categories for Tennessee are described in detail.

APPALACHIA DEVELOPMENT HIGHWAY SYSTEM (APD) provides funding for routes with remaining work deemed eligible as approved by the Appalachian Regional Commission in the most recent APD Cost Estimate.

ARRA / TIGER GRANTS provides 80% Federal funding by Grant for various projects approved through the grant funding process.

BONDING AUTHORITY (BOND) provides 100% funding by the state by utilizing the state's authority to issue bonds for various projects on the State Route Highway System.

BRIDGE BOND (BRBD) provides 100% funding by the state by utilizing the Tennessee transportation infrastructure improvement bond program.

BRIDGE REPLACEMENT AND REHABILITATION (BRR-L) provides funding for off-system bridge replacement, or to rehabilitate aging or substandard bridges based on bridge sufficiency ratings.

BRIDGE REPLACEMENT AND REHABILITATION (BRR-S) provides funding for on-system bridge replacement, or to rehabilitate aging or substandard bridges based on bridge sufficiency ratings.

CONGESTION MITIGATION AND AIR QUALITY (CMAQ) provides funding for transportation projects in air quality non-attainment or maintenance areas. CMAQ projects are designed to contribute toward meeting the national ambient air quality standards.

DELTA REGION TRANSPORTATION DEVELOPMENT PROGRAM supports and encourages multi-state transportation planning and corridor development, provides for project development, facilitates transportation decision making and supports construction in the eight states comprising the Delta Region.

DEMONSTRATION SET ASIDE OF THE STP (DEMO) provides special funding for certain projects.

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ENHANCEMENT ACTIVITY SET ASIDE OF THE STP (ENH) provides funding for pedestrian and bicycle facilities; pedestrian and bicycle safety and educational activities; acquisition of scenic easements and scenic or historic sites; scenic or historic highway programs; landscaping and other scenic beautification activities; historic preservation; rehabilitation of historic transportation buildings, structures, or facilities; preservation of abandoned railway corridors; control and removal of outdoor advertising; archaeological planning and research; environmental mitigation to address water pollution due to highway runoff or reduce vehicle-caused wildlife mortality while maintaining habitat connectivity; and establishment of transportation museums. Under the Tennessee Roadscapes grant program, types of work will include landscaping, irrigation, benches, trash cans, paths, and signage.
FOREST HIGHWAY/PUBLIC LANDS (FH/PL) provides funding for improvements on any roads serving Federal and Indian lands. There are five programs funded under this category: Park Roads/Parkways, Indian Reservation Roads, Public Lands Highways, Forest Highways, and Refuge Roads.

HIGH PRIORITY PROJECTS (HPP) provides designated funding to the state for specific projects identified by Congress.

HIGH PRIORITY PROJECTS (HPP-L) provides designated funding to local entities for specific projects identified by Congress.

HIGH RISK RURAL ROADS (HRRR) provides funding for achieving a significant reduction in traffic fatalities and incapacitating injuries on rural major or minor collectors, and/or rural local roads.

HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP) provides funding for reducing the number and severity of crashes and decreasing the potential for crashes on all highways and/or the installation/upgrade of protective devices at crossings.

INTERSTATE MAINTENANCE (IM) provides funding to rehabilitate, restore, and resurface the Interstate System. Reconstruction is also eligible if it does not add capacity, and High-Occupancy-Vehicle (HOV) lanes can be added.

INTERSTATE MAINTENANCE DISCRETIONARY (IMD) provides funding for resurfacing, restoration, rehabilitation and reconstruction (4R) work, including added lanes to increase capacity on most existing Interstate system routes.

LOCAL (LOCAL) is a fund code to recognize projects that are totally funded by a local agency.

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NATIONAL CORRIDOR INFRASTRUCTURE IMPROVEMENT PROGRAM (NCIIP) provides funding for construction of highway projects in corridors of National significance to promote economic growth and international or interregional trade.

NATIONAL SCENIC BYWAYS PROGRAM (NSBP) provides funding for roads having outstanding scenic, historic, cultural, natural, recreational, and archaeological qualities and provides for designation of these roads as National Scenic Byways, All-American Roads or America's Byways.

NATIONAL HIGHWAY SYSTEM (NHS) provides funding for major roads including the Interstate System, a large percentage of urban and rural principal arterials, the Strategic Defense Highway Network (STRAHNET), and strategic highway connectors.

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION (NHTSA) provides funding to help save lives, prevent injuries, and reduce economic costs due to road traffic crashes, through education, research, safety standards, and enforcement activity.

PUBLIC LANDS HIGHWAY DISCRETIONARY (PLHD) provides funding for any kind of transportation project eligible for assistance under Title 23, U.S.C., that is within, adjacent to, or provides access to Federal Lands or facilities.

RECREATIONAL TRAILS (RTP) provides funding for the creation, rehabilitation and maintenance of multi-use recreational trails.

SAFE ROUTES TO SCHOOL (SRTS) provides funding for empowering communities to make walking and bicycling to school a safe and routine activity.

STATE (STA) provides 100% funding by the state for various projects on the State Route Highway System.

SURFACE TRANSPORTATION PROGRAM (STP) provides funding for roads not functionally classified as a local or minor collector. Funds may be utilized on projects in Rural Areas, Urbanized Areas, Small Urban Areas, Enhancement, Safety and Rail-Highway Crossings. Safety Projects may include, but are not limited to: Signalization, Intersection Modification without signalization, Sight Distance Modification, Adding Turn Lanes, Adding Turn Lanes with Signals, School Flashing Signals, Flashing Beacons, and Land Acquisition.

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LOCAL-SURFACE TRANSPORTATION PROGRAM (L-STP) allocates funding to areas of 50,000 to 200,000 people for improvements on routes functionally classified urban collectors or higher.

URBAN-SURFACE TRANSPORTATION PROGRAM (U-STP) allocates funding to areas with greater than 200,000 people for improvements on routes functionally classified urban collectors or higher.

SURFACE TRANSPORTATION PROGRAM-SAFETY (STP-S) provides funding for making improvements on high hazard state highways.
TRANSPORTATION, COMMUNITY AND SYSTEM PRESERVATION (TCSP) provides funding for planning grants, implementation grants, and research to investigate and address the relationship between transportation and community and system preservation.

TRUCK PARKING GRANT PROGRAM (TPG) is to fund a pilot program to address the shortage of long-term parking for commercial motor vehicles on the National Highway System.

The vast array of transportation related programs does have a profound impact on which projects are funded at the county level. For example, in Kentucky's Statewide Transportation Improvement Program (STIP), Todd County is employing its funding for a transportation museum and bike paths. This does not reflect a lack of concern about the maintenance of its roads and bridges, but the political reality of transportation funding. Actually, federal funding for a transportation museum is fully funded while bridge and road funding requires a state or local match. Nonetheless, the different programs reflect the wide range of public interests as shown in Exhibit 23.

- The number of transportation programs is a challenge to a county engineer attempting to properly maintain the county roads and bridges.
  - Programs for the wide range of interests divert money away from maintenance and capital projects while lowering taxpayers' willingness to fund transportation programs. Taxpayers are concerned money raised to upkeep roads and bridges will be spent on other needs.
  - A county engineer in a metropolitan area has more opportunity to "game" the system. For example, use of funding for bike paths to get the federal government to pay 90% of the cost to repave existing roads. For example, it is uncommon for rural areas to have four lane, low volume traffic roads that can be transformed into two lane roads with bike lanes that occur in cities or more populous counties.

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- The greater the population the lower the household cost required to raise matching funds to take advantage of federal transportation funding. For densely populated areas, higher traffic volumes and higher property taxes eliminate the option of gravel roads.

- Metropolitan areas are more likely to have higher priority roads, such as interstates and four lane state highways. Rural counties intersected by federal and state roads have a strong support for their transportation system. The other extreme are rural counties with adjacent population that travels the county roads as a cut through - the county incurs the maintenance costs without the benefit of a population base.

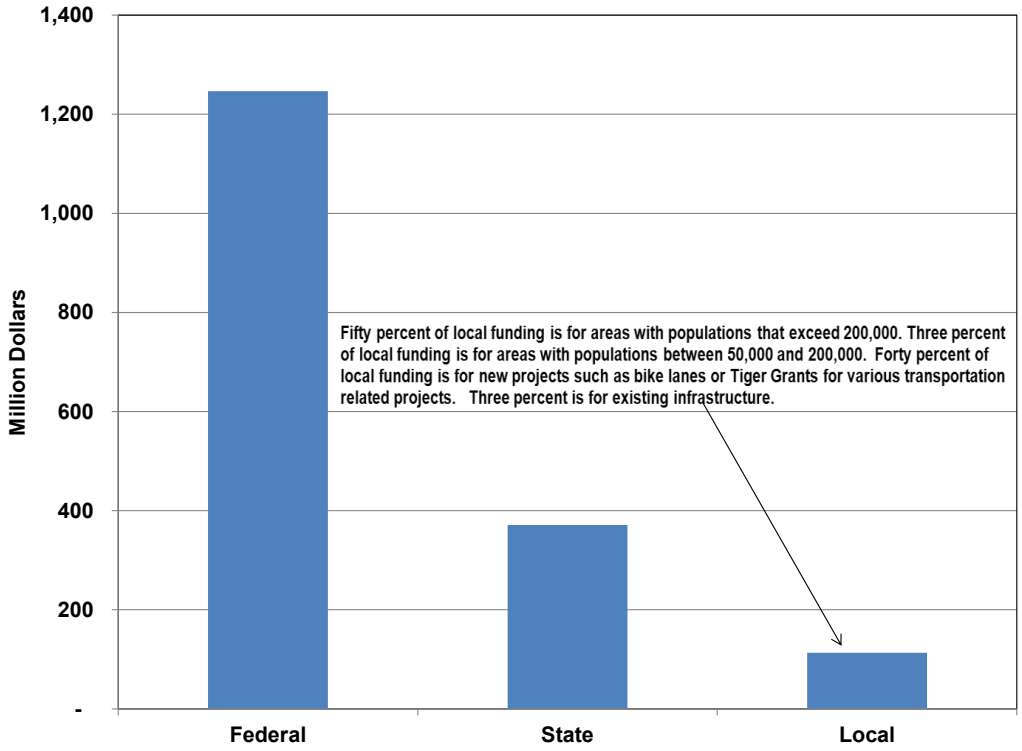
- Counties are dependent on federal and state governments for road and bridge maintenance as shown in Exhibit 22. This is a typical breakdown for all states.

- For Tennessee, only $113 million out of a $1.7 billion transportation budget is locally funded.

- Only 3% of the total local funding is for programs that maintain existing infrastructure in population centers below 50,000.

- Counties with low populations and a large number of roads are struggling to maintain roads and bridges, but are also unwilling to turn paved roads into gravel or raise local taxes. The result is posted notices on bridges and rough roads.

Exhibit 22: Tennessee Transportation Funding by Government



Source: TNDOT

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Exhibit 23: Tennessee Transportation Funding by Program

FUND CODE	ESTIMATED AVAILABLE FUNDS	ESTIMATED TOTAL COSTS	FEDERAL COSTS	STATE COSTS	LOCAL COSTS
APD	415,378,498	132,924,160	106,339,328	26,584,832	
ARRA/TIGER	94,425,572	94,425,572	55,320,458		39,105,114
BRBD	101,831,247	101,730,000		101,730,000	
BRR-L	19,878,701	13,310,000	10,648,000		2,662,000
BRR-S	73,605,148	41,930,000	33,544,000	8,386,000	
CMAQ	41,985,000	27,885,392	22,308,314	5,577,078	
DEMO	30,062,065	4,177,627	4,177,627		
ENH	97,866,975	23,272,000	18,617,600		4,654,400
FH/PL	1,295,000	1,295,000	1,295,000		
HPP	160,499,569	74,090,930	59,272,744	14,818,186	
HPP-L	156,468,156	19,202,648	15,362,118		3,840,530
HRRR	11,289,291	2,000,000	1,600,000	400,000	
HSIP	81,166,512	38,651,183	30,920,946	7,730,237	
IM	186,958,183	155,232,960	139,709,664	15,523,296	
IMD	1,833,333	1,333,333	1,650,000	133,333	50,000
LOCAL	750,000	750,000			750,000
L-STP	70,210,736	22,249,370	17,799,496	81,050	4,368,824
U-STP	288,960,000	288,960,000	231,168,000		57,792,000
NHS	233,624,835	222,718,565	178,174,852	44,543,713	
NHTSA	9,301,377	50,000	125,000		
NSBP	753,200	753,168	602,534	141,596	6,038
PLHD	652,800	452,760	652,760		
RTP	2,614,378	1,500,000	1,200,000	300,000	
SRTS	14,965,799	2,000,000	2,000,000		
STA	70,186,769	66,680,000		66,680,000	
STP	395,454,916	391,428,275	313,142,620	78,285,655	
TPG	994,875	994,875	795,900	198,975	
Total	**2,563,012,935**	**1,729,997,818**	**1,246,426,961**	**371,113,951**	**113,228,906**

Source: TNDOT

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C. Other Support Programs

National Rural Development Partnership (NRDP) Such programs as the National Rural Development Partnership serve as a set of channels through which work to strengthen rural America. Its mission is to leverage collaboration and cooperation among numerous partners, bringing together interested parties from local, state, tribal, and federal governments. The not-for-profit, as well as the for profit private sectors, each recognize common interests and often face a diverse range of obstacles in developing success in rural America.

Numerous states have created Rural Development Councils**.** Currently twenty-eight (28) State Rural Development Councils (SRDCs) have been developed. These SRDCs serve as a front door into the Partnership, with some more successful and active compared to others. Their mission is to bring together dedicated rural development interests in the respective states. The interest groups are able to collaborate to address particular concerns of the rural and agricultural communities. The regionally focused grassroots driven groups are able to take action in relatively short time horizons, in order to respond to rural and local community issues that arise as either constraints or opportunities.

State Rural Development Councils are responsible for creating their own mission, structure, operating guidelines, and action plan. Each Council engages an executive director or senior-level leader that works with the parties that comprise the Council.

Beyond facilitating coordination and collaboration on the state level, a SRDC can also work through their national network to affect major changes on both regional and national levels. The SRDC provides a connection between government and the business community, as well as the general public; in order to utilize the assets that each brings to collaborative efforts. That is, the ability to access a breadth of the elected officials facilitates the spread of new information and provides access to update the community or public sector as well as private industry programs and opportunities. In addition to disseminating information, the SRDC serves as beacons by which subsequent efforts may be guided.

Nationally, the NRDP administratively is housed within the USDA Rural Development's Cooperative Programs. The program has clearly stated that its mission is an effort to improve the quality of life in rural America. Increasing engagement and attracting the range of stakeholders that will enable change in the structure of transportation infrastructure finance will require a consistency of message. The primary principles, to be understood and embraced, repeated and advanced will require sufficiently flexible underlying tenets to bring together a broad coalition of transportation interests. The principles will be achieved through employing a comprehensive approach to transportation infrastructure finance using established facts, simple to express pertinent logic, a political assessment that recognizes

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practical realities that accommodates the complexity that stems from the different levels of government. The approach to affect change must, in any case, be focused on achieving the objective. Establishing recognition that the funding for transportation infrastructure is not keeping pace with the needs, that sources of funding for transport infrastructure must come from a range of sources and that generating the amounts of investment necessary to enhance the transport network can bring benefits to the whole economy, is a tall order. Seeing the need for an adjusted revenue generating approach may appear on its face to be an effort to create a new tax regime. In point of fact, understanding that a reduction in a jurisdiction's road expenses can be achieved through road closures; or, a fee established to raise revenues to maintain and improve specific classes of roads, bridges, waterway locks, channels or other transportation assets will bring a direct set of economic benefits, begins to accept and recognize the importance of the investments that will result in jobs, future cost savings, additional economic output and increase the value added in the economy where the investments are made.

Local Technical Assistance Program (LTAP) In the multitude of states under review, the local township or county road programs are supported through the Local Technical Assistance Program offices. The LTAP, begun by FHWA in 1981, today comprises 58 centers across the country to help local transportation agencies, as well as serving as a resource for information to maintain and improve the local roads. Often the assistance is technical, applying innovative methods and communicating advancements that assists local engineers and public works staff to better understand pavement construction, maintenance and management. The means and methodologies to work smarter and safer are also often elements the LTAPs provide as resources. The program promotes the efficient use of local transportation agencies' scarce resources through the distribution and sharing of technical information. The LTAPs are associated with University centers as well as with state transportation departments.

D. Cost Requirements for Modernizing the System

A modern transportation system that can handle the demands from an ever expanding agricultural system requires a proactive game plan that accounts for future needs rather than funding the next project on the list. For example, does a community complain about a lack of funding while the condition of the infrastructure worsens or does the community make politically hard decisions, such as turning a seldom used road into gravel and diverting the savings into improving the existing roads. Ensuring a road system that can accommodate heavier farm trucks requires increased funds from local sources.

Long-term transportation projects require constant maintenance. The political funding problem of maintenance can be skipped, delayed or not done properly in the short run without paying a major price in quality, but the lack of maintenance greatly increases the cost of repair over the life of the project. The politicians are able to push the bigger problem to the

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next administration. For example, if a lack of maintenance requires a paved road to be resurfaced in 10 years instead of 15 years, the annual cost expands from $5,333 per mile to $8,000 with the extra cost being borne after the shortened life cycle but the lower maintenance cost savings are instant. When counties are faced with the unbudgeted cost related to the paved road not lasting as long as expected, the decision makers have to decide to turn the road into gravel or cropland, raise taxes, or do nothing. Meanwhile, the general public grows frustrated as they observe other less important projects being funded, which creates the impression their tax dollars are being misspent.

In this report, six counties are used as a basis for a general representation of the situation being tackled by county officials. It is estimated that to properly maintain the roads will cost approximately $5,333 per mile for resurfacing and improvements, and an additional $4,294 per mile for maintenance, which includes administration costs and other road related expenses, such as snow plowing as shown in Exhibit 24.

- It is assumed the cost for resurfacing a low traffic volume rural mile of paved road is $80,000 and will last 15 years. The $80,000 is for a hot asphalt repaving and assumes the road will be chip sealed once during the 15 years.
  - The predominant cost factor is the asphalt where the general market cost is fairly equivalent across most rural geographies.
  - The length of service life depends on volume of traffic, climate, and size of vehicles traveling over the road.
  - Urban roads cost more to repair due to the extensive sewer and utility work.

- The total annual paved road cost for all paved roads in the selected counties range from $2.4 million to $12.9 million.

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Exhibit 24: Annual Paved Road Cost by Selected Counties

	Richland, ND	Kendall, IL	Wright, IA	Todd, KY	Buffalo, NE	Wood, OH
Cost to Resurface & Improve Paved Road	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 80,000	$ 80,000
Life of Resurfacing (Years)	15	15	15	15	15	15
Annual Per Mile Cost to Resurface & Improve Roads	$ 5,333	$ 5,333	$ 5,333	$ 5,333	$ 5,333	$ 5,333
Paved Miles of County & Township Roads	255	635	800	515	1,350	929
Annual Total Cost	$ 1,360,000	$ 3,384,480	$ 4,266,667	$ 2,746,667	$ 7,200,000	$ 4,953,600
Annual Per Mile Non-Construction Maintenance Cost	$ 4,294	$ 4,294	$ 4,294	$ 4,294	$ 4,294	$ 4,294
Paved Miles of County & Township Roads	255	635	800	515	1,350	929
Annual Total Cost	$ 1,094,970	$ 2,724,929	$ 3,435,200	$ 2,211,410	$ 5,796,900	$ 3,988,267
Annual Paved Road Cost	**$ 2,454,970**	**$ 6,109,409**	**$ 7,701,867**	**$ 4,958,077**	**$ 12,996,900**	**$ 8,941,867**

Source: State Departments of Transportation, interviews

- It is assumed the annual cost for properly maintaining a gravel road is $3,000 per mile.
  - If the cost for maintaining a gravel road is above $3,000 per mile, the road will likely be expanded and paved because it is experiencing higher traffic volumes.
  - Most rural counties require an average daily traffic count (ADT) of 150 vehicles or greater before considering paving a road.
    - For paved roads that exceed 150 ADT, turning it into gravel is not cost effective.

- Depending largely on the number of gravel roads in the county, the annual gravel road cost in the selected counties range from $456 thousand to $1.3 million.

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Exhibit 25: Annual Gravel Road Cost by Selected Counties

	Richland, ND	Kendall, IL	Wright, IA	Todd, KY	Buffalo, NE	Wood, OH
Cost to Resurface & Improve Gravel Road	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000	$ 3,000
Life of Resurfacing (Years)	1	1	1	1	1	1
Annual Per Mile Cost to Resurface & Improve Roads	3,000	3,000	3,000	3,000	3,000	3,000
Gravel Miles of County & Township Roads	270	397	170	93	150	103
Annual Total Cost	$ 810,000	$ 1,191,990	$ 510,000	$ 279,000	$ 450,000	$ 309,600
Annual Per Mile Non-Construction Maintenance Cost	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900	$ 1,900
Gravel Miles of County & Township Roads	270	397	170	93	150	103
Annual Total Cost	$ 513,000	$ 754,927	$ 323,000	$ 176,700	$ 285,000	$ 196,080
Annual Gravel Road Cost	**$ 1,323,000**	**$ 1,946,917**	**$ 833,000**	**$ 455,700**	**$ 735,000**	**$ 505,680**

Source: State Departments of Transportation, interviews

- The cost that ultimately matters the most is the cost to the individual households. The household cost is the total cost of maintaining a road divided by the population, multiplied by the average number people per household at a nominal average of 2.5.
  - Bridge improvement cost came directly from the national bridge database from USDOT.
  - Assuming the total cost of maintaining the roads is borne by the county, the annual household cost would vary from $176 to $2,757 as shown in Exhibit 26.
    - The major influence on annual household cost is population. A higher populated county, such as Wood County, Ohio has the highest expense per mile of road, but the second lowest household cost.
    - Kendall County, Illinois has a special transportation sales tax that raises an additional $4 million for capital projects. Kendall is experiencing dramatic population growth, and the tax is viewed as facilitating economic development by strengthening local infrastructure required to handle new residential developments. More importantly, the additional tax per household is only $87. By comparison, to raise the $4 million in Buffalo County, Nebraska for example, would cost each household $803.

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Exhibit 26: Annual Household Road Cost by Selected Counties

County and Township Roads	Richland, ND	Kendall, IL	Wright, IA	Todd, KY	Buffalo, NE	Wood, OH
County Population	**16,321**	**114,736**	**13,229**	**46,102**	**12,460**	**125,488**
Per Capita Cost	**$ 232**	**$ 70**	**$ 646**	**$ 117**	**$ 1,103**	**$ 78**
Household Cost	**$ 581**	**$ 176**	**$ 1,615**	**$ 294**	**$ 2,757**	**$ 195**
Road Expense						
Paved Roads Annual Cost	$ 2,454,970	$ 6,109,409	$ 7,701,867	$ 4,958,077	$ 12,996,900	$ 8,941,867
Gravel Roads Annual Cost	$ 1,323,000	$ 1,946,917	$ 833,000	$ 455,700	$ 735,000	$ 505,680
Total Road Annual Cost	**$ 3,777,970**	**$ 8,056,326**	**$ 8,534,867**	**$ 5,413,777**	**$ 13,731,900**	**$ 9,447,547**
Bridge Deficiency Cost	**$ 14,739**	**$ -**	**$ 12,543**	**$ 195**	**$ 8,508**	**$ 328,127**
Total Road & Bridge Cost	**$ 3,792,709**	**$ 8,056,326**	**$ 8,547,410**	**$ 5,413,972**	**$ 13,740,408**	**$ 9,775,674**

Source: U.S. Census, State Departments of Transportation, interviews, Informa

E. Total Upgrade Costs for Rural County and Township Roads the 11 STC states

- Based on the per mile cost estimates from the county examples, the cost of properly maintaining the roads range from $7,200 to $9,500 per mile. The estimated budget for road maintenance among those counties ranged from $2,150 to $7,600 per mile.

- The low surplus / deficit estimate is the high funding estimate minus the low cost estimate; and the high surplus / deficit estimate is the low funding estimate minus the high cost estimate. This will provide the extreme scenarios. Within a state, due to the complexity of the funding and individual county demographics, some counties will be able to fully fund its transportation needs while other counties struggle. Overtime, this situation will create problems for all because the transportation system is interconnected.

- The estimated annual cost to properly maintain rural county and township roads among the 11 selected states is $5.7 billion or $517 million per state. The estimated annual budget to maintain the roads is $302 million per state or 58% of the required amount. Generally speaking, the prospect of obtaining a 70% increase in funding is unrealistic. The extent of budget increases of that magnitude is so significant and of a scale that regional revenue base increases would not be politically acceptable.

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- Depending on the county profile, to close the funding gap while upgrading the serviceability to the local economy will require a focused strategy on which roads need to be strengthened and an objective assessment of which roads need to be transformed needs to be balanced with funding options.
- Funding for new capital projects will likely require new funding sources and the public has to accept that the funding for new capital projects justify a tax increase. The diversion of road and bridge maintenance funds to politically popular projects illustrate the taxpayer concerns are valid.
- Creative measures, like converting roads to cropland, must be explored.
- The low and high estimates represent the best and worst case scenarios. The current economic environment of low tax revenues and high commodity prices represent the worst case scenario.

Exhibit 27: Rural County and Township Road Maintenance Cost for Selected States (million dollars)

State	Costs to Maintain Roads			Estimated Budget to Maintain Roads			Surplus Low / Deficit High		
	Low Estimate	High Estimate	Average	Low Estimate	High Estimate	Average	Low Estimate	High Estimate	Average
Illinois	$ 523	$ 691	$ 607	$ 156	$ 553	$ 354	$ 29	$ (534)	$ (253)
Indiana	$ 336	$ 443	$ 390	$ 100	$ 355	$ 227	$ 19	$ (343)	$ (162)
Iowa	$ 464	$ 612	$ 538	$ 139	$ 490	$ 314	$ 26	$ (474)	$ (224)
Kansas	$ 630	$ 832	$ 731	$ 188	$ 665	$ 427	$ 35	$ (643)	$ (304)
Kentucky	$ 333	$ 439	$ 386	$ 99	$ 351	$ 225	$ 18	$ (340)	$ (161)
Minnesota	$ 566	$ 746	$ 656	$ 169	$ 597	$ 383	$ 31	$ (577)	$ (273)
Nebraska	$ 430	$ 567	$ 498	$ 128	$ 453	$ 291	$ 24	$ (438)	$ (207)
North Dakota	$ 485	$ 640	$ 563	$ 145	$ 512	$ 328	$ 27	$ (495)	$ (234)
Ohio	$ 395	$ 521	$ 458	$ 118	$ 417	$ 267	$ 22	$ (403)	$ (191)
South Dakota	$ 391	$ 516	$ 453	$ 117	$ 412	$ 265	$ 22	$ (399)	$ (189)
Tennessee	$ 350	$ 461	$ 406	$ 104	$ 369	$ 237	$ 19	$ (357)	$ (169)
Average	$ 446	$ 588	$ 517	$ 133	$ 470	$ 302	$ 25	$ (455)	$ (215)

Source: USDOT, U.S. Census, State Departments of Transportation, interviews, Informa

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III. FUNDING STRUCTURE

A. Local Funding Requirements to fund Local Infrastructure

1. Sources of Local Government Funding

Local governments have three broad sources of revenue for rural infrastructure: state and federal government monies, property taxes and sales taxes. Part of the exercise of this study to is examine how county-level governments can manage to maintain rural road infrastructure in the event that state and federal authorities, pressured by policies dialogues favoring fiscal austerity, decide to reduce the support for rural road maintenance and support for local governments which has characterized government finance since the Great Society initiatives of the1960s, which created, among other institutions, the U.S. Department of Transportation as a cabinet level federal agency.[43] In addition to property and sales taxes, we also introduce the possibility of a "bushel tax" similar to the road maintenance financing proposals in Mato Grosso, Brazil.

(a) Property Taxes

County authorities, usually in the form of a county board or commission, create periodic legislation providing for a property tax levy of a specified dollar amount. In addition to the county levy, other local government authorities, such as cities, townships, and school districts, also pass levy legislation that county authorities are authorized to collect in the form of property taxes. State law may provide restrictions on the amount of property taxes that local governments may levy even, or perhaps especially, in cases where state and federal funding to county governments are being reduced.

- One common misunderstanding about property taxes is that if property values increase, such as the dramatic increases in farmland values since the mid-2000s, the amount of property taxes collected does ***not*** increase in any way. Tax levies passed by local governments are fixed dollar amounts that have no relationship at all to property values. Property values simply determine the ***distribution*** of tax burdens on local taxpayers, not the total amounts collected, if the levy legislation provides, as it usually does, for taxes to be collected as some proportion of assessed property values. If property values increase uniformly throughout a county, the effective tax rate will decrease while

[43] The poverty reduction programs of the Great Society era under President Lyndon Johnson sought to capitalize on the fact that the tax burdens of government expenditures were much less burdensome for individual taxpayers if assessed on the much larger state and federal income tax bases rather than local property and sales taxes, which are both lower in low-income counties.

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the tax burden stays the same for all property owners. But if, as is often the case, property values increase more in one area of the county but not in other areas, the effective tax rate in the increasing areas will be lower, but the total burden will end up being higher since the allocation of tax levies are determined largely by property values.

- Many counties, including rural counties, also provide for property taxes to be collected on the basis of owned property other than real estate, such as automobiles or other assets. But real estate, broadly categorized as agricultural, residential, commercial, and industrial provides the largest part of any county's property tax base.

- Generally residential property is taxed at a higher rate than economic-use properties but makes up a smaller proportion of land area than other real property categories. Agricultural land is usually taxed at the lowest rate because, per acre, agricultural land provides less income generating economic activity than other land use categories. How tax burdens are allocated among various categories of taxpayers is the principal, ongoing policy contest over ***equity*** that is in local governments – who gets what, when, and how from the local tax base.

- Since property taxes can be estimated as a proportion of local real property values, when allocating some road expenditure burdens to property owners as a property tax levy, the effective property tax increase can be expressed as a rate increase in property taxes. In most rural counties, a rate increase of less than .25% can be shown to be sufficient to cover the costs of maintaining rural roads under the scenarios analyzed in this study.

(b) Sales Taxes

Sales taxes are a popular source of state and local funding. In many foreign countries, such as Europe, sales taxes in the form of a value added tax are one of the principal sources of national government revenue, but in the United States, income taxes provide the bulk of federal revenue as well as state revenue in many states. The U.S. Census bureau collects county level data on retail expenditures, and this provides a useful way to estimate the sales tax base of any U.S. county.

- Counties with higher populations and more urban and commercial land areas tend to have higher retail sales and thus higher sales tax bases than a rural county that may be experiencing obstacles to maintaining its rural roads. Therefore, using sales taxes to pay for rural road infrastructure costs necessarily increases burdens on local retail establishments and their customers relative to counties with more urban infrastructure. Because rural counties tend to still have high poverty rates and consequent government social expenditure costs per capita relative to more urban counties, there really are not offsetting benefits for being a rural county as far as sales tax revenues are concerned.

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- Unlike property taxes, sales tax legislation determines a rate that retailers must pay the county as a percentage of retail sales. This means that increases in retail sales business results in higher taxes collected, and decreases in sales, perhaps due to a recession or other negative economic impact in a local area, result in lower taxes collected.

- Sales tax increases often drive consumers to neighboring jurisdictions where taxes, and thus prices, are lower, and retail business establishments might relocate to neighboring counties to escape the additional tax burdens if the difference is significant.

(c) Bushel Tax

The bushel tax concept is an adaptation of the Mato Grosso case for a road use tax, as described in sections D and E. The idea is that in lieu of sales or property tax revenue sources from county authorities, farmers who benefit from rural roads may be able to obtain sufficient maintenance of those roads by the county government if they pay for their use of those roads in some way proportionate to the use.

- Charging a fee per volume or weight of loads for the roads traveled was a policy implemented in the soybean growing state of Mato Grosso, Brazil. Similarly, the possibility of charging a fee per bushel of grain produced in a given county was analyzed.

- A tax based on agricultural production of each farm operation in the county was proposed. Production information is collected by the USDA and the Internal Revenue Service (IRS) each year for each producer, and since virtually all production at some point requires use of county roads, farm production provides a cost effective means of collecting a use tax for farm production.

2. Putting it all together

Funding for a given county can be summarized as a function of property, sales, and use tax rate times the relevant tax bases, as follows:

- Revenue = [Taxable Property Value X Property Tax Rate] + [County Annual Retail Sales Receipts X Sales Tax Rate] + Number of Bushels Produced X Bushel Tax Rate]

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Exhibit 28: Summary of Funding Model Parameters

	Richland, ND	Kendall, IL	Wright, IA	Todd, KY	Buffalo, NE	Wood, OH
Population	16,321	114,736	13,229	46,102	12,460	125,488
Taxable Property Value ($)	601,812,940	28,546,906,725	726,096,332	401,335,842	3,485,346,019	2,866,984,610
Farmland Property	280,627,100	807,979,545	350,681,750	145,303,852	785,097,352	NA
Comm, Ind, Other	180,700,360	4,227,195,309	180,280,481	60,032,094	1,048,000,157	NA
Residential	99,190,090	23,511,731,871	195,134,101	195,999,896	1,652,248,510	NA
Effective Property Tax Rate	0.3%	0.3%	0.3%	0.3%	0.3%	0.3%
Property tax Revenue ($)	1,504,532	71,367,267	1,815,241	1,003,340	8,713,365	7,167,462
Annual Retail Sales Receipts ($)	205,012,000	1,064,021,000	100,154,000	58,574,000	739,878,000	1,522,477,000
Average Retail Sales/Capita	$12,424	$10,957	$7,681	$4,878	$16,483	$12,175
Sales Tax Rate	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%
Sales Tax Revenue	512,530	2,660,053	250,385	146,435	1,849,695	3,806,193
Total Bushels Produced*	65,791,980	16,028,240	36,961,770	9,480,332	14,358,844	22,586,291
$ per bushel tax	0.0050	0.0050	0.0050	0.0050	0.0050	0.0050
Bushels Per Paved Mile	258,008	25,258	46,202	18,408	10,636	24,318
Bushels Per Gravel Mile	243,674	40,340	217,422	101,939	95,726	218,859
Bushel Tax Revenue	328,960	80,141	184,809	47,402	71,794	112,931
Revenue	2,346,022	74,107,461	2,250,435	1,197,176	10,634,854	11,086,585

* Bushels produced is the average 2001-2010 of production of corn, soybeans, wheat, barley, and oats.
Note: Richland County's taxable property value is only about 5% of full market value and 10% of assessed value, an institutional limitation in North Dakota.

The assessed value is used in the model to make Richland comparable to other counties for purposes of comparing burdens on taxpayers.

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- Exhibit 28 summarizes the parameters which drive the funding model – county-level property values, retail sales. To illustrate how differences in production, retail sales, and taxable property values differ by county, the same effective tax rates on each tax base are provided in the exhibit, providing markedly different results for each county.
  - For example, Richland County, North Dakota has a taxable property value base of only $60 million due to institutional limits in North Dakota which provide for taxable property at only 10% of assessed property values (and about 5% of true market values). The capacity of Richland County to raise revenues through property taxes is very limited relative to the capacity to raise such revenues from Kendall County, Illinois. The same 0.25% effective property tax rate would raise over $71 million in Kendall County, Illinois but only raise $150,000 in Richland, North Dakota almost entirely due to legislated limitations on taxable property in North Dakota.
  - Likewise, a sales tax produces different revenues depending on the total retail sales occurring in a given county. Todd County, Kentucky has fewer retail sales establishments than other representative counties so a 0.25 cent sales tax produces only $140,000 in additional revenue, whereas in Wood, Ohio the same sales tax increase of 0.25 cent would produce $3.8 million in additional revenue.
  - A use tax is also dependent upon differing levels of agricultural production. Richland, North Dakota produces the largest number of bushels in our sample of six representative counties, so it would also produce more revenue than the other counties if a uniform 0.50 cent per bushel use tax were applied to all of the counties.

B. Example of a County Sales Tax

A county sales tax produces revenue as a function of total retail sales in a given jurisdiction, or retail sales of a given commodity, such as fuel, in that jurisdiction. (Other popular taxable commodities are cigarettes and alcohol.) Since a sales tax is provided for through legislation which sets a tax rate that a retail sales establishment must pay on their recorded sales, estimating retail sales in a given county provides only an estimate of sales tax revenues – the real revenues depend upon actual sales that occur, and they may be greater or lesser than estimates.

- Complicating sales taxes further, consumers and retailers often change behavior to avoid paying this tax, so retail establishments that are able to do so often move their locations to jurisdictions with lower taxes, and consumers often avoid taxed items or shop for them in other jurisdictions where prices might be lower. In fact, one of the principal purposes of establishing some sales taxes, for example on cigarettes or alcohol, is to reduce consumption of those items.

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As indicated in Exhibit 28, average retail sales per county resident differ greatly, as does the population of different rural counties. Counties with higher populations and with more retail sales per person are thus able to generate more sales tax revenue for road maintenance, and thus, lower total burdens are felt by taxpayers or local retail establishments.

Exhibit 29: Additional Sales Tax Rates Required to Meet a 10% Road Budget Shortfall

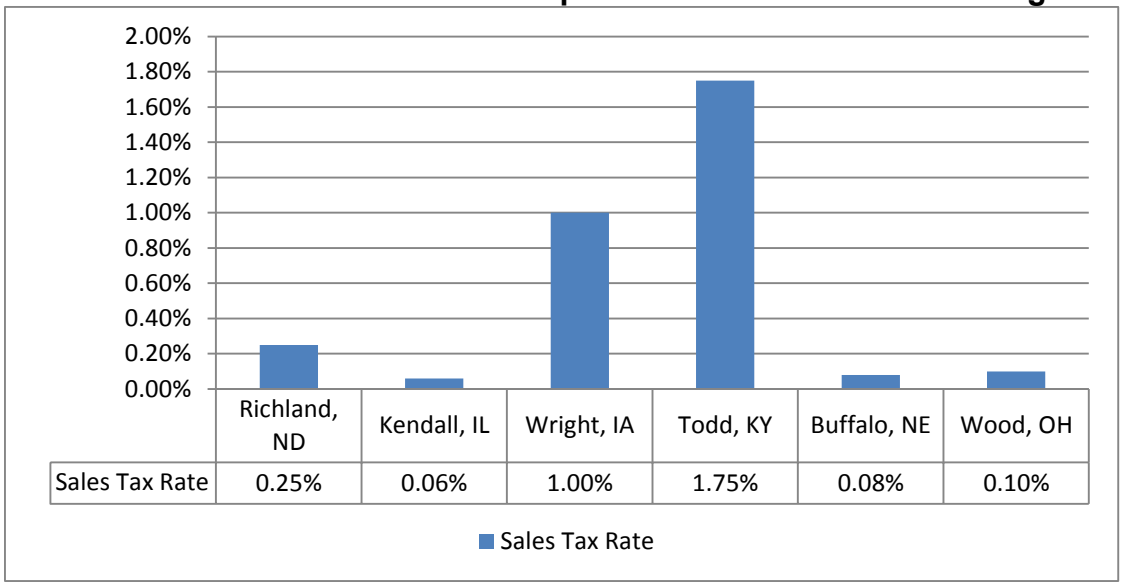

Exhibit 29 indicates the sales tax rates required if there was a 10% shortfall in county revenues for road maintenance, and policymakers attempted to cover the difference with a countywide sales tax on all retail sales. The driving variables behind the differences in required additional sales taxes to cover shortfall is given in the population, retail sales, and retail sales per capita figures in Exhibit 28.

- Some counties, such as Kendall, IL, are able to easily cover any shortfall from local sales tax revenue, requiring only an additional local sales tax of 0.06% (less than 1/10 of a cent per dollar of retail sales). This county has high populations and high retail sales per resident which allows a much wider distribution of the burdens of covering any road budget shortfall.

- Other counties, however, have very small populations and/or lower retail sales per resident, which is normal for very rural counties where residents typically travel to other more urban counties for many retail purchases. Wright County,

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Iowa, and Todd County, Kentucky are examples of counties which would have charges between 1 and 2 cents per dollar expended on retails sales, in addition to any current sales taxes. Such an increase is both likely to be viewed as unacceptable by county residents and retail establishments (and thus policymakers) and is likely to induce behavior changes among consumers and retailers, reducing the revenue this tax would provide in following years.

- Other parameters of sales taxes would be included if actually implemented in policy, such as sales taxes on gasoline or other limited items, but it adds no analytical value to do so because the drivers of sales tax revenues have already been identified – population and propensity to purchase taxable goods in a given county. Counties with larger populations and urban centers are able to easily implement a sales tax on anything with little burden being felt by consumers, but counties with small populations and fewer establishments for selling goods within the county will feel much more burdened by a sales tax.

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C. Matto Grosso, Brazil: A Case Study for a Form of a "Bushel Tax"

1. Description of the Mato Grosso Policy

Housing and TRO fund (FETHAB), a transportation fund for infrastructure and housing improvements was established by State law No. 7263 on March 27, 2000. The law regarding FETHAB has been amended a number of times. Governor Maggi, the largest soybean grower in Brazil, transformed FETHAB in 2003 into a major state revenue for improving roads in Mato Grosso. The taxes for the fund are based on the tonnage or number of units transported of diesel oil, soybeans, cattle, cotton, wood and natural gas produced in Mato Grosso. About 70% of the funding is designated for highways and 30% for low income housing.

- FETHAB collections are administered by the Secretary of State for Infrastructure (Sinfra) and supervised by the Council of FETHAB. Sinfra collects the FETHAB taxes. It also is responsible for applying the funding to construction of bridges, culverts, paving of roads, restoration of paved roads, education and road projects, enhance security and air traffic control, expropriation and compensation, preservation of highways paved, implementation of the toll plaza, deployment of cargo checkpoints, construction, reconstruction and renovation of wooden bridges, highway building, and maintenance of unpaved roads. FETHAB funds are also invested in the development of technical projects involving sanitation, expansion, construction of water distribution networks and sewage, construction of urban housing, urban roads with enforcement of storm water drainage and construction of rural housing. Sinfra does some of these projects in partnership with The Land Institute of Mato Grosso (INTERMAT).

- FETHAB collections have grown sharply, reaching a record R$577 million in 2011 (Exhibit 30) and could reach another record of R$742.5 in 2012 according to a study by Sistema Famato (Federation of Agriculture and Livestock of Mato Grosso). On a cumulative basis from 2000 to 2011, FETHAB collections totaled R$3.5 billion.

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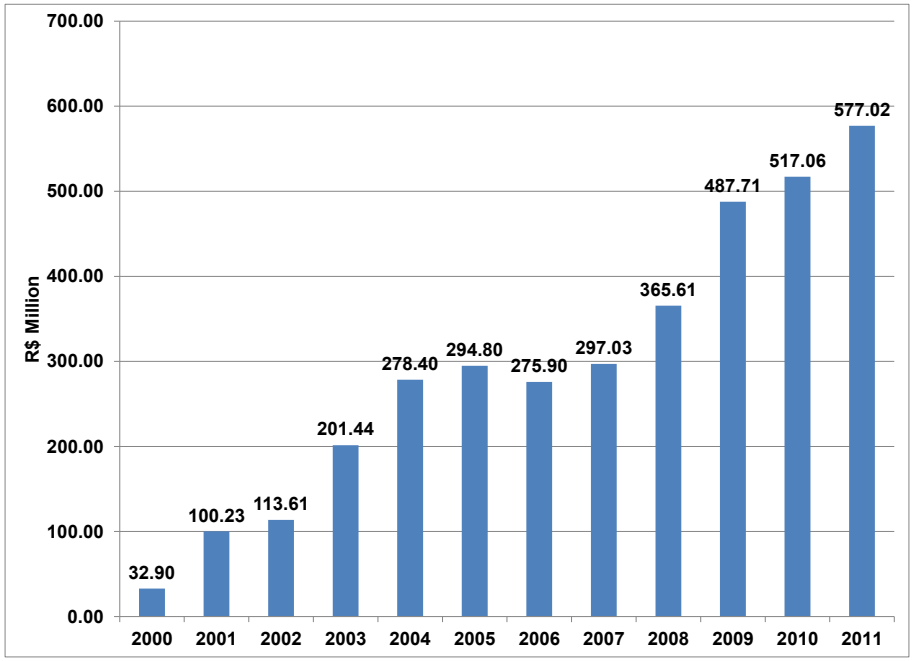
Exhibit 30: Trends in Mato Grosso FETHAB Collections



Source: Annual reports from Secretaria de Estado de Fazenda, Estado de Mato Grosso

Diesel oil accounts for the largest share of FETHAB collections or about two-thirds of the collections in 2011 (Exhibit 31). Soybeans account for the second largest share or 22.5% in 2011.

Exhibit 31: Mato Grosso – Annual FETHAB Effective Collections from Agricultural Sectors for Infrastructure and Housing Investment

(In R$ Million)

	2004	2005	2006	2007	2008	2009	2010	2011
Soybeans	**61.20**	**78.90**	**78.35**	**83.47**	**85.05**	**105.57**	**105.90**	**129.71**
Infrastructure and Housing	61.20	78.90	78.35	83.47	85.05	105.57	72.44	84.98
World Cup & SECID							33.46	44.73
Cattle	**21.20**	**29.40**	**32.14**	**28.13**	**27.97**	**31.80**	**31.98**	**47.65**
Infrastructure and Housing	21.10	29.40	32.14	28.13	27.97	31.80	22.01	31.22
World Cup & SECID							9.97	16.43
Cotton	**2.40**	**3.20**	**2.67**	**3.68**	**4.39**	**4.19**	**3.87**	**4.71**
Infrastructure and Housing	2.40	3.20	2.67	3.68	4.39	4.19	2.67	3.08
World Cup & SECID							1.20	1.62
Wood	**16.20**	**14.00**	**11.45**	**13.45**	**12.97**	**11.85**	**14.06**	**14.03**
Infrastructure and Housing	16.20	14.00	11.45	13.45	12.97	11.85	9.68	9.19
World Cup & SECID							4.38	4.84
Diesel	**177.50**	**169.30**	**151.28**	**168.31**	**235.23**	**334.31**	**361.26**	**380.91**
Infrastructure and Housing	177.50	169.30	151.28	168.31	235.23	334.31	248.73	249.56
World Cup & SECID (urban housing)							112.53	131.34
Total	**278.40**	**294.80**	**275.90**	**297.03**	**365.61**	**487.71**	**517.06**	**577.02**
Infrastructure and Housing	278.40	294.80	275.90	297.03	365.61	487.71	355.53	378.04
World Cup & SECID							161.53	198.98

Note: Numbers in red are calculated

Source: Annual reports from Secretaria de Estado de Fazenda, Estado de Mato Grosso

Based on data from 2001 through 2006, most of the FETHAB funding was used for transportation infrastructure. Data is not available for years after 2006. The assumption is that a sizeable amount of the funding is used for transportation infrastructure.

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Exhibit 32: Road Projects Financed by FETHAB (R$ 1,000)

Description of Project	2001	2002	2003	2004	2005	2006
Special Works of Art	1,154	2,133	1,423	674	10,273	8,176
Wooden Bridges	698	0	7,351	13,170	12,524	13,106
Municipal Roads	3,391	15,076	30,173	0	15,191	10,937
Pavement of Roads	20,839	0	57,094	113,019	109,938	132,509
Implanting Roads	1,196	38,516	0	100	251	0
Restore and Conserve Non-Paved Roads	57,168	33,574	21,021	55,414	37,640	28,220
Restore and Conserve Paved Roads	11,771	15,115	12,658	9,654	13,713	21,892
Total	**96,217**	**104,414**	**129,720**	**192,031**	**199,530**	**214,840**

Source: Secretaria de Estado de Planejamento e Coordenacao Geral - SEPLAN 2000-2006. Working Data. Universidade Federal Mato Grosso

In September 2009 Mato Grosso law established that 29.125% of the money raised from FETHAB would be designated for infrastructure for the World Cup. In 2010 and 2011 more than $340 million of FETHAB funds were transferred for use to be applied toward infrastructure for the World Cup competition. In recent years there has also been concern that some of the FETHAB money was not being used toward its designated, intended applications, namely, infrastructure and housing.

Calculation of FETHAB

In order to model the impact to an agribusiness enterprise in the U.S.A. for such a fee, an understanding of the calculation as it has been created in Brazil is instructive. The Standard Audit Unit (UPF) of Mato Grosso is used as the basis for calculating the funds received through FETHAB and FACS. UPF is the "currency" used by the government to base the value of payment and receipt of taxes in the state.

According to state law, the UPF is based on variations in the purchasing power of the national currency through the index called the General Price Index - Internal Availability (IGP-DI). This index is currently calculated by the Getulio Vargas Foundation which attempts to reflect the monthly changes in prices. The index is comprised of IPA (Wholesale Price Index), CPI (Consumer Price Index) and INCC (National Index of Construction Cost), with weights of 60%, 30% and 10% respectively. The index determines the price variations of raw agricultural and industrial wholesale and final goods and services consumption. The value of UPF is updated semiannually, in January and July each year, based on the IGP-DI, released by the Getulio Vargas Foundation in the previous month or quarter or corresponding period. Changes involve discussions between rural associations and the state government.

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Once the UPF is established, it is multiplied by percentages by product designated in Mato Grosso law to calculate the fee per ton of product transported. The percentages by product for FETHAB are as follows:

- Soybeans – 19.21%
- Cattle – 23.52%
- Cotton – 20.47%
- Wood – 18.61%
- Natural gas – 0.5%

The factor calculated from multiplying the designated percentage by the UPF is then multiplied by the number of tons of that product transported to derive the total fees paid.

The following are examples of FETHAB calculations using the current UPF established by the government of 46.27:

Soybean FETHAB contribution:
19.21% (standard% under Code 7927) times UPF of R$46.27 equals R$8.89 Using transport load of 15 tons times R$8.89 equals FETHAB collection of R$133.35 per load.

Cattle FETHAB contribution:
23.52% (standard percent under Code 7935) times UPF of R$46.27 equals R$10.88 Using transport load of 25 head of cattle times R$ 10.88 equals FETHAB collection of R$222.25 per load.

Cotton FETHAB contribution:
20.47% (standard percent under Code 7951) times UPF of R$46.27 equals R$9.47 Using transport load of 20 tons times R$9.47 equals FETHAB collection of R$189.4

Timber (wood) FETHAB contribution:
18.61% (standard percent under Code 7960) times UPF of R$46.27 equals R$8.61
Using transport load of 15 cubic meters times R$8.61 equals FETHAB collection of R$129.15

Trends in UPF to Calculate FETHAB

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In January 2011 the UPF was R$34.82. It was readjusted legally in July to R$36.03. After that, the state government adjusted the UPF two additional times in the same year, outside of statutory requirements, which led soybean producers and others to negotiate these changes outside the law.

As a result of the negotiations, the government issued Ordinance 353 in December 2011 amending the UPF value of R$39.86 to 92.54 (valid from January 2012). But the UPF was then reduced by 50% to R$46.27, as a compromise for the changes in UPF last year outside statutory requirements, and this is the UPF for 2012.

2. Applying the Mato Grosso Case to the U.S.

The state of Mato Grosso, Brazil provides an instructive case for funding road infrastructure in some rural, U.S. counties. Although the actual implementation of Mato Grosso's system of charging farmers for road maintenance based on agricultural inputs and products attributed to each farm was quite complicated as discussed above, for our purposes, Mato Grosso is a *simple usage tax*, and can be modeled as a bushel tax – a fee for road maintenance that is distributed to road users according to the scale of their production.

- Essentially, by charging a fee on the volume of key agricultural inputs (diesel oil) and commodities (grain, wood, livestock, and cotton), state authorities in Mato Grosso have applied a form of road use tax on agricultural producers who benefit from roads servicing their farms. This form of taxation has important benefits in Brazil that may or may not be applicable in the U.S., but the general concept of a use tax on agricultural producers can be analyzed as a possible option for financing rural roads in lieu of current sources of state gasoline taxes or other state or federal transfer payments to county governments.

As indicated in Exhibit 28, Richland, North Dakota is limited by law regarding property tax burdens and is also limited regarding sales tax option because of its low population. However, Richland County is the highest of our six sample counties in terms of agricultural production, so Richland serves as a case study in applying a use tax similar to that applied in Mato Grosso, Brazil.

- For this exercise, the Mato Grosso use tax framework was simplified to a more straightforward "bushel tax" where revenue generated is a function of the numbers of bushels of five major grain products – corn, soybeans, wheat, oats, and barley. There is really no benefit to including any of the complexities in the actual Mato Grosso policy because such complexities are entirely related to Brazil's internal politics of social equity and local financing functions, not to the economics of charging farmers a form of a use tax to maintain rural roads.

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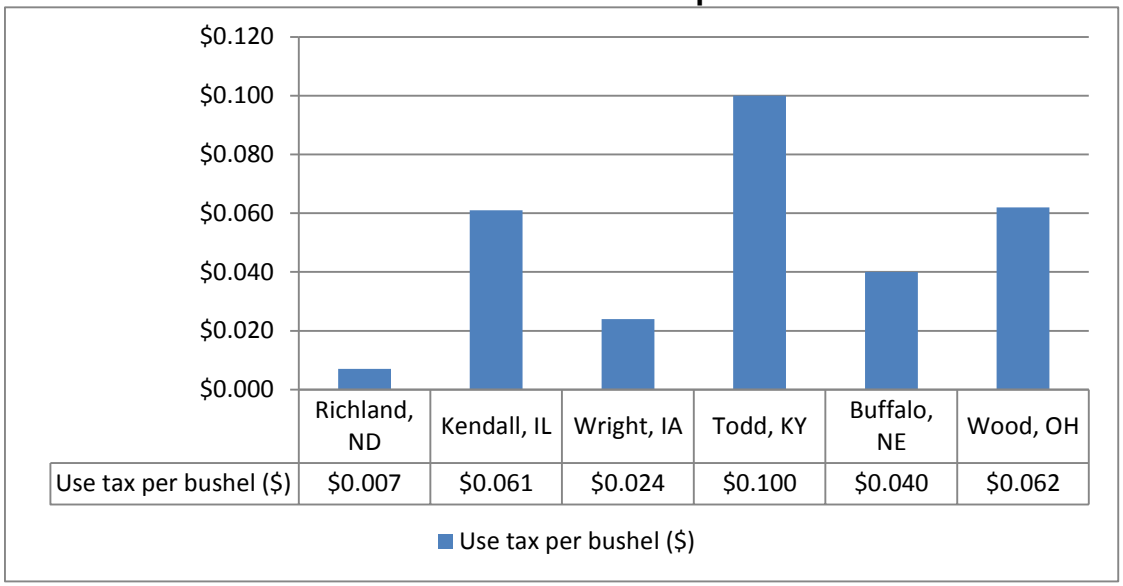
- Although grain production only was analyzed as a source of revenue for a rural road use tax, the analysis can easily be applied to other commodities of interest in a given county, such as wood, cotton, livestock, horticulture, or inputs such as fertilizer and diesel fuel. The distribution of the use tax among such commodities and inputs is merely a question of the equity of such a tax on the actual economic beneficiaries of rural roads and is not a significant matter regarding the total amount of the revenue that can be generated relative to the benefits that agricultural producers receive from well-maintained rural roads.

Exhibit 33: Use Tax Comparison



	Richland, ND	Kendall, IL	Wright, IA	Todd, KY	Buffalo, NE	Wood, OH
Use tax per bushel ($)	$0.007	$0.061	$0.024	$0.100	$0.040	$0.062

- Exhibit 33 illustrates the effectiveness of a use tax imposed on farm operations in the six sample counties.

- The tax is presumed, in this analytical model, to be incurred per bushel of corn, soybeans, wheat, barley, and oats produced by each farm in each county.

- The tax is based on farm production, which is reported to USDA, rather than actual use of roads in order to make collection of the tax less costly for the limited resources of a given county. This differs substantially from Mato Grasso's much more complicated, and therefore expensive, means of calculating and collecting the use tax.

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- As Exhibit 33 indicates, counties such as Richland, North Dakota, can provide for a 10% shortfall in the county's road maintenance budget with a use tax of less than one cent per bushel, while other counties with lower production are forced to charge a higher fee of between two cents and ten cents per bushel for the same road maintenance outcomes.

D. Property Tax

In all cases, property taxes represent the least burdensome means of raising local revenue for road maintenance in case of shortfalls in state funds for that purpose. Because property taxes are generated from legislated levies of specific dollar amounts, and do not vary with changes in income, production, or sales, as other forms of taxes do, property taxes also provide the most reliable revenue from which to fund a budget shortfall. However, this does not mean that property taxes are always politically feasible, since in many cases there legislation exists which might prevent sufficient increases in a property tax levy.

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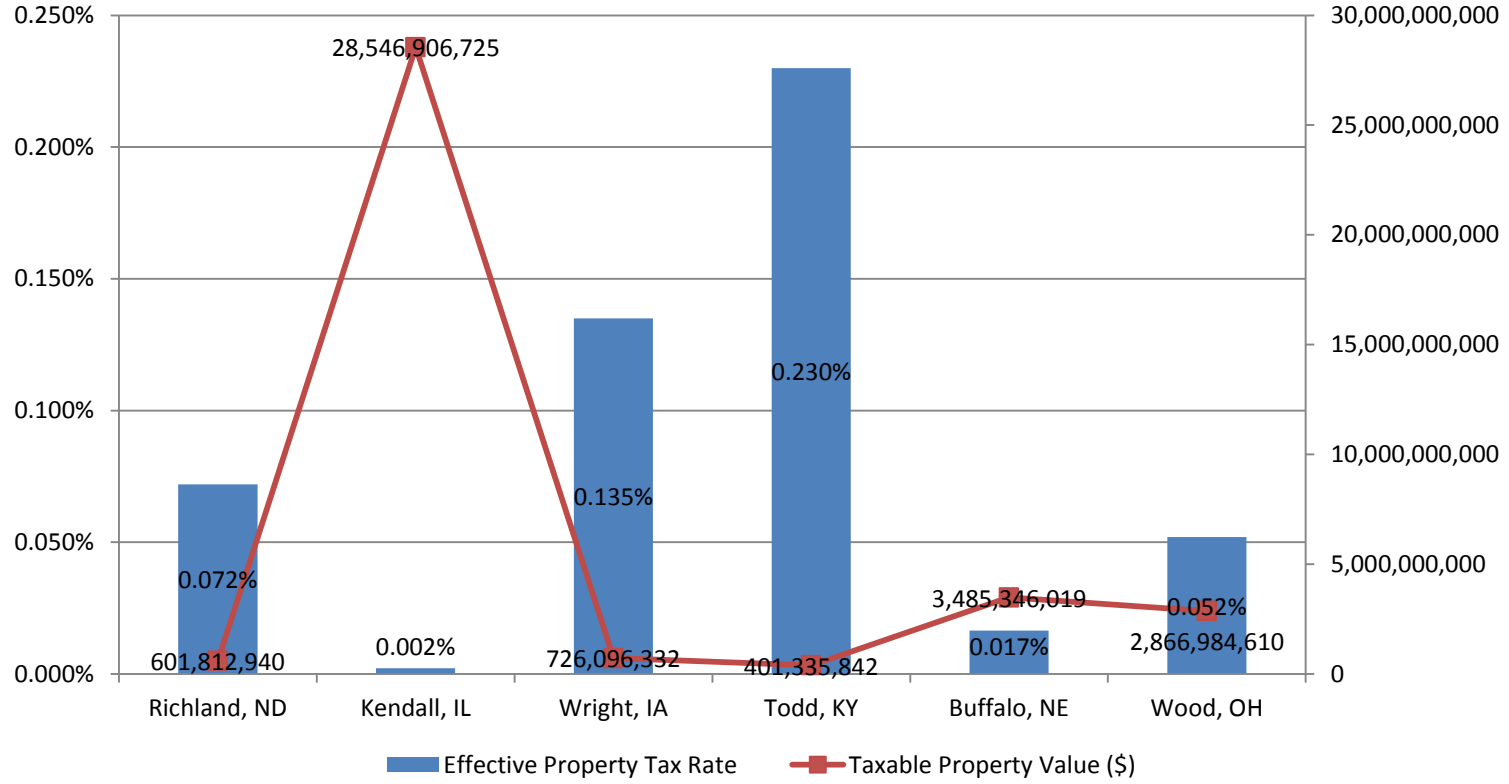
Exhibit 34: Effective Property Tax Rates Given a Levy to Fund a 10% Shortfall in Budget for Road Maintenance



- Even in counties with low populations, relative low increases in taxes are likely to be sufficient to cover even large shortfalls in state income transfers to counties for road maintenance.

- Counties with high populations tend to have higher property values and more capacity to spread the burdens of rural road maintenance to non-farmers. Kendall, Illinois is an example of such a county, with an estimated increase in the average property tax rate of only two one-thousands of a percent being sufficient to cover a 10% shortfall in state revenue for rural road maintenance.

- Rural counties without as much industry, commerce, or population have a smaller property tax base over which to spread tax burdens, causing more of the burden of road maintenance to fall on farmers in these counties. Among our

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sample counties, Todd, Kentucky had the lowest property tax base, and making up a budget shortfall of 10% would have required an increase in the property tax levy for that county of about 0.23% of the total assessed property value of the county.

E. Farmer Profile Impact Assessment

Taxes are a means of assessing burdens on different members of society in order to pay for costs of public goods, such as roads. Different kinds of taxes place different burdens on different classes of taxpayers. Up to now, farmers have benefited from taxes paid by non-farmers to support the existing rural road infrastructure, so the burdens on farmers themselves have been relatively low – urban economic sectors have been subsidizing rural roads, mostly through revenue transfers from the state treasury to county treasuries.

To hypothesize a reduction of state revenue to support rural roads, three different local tax options were analyzed for replacing the shortfall in state revenue: property taxes, sales taxes, and a use tax similar to the system implemented in Mato Grosso, Brazil. Using an average farmer for each of the six representative counties, this section of the report examines how each kind of tax would impact a farmer.

- Exhibit 35: Impact of Road Budget Shortfall on Various Classes of Taxpayers indicates how a road maintenance budget shortfall of 10% would impact various taxpayers.[44] Analysis of the differences in some attributes of each representative rural county explains how those different impacts occur.

[44] After taking reversion of some paved roads to gravel, and some roads to farmland into account.

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Exhibit 35: Impact of Road Budget Shortfall on Various Classes of Taxpayers

	Richland, ND	Kendall, IL	Wright, IA	Todd, KY	Buffalo, NE	Wood, OH
10-Year Shortfall (10%)	(4,152,911)	(8,821,453)	(8,821,453)	(8,821,453)	(8,821,453)	(8,821,453)
Annual Shortfall (10%)	(415,291)	(882,145)	(882,145)	(882,145)	(882,145)	(882,145)
Bushels Produced	65,791,980	16,028,240	36,961,770	9,480,332	14,358,844	22,586,291
Road Miles* (Paved Plus Gravel Minus Reverted)	478	932	862	502	1,433	860
Population	16,321	114,736	13,229	46,102	12,460	125,488
Retail Sales Per Capita	$12,424	$10,957	$7,681	$4,878	$16,483	$12,175
Assessed** Property Value	601,812,940	28,546,906,725	726,096,332	401,335,842	3,485,346,019	2,866,984,610
Assessed Agricultural Property Value	280,627,100	807,979,545	350,681,750	145,303,852	785,097,352	NA
Shortfall per Road Mile ($)	(868.81)	(946.59)	(1,023.37)	(1,757.26)	(615.59)	(1,025.75)
Shortfall Per $ Property Value	(0.00069)	(0.00003)	(0.00121)	(0.00220)	(0.00025)	(0.00031)
Shortfall Per $ Ag Land Value	(0.00148)	(0.00109)	(0.00252)	(0.00607)	(0.00112)	NA
Shortfall per Capita ($)	(25.45)	(7.69)	(66.68)	(19.13)	(70.80)	(7.03)
Shortfall per Bushel Produced ($)	(0.00631)	(0.05504)	(0.02387)	(0.09305)	(0.06144)	(0.03906)
Shortfall per Farm	(440.39)	(2,080.53)	(1,144.16)	(1,162.25)	(929.55)	(754.62)

- Exhibit 36 summarizes the burden on an average farm for that county based on the average household size of each county and the average production of farms in each county.

Exhibit 36: Summary of Tax Burdens on Average Farms to Fund a 10% Gap in a County Road Infrastructure Budget

	Richland, ND	Kendall, IL	Wright, IA	Todd, KY	Buffalo, NE	Wood, OH
Property Tax Burden Per Farm	214	42	614	440	137	NA
Sales Tax Burden Per Farm	79	20	181	226	35	32
Use Tax Burden Per Farm	488	2,306	1,151	1,249	605	1,198

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- The analysis of burdens on hypothetical average farms indicates that a county-wide sales tax on retail goods imposes the least burden on farm families. However, the reason this is true is because the tax distributes more of the burden on non-farm taxpayers, which make up the vast majority of households even in the most rural counties.

- If a property tax levy is used instead of a broad sales tax, the burden imposed on the average farm ranges from $42/year in Kendall, Illinois to $614/year in Wright, Iowa. The driving factors behind differences in burdens are the assessed property values of the county, the proportion of property tax assessed by agricultural property, and the number of farms (more farms, and thus lower acreage per farm) lowers the tax burden on the average farm family in the county. If a higher proportion of the property tax in a given county is assessed to non-farm property, the burden imposed on farmers is lower.

- A use tax imposes the highest burden of farm operators, and the reason is simple. A use tax does not deflect any of the burden to cover a funding gap for rural road infrastructure to non-farm taxpayers, so a use tax represents the highest cost to farmers for covering a road infrastructure funding gap.

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IV. REVERTING ROADS TO CROPLAND

The Informa analysis, developed through civic and industry conversations, and interviews have raised numerous issues around the changes and challenges that would be faced in reverting roads to cropland. This section assesses the concept of reverting roads to cropland.

A. Road to Cropland Transfer Issues

- Rural cities tax their citizens and in return are expected to provide services, such as fire and police protection. Often included in the services is the upkeep of the road and sewer systems. Therefore, if a house is located within a city or town, the roads must be maintained.

- Interviews stated that the farmer owns the county roads in most states but nonetheless, the county has to follow strict laws and procedures, which entails submitting legal forms for approval.
  - Interviews suggest transferring land always has the potential to be a time consuming process. The issue that must be overcome is the process to transfer land to the farmer can take between two months to two years. For small pieces of road, less than a mile, county officials would rather let the road degrade than go through the land transfer process. This is especially true for state officials because they have to justify "giving away" the property.
    - Historically, fraudulent procedures were used to transfer land. One example is the use of eminent domain to acquire more land than was needed for a project and then after the project was completed, the adjacent land was sold at below market values to a partner. In response to the problem, states instituted laws and procedures to prevent the abuse of eminent domain power.

- Sodbuster pertains to all highly erodible land (HEL) that was not cropped during 1981-85; anyone cultivating these lands must adopt a basic conservation system that reduces erosion to the T level. A violation of either conservation compliance or Sodbuster will result in loss of some or all USDA program benefits. The new cropland would have to meet the environmental standards. Because cropland erodes more than a road, the farmer has to ensure the land does not qualify as highly erosive. Sodbuster and swampbuster provisions required the farmer to have an approved conservation plan.
  - Prairie Pothole National Priority areas which span Iowa, Minnesota, Montana, North Dakota, and South Dakota are subject to the laws. Native-sod acreage tilled for production of an annual crop could be ineligible for crop insurance and non-insured disaster assistance during the first five years of planting.

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- The cost to the farmer is the inconvenience of going through an approval process with the National Resource Conservation Services (NRCS).

- Wildlife groups have shown a willingness to sign long term leases to turn land into wildlife refuges. Anheuser Busch funds effort by Ducks Unlimited to preserve Prairie Potholes for duck breeding.

- The roads that would be considered for reversion to cropland need to be extremely low traffic volume roads that do not service any homes. States have access laws that legally prevent county engineers from abandoning roads required to access property. The majority of miles that could be turned into cropland are pieces of roads that were abandoned after other roads were built or an existing road was altered. An example would be county roads that are sliced in two by an interstate. The section of the road from the last house until it dead ends into the interstate would be eligible to convert into cropland. The problem is, these sections of roads are not maintained and no money is spent on them.

B. How Reverting Roads to Cropland Would Work?

- Interviews with county engineers reinforce the struggle to maintain the road system. The longer term problem, as stated in Section II of the report, crop yields are continually improving. The increase in production increases harvest pressure and farmers responded by building on-farm storage, buying larger farm equipment and shipping heavier loads. Modern agriculture would benefit from a county road system that could handle properly configured 97,000 pound trucks.
  - One idea to achieve this goal is reverting roads into cropland to increase spending per mile.
    - The first step is to upgrade the county highway system to handle 97,000 pound trucks.
    - The second step would be to upgrade the feeder roads to levels that can handle 97,000 pound trucks.
    - The third step is for farmers to locate operations that require heavier trucks on the roads that can handle heavier trucks.

- For a county to effectively save money by converting roads to cropland would require landowners to accept an exchange where the county reduces its cost liability of road infrastructure and the landowner accepts a smaller, higher quality road system that would, in effect, raise property values through the transportation systems ability to handle the requirements of modern agriculture. For example, replacing three county feeder roads that connect two county highways with one road improved to handle heavier trucks. Assuming the roads were each five miles would annually save the county approximately $98,000. The $98,000 would then allow one mile of road to be completely resurfaced

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and upgraded to handle heavier equipment. Within seven years, three marginal roads would be replaced with one upgraded road.

- To make the newer system truly effective, farm infrastructure needs to be located on the improved roads.
  - When many of the roads where built, the number of farms was much greater than today. For example, from 1954 to 2007 in the selected counties, the number of farms declined by 55%. In addition, many of the farms are rented to farmers by absentee owners.
- For counties with growing populations, the improved roads would reduce the cost to build residential areas, which would raise property values.

C. Cost Savings

The annual cost savings from turning one mile of road into cropland is approximately $9,800 for paved roads and $5,100 for gravel roads as shown in Exhibit 37. The revenue generated is minimal compared to the cost savings of not having to maintain the road. The removal of the road is an inconvenience to the farmer that in some cases could be offset by diverting the saving towards improving other roads the farmer travels.

The removal of a road is highly dependent on alternative routes available to the existing population. The building of the county road system was based on a section of land or one square mile (640 acres). Effectively moving towards a county road system of two square miles (2,560 acres) could reduce county road miles by up to 50% with the maximum increase in travel distance of 2 miles per trip. Due to existing service requirements that rural road networks provide, e.g., schools bus services, emergency services and general rural residential services, etcetera, only limited change would be able to occur. Nonetheless, such road closures do offer a solution that makes available funding to improve the remaining road system. It should be noted that the Federal-Aid roads (primarily interstates and state highways) would remain in place.

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Exhibit 37: Cost Saving from Reverting One Mile of Road to Cropland for Selected Counties

County and Township Roads	Richland, ND	Kendall, IL	Wright, IA	Todd, KY	Buffalo, NE	Wood, OH
Cost to Reverting Paved to Gravel	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000
Cost to Reverting Paved to Acreage	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000	$ 10,000
Cost to Reverting Gravel to Acreage	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000
Annual Property County Tax Return	$ 113	$ 212	$ 207	$ 152	$ 233	$ 205
Annual Fuel State Tax Revenue Transporting Additional Soybean Production	$ 1	$ 1	$ 1	$ 1	$ 2	$ 2
Annual Paved to Soybean Acres Savings (conversion year)	**$ (259)**	**$ (160)**	**$ (165)**	**$ (220)**	**$ (138)**	**$ (166)**
Annual Paved to Soybean Acres Savings (maintenance year)	**$ 9,741**	**$ 9,840**	**$ 9,835**	**$ 9,780**	**$ 9,862**	**$ 9,834**
Annual Gravel to Soybean Acres Savings (conversion year)	**$ 14**	**$ 113**	**$ 108**	**$ 52**	**$ 135**	**$ 107**
Annual Gravel to Soybean Acres Savings (maintenance year)	**$ 5,014**	**$ 5,113**	**$ 5,108**	**$ 5,052**	**$ 5,135**	**$ 5,107**

Source: State Departments of Transportation, interviews, Informa

Crop returns, shown in Exhibit 38, are based on Informa's crop acreage model. One mile of road equals 8 acres assuming the average width of the road, right of way and embankments total 66 feet. The increase in crop value will be eventually capitalized into the cost of land, which will increase property taxes. Using an input output economic model (IMPLAN), Informa's analysis estimated that 6.6% of the increase in revenues will be paid towards property tax. For example, for Richland, ND, the assumed return for acreage in soybeans is $214 per acre. Total revenue per mile of road converted is $1,712. The value of the land is based on revenues. On a purely mathematical relationship between property tax and soybean revenue, the proportion of property tax results in 6.6%. In reality, property tax is a predetermined amount decided upon by the local government. That being stated, increased revenue increases the price of the land, which ultimately increases the potential of local governments to raise property taxes.

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Exhibit 38: County Property Tax Revenue for Selected Counties from Reverting One Mile of Road to Cropland

	Richland, ND	Kendall, IL	Wright, IA	Todd, KY	Buffalo, NE	Wood, OH
Soybean Returns to Land	$ 214	$ 401	$ 391	$ 287	$ 441	$ 388
Acres per Mile of Road	8	8	8	8	8	8
Annual Total Revenue	$ 1,712	$ 3,209	$ 3,131	$ 2,296	$ 3,529	$ 3,107
Revenue to Property County Tax Conversion	6.6%	6.6%	6.6%	6.6%	6.6%	6.6%
County Property Tax Revenue	$ 113	$ 212	$ 207	$ 152	$ 233	$ 205

Source: IMPLAN, State Departments of Transportation, interviews, Informa

In addition to the property taxes paid from having additional farmland in production, there will also be tax revenues at both the state and federal level generated by the economic activity produced by the active farm production of new ground. Using state tax multipliers taken from IMPLAN[45], which uses the U.S. Census for its data, additional tax generation by active farm production, was estimated. The additional tax revenue to the state and federal governments for total tax generation is approximately $101. This total tax generation is in the form of sales tax, property tax, motor vehicle licensing, severance tax, income taxes, social security, and other tax types. This implies that in addition to the savings from not having to maintain county roads, each mile of road that is recovered by farmers and put into production will generate $808 for the state and federal government.

The fuel tax generated by reverting road to cropland is minimal. The extra production would only raise less than $5 annually as shown in Exhibit 39. Most likely the USDA county average yield referenced in Exhibit 39 would not be accomplished the first year in production, but would quickly move towards the average.

[45] The Minnesota IMPLAN Group, Inc (MIG, Inc) is the developer of the IMPLAN® economic impact model, a top tier economic impact evaluation tool. In 2009, the US Department of Agriculture selected IMPLAN as its analysis framework for monitoring job creation resulting from the American Recovery and Reinvestment Act of 2009.

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Exhibit 39: Fuel Tax Revenue for Selected Counties from Reverting One Mile of Road to Cropland

	Richland, ND	Kendall, IL	Wright, IA	Todd, KY	Buffalo, NE	Wood, OH
Soybean Yield (bushel)	29	54	53	39	59	52
Acres per Mile of Road	8	8	8	8	8	8
Annual Total (bushel)	230	430	420	308	473	417
Truckload (bushel)	866	866	866	866	866	866
Average Roundtrip Truck Move (miles)	80	60	60	60	80	60
Fuel Mileage (miles per gallon)	5.14	5.14	5.14	5.14	5.14	5.14
Total Gallons Consumed	4.13	5.80	5.66	4.15	8.51	5.62
Fuel Tax (gallon)	$ 0.23	$ 0.22	$ 0.23	$ 0.18	$ 0.26	$ 0.28
Total State Fuel Tax	$ 0.95	$ 1.25	$ 1.27	$ 0.75	$ 2.25	$ 1.57

Source: USDA, State Departments of Transportation, interviews, Informa

D. Paved Road to Cropland Example

The actual shortfall in the funds required to properly maintain the roads could be greater than 10%. Assuming a 10% shortfall in the funds required to properly maintain the roads and bridges, how many paved miles would have to be reverted to cropland to close the funding gap in the selected counties. The number of miles that are required to be converted to close a 10% funding gap ranges from 47 miles in Richland, ND to 172 miles in Wood, OH as shown in Exhibit 40. The Richland country officials have already engaged in an aggressive campaign of reverting seldom used paved roads to gravel. The early results are quite positive. The newly constructed gravel roads are a significant improvement over the degrading of paved roads. By bringing the overall cost of properly maintaining the road and bridges in line with the funds received, Richland is able to sustain its infrastructure. Other counties with higher populations like Wood, OH and Kendall, IL, have a population exceeding 100 thousand, which makes shrinking the size of the road system problematic, but lowers the per household cost of maintaining the roads.

It should be noted that infrastructure changes and adjustment are being made at the local level based on population density and distribution, crop production potential, existing commercial operations, physical geography, and other factors. The willingness of the citizens within a county to accept higher taxes and fees in return for a higher level of service is based on the perceived positive benefit/cost ratio of the higher expense. Where there is additional sufficient infrastructure supporting the transportation network to enable conversion of roadway to cropland it can be in the community's best interest to allow such land conversion.

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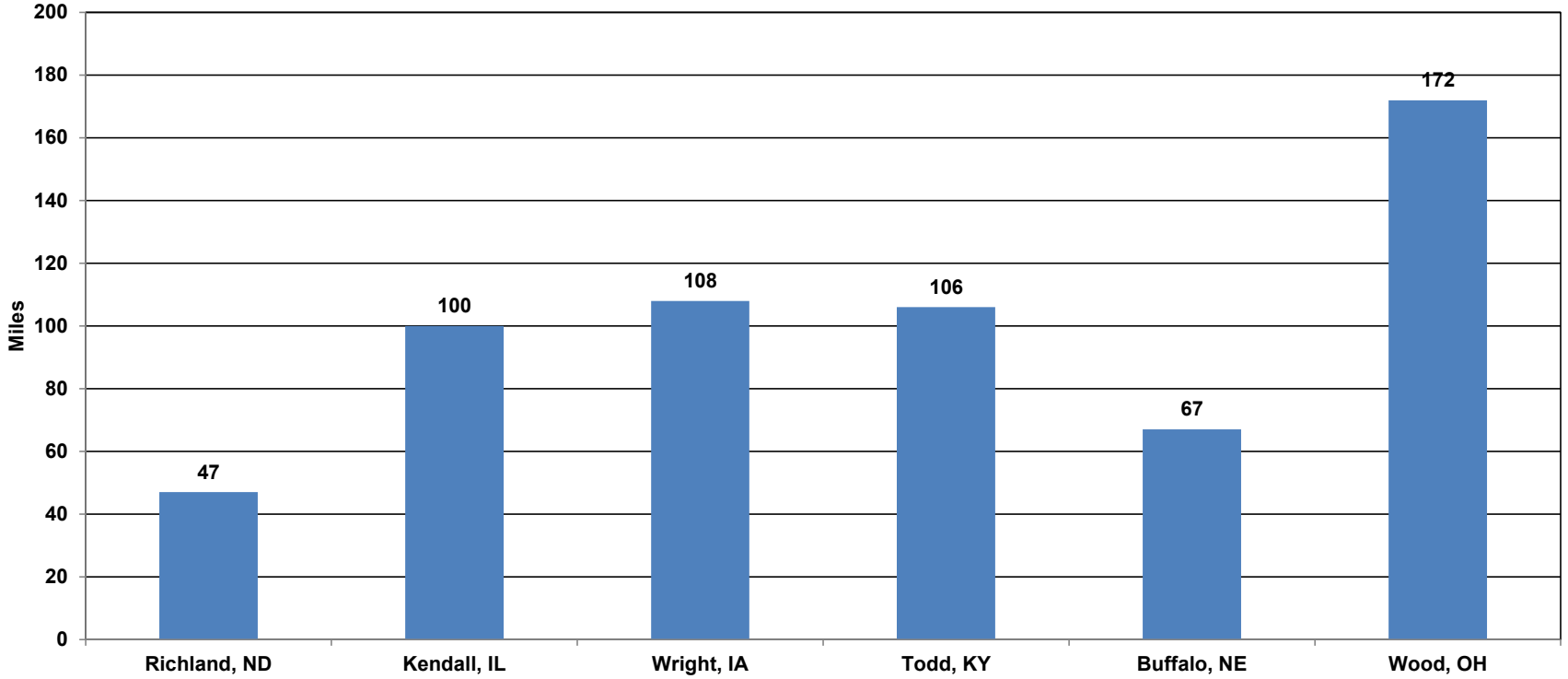
Exhibit 40: Paved Roads Reverted to Cropland (Miles)



Source: USDA, State Departments of Transportation, interviews, Informa

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V. BALANCING ROAD AND BRIDGE COSTS WITH REVENUES

This section covers the topic of balancing costs with funding. Depending on the profile of the county, the answers to road maintenance budget shortfalls can differ dramatically. The effort that answers the question in one scenario may not be an exact fit for another regulatory regime in a different jurisdiction, an adjacent or distant state, county, or even another governmental unit, such as a rural planning region.

The two lowest maintenance cost per mile counties are Richland, ND and Kendall, IL but for two different reasons. Richland has reverted seldom used paved roads to gravel to reduce cost and Kendall collects a transportation sales tax to preserve its infrastructure. The two different answers were driven by population and in turn, household cost per mile as shown in Exhibit 42.

Exhibit 41: County and Township Paved Miles Versus Cost per Mile

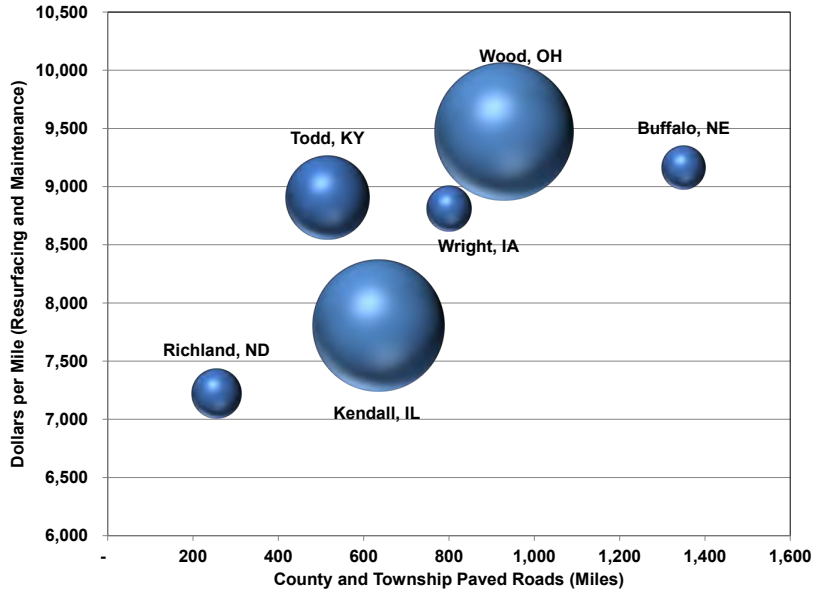
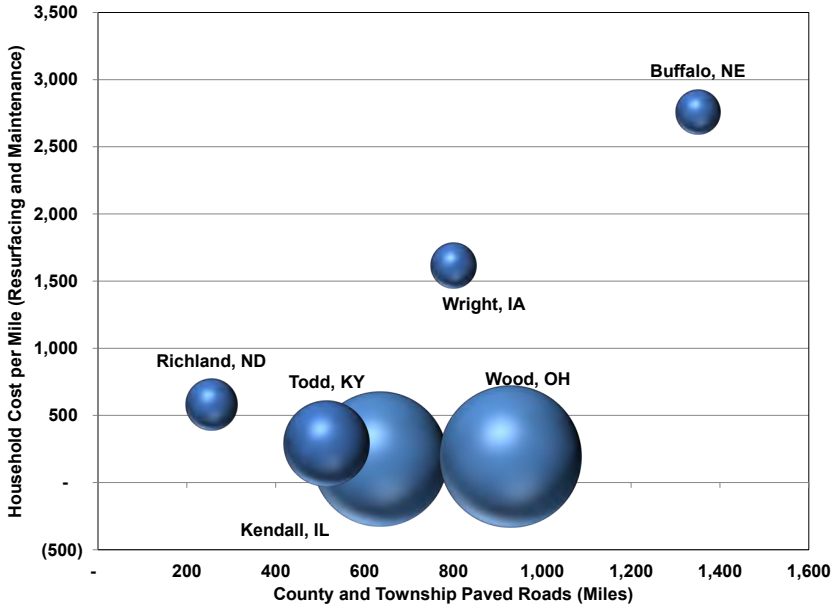


Exhibit 42: County and Township Paved Miles Versus Household Cost per Mile



Source: USDA, U.S. Census, State Departments of Transportation, interviews, Informa

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Wood County, OH has the highest maintenance cost per mile due to large aging infrastructure. Because Wood County, OH is located near Toledo, it has the population base required to lower the household cost. Buffalo County, NE and Wright County, IA have small populations that in turn increases the household cost for funding infrastructure.

A summary of options to close a 10% funding gap illustrates the fact that one plan across all counties will not work. If Todd County, KY had a shortfall, no obvious answer emerges, but it is a county that is increasing in population. For Kendall County, IL, the only bad option is reverting roads to cropland. For Richland County, ND, Wright County, IA and Buffalo County, NE, a bushel tax of less than 5 cents would increase funding 10%. Buffalo County, NE benefits from higher property values, but that cost is borne by a few people. For Buffalo County, NE, implementing a transportation sales tax similar to Kendall County, IL might be a better idea. Wright County, IA and Todd County, KY have to either shrink their road system or entice people to relocate to their county. According to the U.S. Census, over the last decade, Todd County, KY increased population while Wright County, IA lost population.

Exhibit 43: Summary of Independent Options to Close a 10% Funding Gap by Selected Counties

	Richland, ND	Kendall, IL	Wright, IA	Todd, KY	Buffalo, NE	Wood, OH
Effective Property Tax Rate	0.072%	0.002%	0.135%	0.230%	0.017%	0.052%
Sales Tax Rate	0.250%	0.060%	1.000%	1.750%	0.080%	0.100%
User Tax per Bushel ($)	$0.007	$0.061	$0.024	$0.100	$0.040	$0.062
Paved Roads Reverted to Cropland (miles)	47	100	108	106	67	172

Source: USDA, U.S. Census, State Departments of Transportation, interviews, Informa

- The following budget models provide perspective on how the different funding methods differ between counties.

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Exhibit 44: Richland County, ND Budget Model

Richland ND	Units	2012	2013	2014	2015	2016	2021	Average
Annual Budget Shortfall	**10%**	$ (379,271)	$ (386,856)	$ (394,593)	$ (402,485)	$ (410,535)	$ (453,264)	$ (415,291)
Revertions	**Miles**							
Paved to Gravel	**10**	$ 3,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 21,333
Paved to Soybean Acres	**10**	$ (1,767)	$ 98,233	$ 98,233	$ 98,233	$ 98,233	$ 98,233	$ 88,233
Gravel to Soybean Acres	**10**	$ 960	$ 50,960	$ 50,960	$ 50,960	$ 50,960	$ 50,960	$ 45,960
Taxes	**Rate**							
County Sales Tax	**0.005%**	$ 10,251	$ 10,159	$ 10,068	$ 9,978	$ 9,889	$ 9,455	$ 9,848
County Property Tax	**0.005%**	$ 30,091	$ 29,822	$ 29,555	$ 29,291	$ 29,030	$ 27,756	$ 28,910
Fee	**$ per bu.**							
Bushel Fee	**0.005**	$ 328,960	$ 335,539	$ 342,250	$ 349,095	$ 356,077	$ 393,138	$ 360,202
Total		$ 371,828	$ 548,047	$ 554,400	$ 560,891	$ 567,522	$ 602,876	$ 554,486
Shortfall or Surplus		$ (7,443)	$ 161,190	$ 159,807	$ 158,406	$ 156,987	$ 149,612	$ 139,195
Tax Increase		$ 369,301	$ 375,520	$ 381,874	$ 388,365	$ 394,996	$ 430,349	$ 398,960
County Populations		$ 16,321	$ 16,175	$ 16,031	$ 15,888	$ 15,746	$ 15,055	$ 15,680
Per Capita Cost		$ 23	$ 23	$ 24	$ 24	$ 25	$ 29	$ 25
Household Cost		$ 57	$ 58	$ 60	$ 61	$ 63	$ 71	$ 64

Source: USDA, U.S. Census, State Departments of Transportation, interviews, Informa

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Exhibit 45: Kendall County, IL Budget Model

Kendall IL	Units	2012	2013	2014	2015	2016	2021	Total
Annual Budget Shortfall	**10%**	$ (805,633)	$ (821,745)	$ (838,180)	$ (854,944)	$ (872,043)	$ (962,806)	$ (882,145)
Revertions	**Miles**							
Paved to Gravel	**10**	$ 3,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 21,333
Paved to Soybean Acres	**10**	$ (1,766)	$ 98,234	$ 98,234	$ 98,234	$ 98,234	$ 98,234	$ 88,234
Gravel to Soybean Acres	**10**	$ 961	$ 50,961	$ 50,961	$ 50,961	$ 50,961	$ 50,961	$ 45,961
Taxes	**Rate**							
County Sales Tax	**0.01%**	$ 53,201	$ 57,298	$ 61,711	$ 66,464	$ 71,583	$ 103,733	$ 75,986
County Property Tax	**0.01%**	$ 1,427,345	$ 1,537,273	$ 1,655,667	$ 1,783,179	$ 1,920,511	$ 2,783,085	$ 2,038,656
Fee	**$ per bu.**							
Bushel Fee	**0.005**	$ 80,141	$ 78,538	$ 76,968	$ 75,428	$ 73,920	$ 66,818	$ 73,300
Total		$ 1,563,216	$ 1,845,638	$ 1,966,874	$ 2,097,599	$ 2,238,542	$ 3,126,164	$ 2,343,471
Shortfall or Surplus		$ 757,584	$ 1,023,893	$ 1,128,694	$ 1,242,656	$ 1,366,499	$ 2,163,359	$ 1,461,326
Tax Increase		$ 1,560,688	$ 1,673,110	$ 1,794,346	$ 1,925,071	$ 2,066,013	$ 2,953,635	$ 2,187,942
County Populations		114,736	$ 123,572	$ 133,089	$ 143,339	$ 154,379	$ 223,716	$ 169,336
Per Capita Cost		$ 14	$ 14	$ 13	$ 13	$ 13	$ 13	$ 13
Household Cost		$ 34	$ 34	$ 34	$ 34	$ 33	$ 33	$ 33

Source: USDA, U.S. Census, State Departments of Transportation, interviews, Informa

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Exhibit 46: Wright County, IA Budget Model

Wright IA	Units	2012	2013	2014	2015	2016	2021	Total
Annual Budget Shortfall	**10%**	$ (805,633)	$ (821,745)	$ (838,180)	$ (854,944)	$ (872,043)	$ (962,806)	$ (882,145)
Revertions	**Miles**							
Paved to Gravel	**10**	$ 3,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 21,333
Paved to Soybean Acres	**10**	$ (2,588)	$ 97,412	$ 97,412	$ 97,412	$ 97,412	$ 97,412	$ 87,412
Gravel to Soybean Acres	**10**	$ 139	$ 50,139	$ 50,139	$ 50,139	$ 50,139	$ 50,139	$ 45,139
Taxes	**Rate**							
County Sales Tax	**0.01%**	$ 5,008	$ 4,972	$ 4,937	$ 4,902	$ 4,868	$ 4,698	$ 4,851
County Property Tax	**0.01%**	$ 36,305	$ 36,048	$ 35,793	$ 35,540	$ 35,289	$ 34,059	$ 35,171
Fee	**$ per bu.**							
Bushel Fee	**0.005**	$ 184,809	$ 188,505	$ 192,275	$ 196,121	$ 200,043	$ 220,864	$ 202,361
Total		$ 227,006	$ 400,410	$ 403,890	$ 407,448	$ 411,084	$ 430,505	$ 396,268
Shortfall or Surplus		$ (578,626)	$ (421,335)	$ (434,290)	$ (447,496)	$ (460,958)	$ (532,300)	$ (485,877)
Tax Increase		$ 226,121	$ 229,525	$ 233,005	$ 236,563	$ 240,199	$ 259,620	$ 242,383
County Populations		13,229	$ 13,135	$ 13,043	$ 12,950	$ 12,859	$ 12,411	$ 12,770
Per Capita Cost		$ 17	$ 17	$ 18	$ 18	$ 19	$ 21	$ 19
Household Cost		$ 43	$ 44	$ 45	$ 46	$ 47	$ 52	$ 47

Source: USDA, U.S. Census, State Departments of Transportation, interviews, Informa

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Exhibit 47: Todd County, KY Budget Model

Todd KY	Units	2012	2013	2014	2015	2016	2021	Total
Annual Budget Shortfall	**10%**	$ (805,633)	$ (821,745)	$ (838,180)	$ (854,944)	$ (872,043)	$ (962,806)	$ (882,145)
Revertions	**Miles**							
Paved to Gravel	**10**	$ 3,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 21,333
Paved to Soybean Acres	**10**	$ (1,597)	$ 98,403	$ 98,403	$ 98,403	$ 98,403	$ 98,403	$ 88,403
Gravel to Soybean Acres	**10**	$ 1,130	$ 51,130	$ 51,130	$ 51,130	$ 51,130	$ 51,130	$ 46,130
Taxes	**Rate**							
County Sales Tax	**0.01%**	$ 2,929	$ 2,940	$ 2,952	$ 2,964	$ 2,976	$ 3,037	$ 2,982
County Property Tax	**0.01%**	$ 20,067	$ 20,148	$ 20,229	$ 20,310	$ 20,392	$ 20,806	$ 20,434
Fee	**$ per bu.**							
Bushel Fee	**0.005**	$ 47,402	$ 48,350	$ 49,317	$ 50,303	$ 51,309	$ 56,649	$ 51,903
Total		$ 73,264	$ 244,305	$ 245,365	$ 246,444	$ 247,544	$ 253,359	$ 231,187
Shortfall or Surplus		$ (732,369)	$ (577,441)	$ (592,816)	$ (608,500)	$ (624,499)	$ (709,447)	$ (650,958)
Tax Increase		$ 70,397	$ 71,438	$ 72,498	$ 73,577	$ 74,677	$ 80,492	$ 75,320
County Populations		46,102	$ 46,288	$ 46,474	$ 46,661	$ 46,849	$ 47,800	$ 47,040
Per Capita Cost		$ 2	$ 2	$ 2	$ 2	$ 2	$ 2	$ 2
Household Cost		$ 4	$ 4	$ 4	$ 4	$ 4	$ 4	$ 4

Source: USDA, U.S. Census, State Departments of Transportation, interviews, Informa

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Exhibit 48: Buffalo County, NE Budget Model

Buffalo NE	Units	2012	2013	2014	2015	2016	2021	Total
Annual Budget Shortfall	**10%**	$ (805,633)	$ (821,745)	$ (838,180)	$ (854,944)	$ (872,043)	$ (962,806)	$ (882,145)
Revertions	**Miles**							
Paved to Gravel	**10**	$ 3,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 21,333
Paved to Soybean Acres	**10**	$ (1,647)	$ 98,353	$ 98,353	$ 98,353	$ 98,353	$ 98,353	$ 88,353
Gravel to Soybean Acres	**10**	$ 1,079	$ 51,079	$ 51,079	$ 51,079	$ 51,079	$ 51,079	$ 46,079
Taxes	**Rate**							
County Sales Tax	**0.01%**	$ 36,994	$ 37,318	$ 37,644	$ 37,973	$ 38,305	$ 40,010	$ 38,485
County Property Tax	**0.01%**	$ 174,267	$ 175,792	$ 177,329	$ 178,881	$ 180,445	$ 188,477	$ 181,290
Fee	**$ per bu.**							
Bushel Fee	**0.005**	$ 71,794	$ 73,230	$ 74,695	$ 76,189	$ 77,712	$ 85,801	$ 78,613
Total		$ 285,821	$ 459,104	$ 462,433	$ 465,808	$ 469,228	$ 487,053	$ 454,152
Shortfall or Surplus		$ (519,812)	$ (362,641)	$ (375,747)	$ (389,136)	$ (402,814)	$ (475,752)	$ (427,993)
Tax Increase		$ 283,055	$ 286,339	$ 289,668	$ 293,042	$ 296,463	$ 314,288	$ 298,387
County Populations		12,460	$ 12,569	$ 12,679	$ 12,790	$ 12,902	$ 13,476	$ 13,018
Per Capita Cost		$ 23	$ 23	$ 23	$ 23	$ 23	$ 23	$ 23
Household Cost		$ 57	$ 57	$ 57	$ 57	$ 57	$ 58	$ 58

Source: USDA, U.S. Census, State Departments of Transportation, interviews, Informa

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Exhibit 49: Wood County, OH Budget Model

Wood OH	Units	2012	2013	2014	2015	2016	2021	Total
Annual Budget Shortfall	10%	$ (805,633)	$ (821,745)	$ (838,180)	$ (854,944)	$ (872,043)	$ (962,806)	$ (882,145)
Revertions	Miles							
Paved to Gravel	10	$ 3,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 23,333	$ 21,333
Paved to Soybean Acres	10	$ (2,204)	$ 97,796	$ 97,796	$ 97,796	$ 97,796	$ 97,796	$ 87,796
Gravel to Soybean Acres	10	$ 523	$ 50,523	$ 50,523	$ 50,523	$ 50,523	$ 50,523	$ 45,523
Taxes	Rate							
County Sales Tax	0.01%	$ 76,124	$ 76,401	$ 76,679	$ 76,958	$ 77,238	$ 78,654	$ 77,383
County Property Tax	0.01%	$ 143,349	$ 143,871	$ 144,395	$ 144,920	$ 145,448	$ 148,114	$ 145,720
Fee	$ per bu.							
Bushel Fee	0.005	$ 112,931	$ 115,190	$ 117,494	$ 119,844	$ 122,241	$ 134,964	$ 123,657
Total		$ 334,057	$ 507,114	$ 510,220	$ 513,375	$ 516,579	$ 533,384	$ 501,412
Shortfall or Surplus		$ (471,576)	$ (314,631)	$ (327,960)	$ (341,569)	$ (355,464)	$ (429,421)	$ (380,733)
Tax Increase		$ 332,405	$ 335,462	$ 338,568	$ 341,722	$ 344,927	$ 361,732	$ 346,760
County Populations		125,488	$ 125,945	$ 126,403	$ 126,863	$ 127,325	$ 129,659	$ 127,794
Per Capita Cost		$ 3	$ 3	$ 3	$ 3	$ 3	$ 3	$ 3
Household Cost		$ 7	$ 7	$ 7	$ 7	$ 7	$ 7	$ 7

Source: USDA, U.S. Census, State Departments of Transportation, interviews, Informa

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VI. SUMMARY AND CONCLUSIONS

The effort to develop a history and review of the current state of the rural agricultural transportation infrastructure has provided considerable noteworthy elements and stair steps bringing the marketplace to its present set of circumstances.

The analysis, evaluation and review of the topics brought into focus a range of possibilities, and identified prospective obstacles. The regulatory and administrative factors that exist in one state do not necessarily translate into the same rural transportation infrastructure management climates that exist in another state. The review of the states found examples, such as in Iowa where there is not a township road system; rather the county jurisdictions are the extension of the local government responsible for the local agricultural haul roads.

As the analysis brought together a number of key strategic action steps for the Soy Transportation Coalition to address and embrace, to advance and explore, there are sets of opportunities that appear to yield near term success.

Similar associated entities, i.e., State Soybean Boards, can serve as resources to extend the communication of the findings of transportation oriented research to a broader, interested public. Presentations, on-going communications in media, education and awareness efforts, along with characterizations of how critical the soybean focused initiatives are in the context of attracting other industrial and sector interests can foster change in funding transportation infrastructure. The efforts that assess the strengths, weaknesses and strategies to ensure soybean industry deliveries are made fluidly and with consistency, and at competitive rates, are expected to attract audiences and stakeholders in other sectors. Understanding the findings, impacts and competitive factors can be beneficial and the principles applied to other industries, not just to other crops.

Making a clear case, this report does more than initiate a dialogue. The facts presented will initiate the development of more specific plans to be formulated into programs that will enable creation of legislative proposals. Recognition of the problem is a start.

Articulating the dramatic changes that have taken place over the past 70 or 80 years in the focus of investments in transportation infrastructure will help community and rural leaders and agricultural industry advocates to understand that change will continue. More agricultural production with shipments becoming more concentrated at fewer elevators, results in longer farm to elevator hauls. In turn, more grains and soybeans are being relayed and trans-shipped through the supply chain. Moving from smaller elevators to larger ones will result in longer lengths of haul. In-state processing being increasingly concentrated and large scale biofuels production resulting in more intrastate road miles and haulage

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overall, puts additional strain on the transportation infrastructure. The shifts to local routings from interstate rail movements are not fully displaced, but with increased production, the whole transportation infrastructure system strains.

Funding for the local and county roads has grown at best, modestly over time measured in real dollars. Some programs have been seriously eroded because nominal amounts established by legislation have not been adjusted in over 30 years, much less kept pace, nor been indexed, to keep up with inflation.

The LTAP in North Dakota, the Upper Great Plains Transportation Research Institute at the University of North Dakota, in 2011 commenced a first phase of a study to characterize the rural and agricultural corridor needs including transportation infrastructure funding and recognized for North Dakota that:

> *The estimated investment needed for county and local paved roads totals $100.5 million annually on a statewide basis. Approximately $59 million of these needs relate to agricultural haul roads. The remainder corresponds to other county and local roads. In addition, $110 million are needed annually for local unpaved roads. Approximately, $43.6 million of these needs relate to agricultural haul roads. The remainder corresponds to other local roads, especially township roads. Altogether, the total estimated statewide need is $211.5 million per year, including $100.5 million of paved road investment needs and $110.0 million of unpaved road investment needs*.[46]

While there are as many examples as there are jurisdictions, townships, counties, regions, states and the federal case for funding transportation infrastructure, the examples used in this study illustrate a range of challenges and constraints that manifest the uneven playing fields across which planners and farmers, engineers and legislators must grapple to establish a broadly robust economy. Investing in the infrastructure facilitates commerce, and is one of the universally recognized roles of government. The potential to address and get beyond merely fixing the funding mechanisms for rural and agricultural transportation infrastructure will take an evaluation of how the impacts of tax changes will affect changes in the road, bridge, rail and waterway investments.

Working toward improvements to the rural infrastructure funding conundrum will be complex. Through a comprehensive assessment of the impacts to the wide range of interests and communities, it will be important to consider the revenue potential as it squares with the population density and number of road miles in a municipal jurisdiction. The type of infrastructure must also account for the maintenance costs of sustaining the infrastructure, not just the capital costs to build the assets, whether roads, bridges, railroad support or waterway infrastructure. In terms of expense to maintain the assets, there is also the sustainability. That is a focus of interest groups and contention among the general public. To

[46] http://www.ugpti.org/resources/reports/downloads/2011-01_RoadInvestAg_ExecSum.pdf

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implement and administer a program addressing infrastructure, there must be considerations of direct and indirect impacts that correspond to the public acceptance and political viability of making changes. If there is an ease of implementing the changes, that goes a long way toward achieving cost savings in providing the infrastructure.

Comparing the U.S. to the tax and revenue generation programs in another country, such as the FETHAB in Brazil, the report considered a range of factors, including differential materials costs, inflation in the economy, and the regulatory structure that is so different from one country to another. The analog serves as a point of comparison, and a prospective model upon which to develop a fee structure. The actual calculations that would be derived in any particular local, regional, state or federal model would be evaluated and the fee or tax assessed would produce a forecast budget amount that alone, would not be sufficient to meet the need for transportation infrastructure.

Competing transportation modes and the private industry operations that serve the marketplace would all seek to utilize the funds for their particular needs. The fuel based fee should still have a role in funding transportation, though the increasing efficiencies must be accounted for as the source of this revenue stream may change as technologies also change with improvements in materials science, and energy industry research and development.

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VII. APPENDICIES

A. State profiles

This section includes summarized agricultural production and rural infrastructure information for each of the 11 target states. The information includes highlights regarding state demographics, transportation infrastructure, and farm input trends. Also included in this section is a map depicting total 2010 crop production density (combining barley, corn, oats, sorghum, soybeans and wheat), as well as a map depicting the change in total crop production from 1950 to 2010.

Included first is an example state profile that includes the data sources for the data points included in the 11 subsequent state profiles.

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Sources of State Information on Agricultural Production and Rural Infrastructure

State Trends in Agricultural Production and Infrastructure

Highlights

Includes key highlights for the state, based on USDA and other available data.

Production Consumed on Farm

Source: USDA ERS

Rural Population Trends

Source: US Census Bureau

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	USDA Census of Agriculture			USDA NASS			Source: Informa
Farmland Trends: Land in Farms (Acres)	USDA Census of Agriculture			USDA NASS			
Average Farm Size (Acres)	USDA, Informa			USDA, Informa			
Population Trends: Population Density (Pop. per Square Mile)	US Census Bureau, Informa			US Census Bureau, Informa			
Production Trends: Volume of Production (Million Bushels)	USDA AMS			USDA AMS			

Illinois Agriculture and Rural Infrastructure

Highlights

Roads	USDOT Federal Highway Administration
Railroad	Associations of, American-rails.com
Waterways	Bureau of Transportation Statistics
Bridges	Bureau of Transportation Statistics, Informa

Did you know?

Includes highlights of current and historic USDA Census of Agriculture information.

Miles of Road by Owner for Illinois

Source: USDOT Federal Highway Administration

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Sources of State Information on Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain						
Soybeans						
Wheat						
Cattle and Calves Inventory						
Hogs Sold						
Broilers Sold						
All Farms						

Source: US Census of Agriculture

Source: US Census of Agriculture

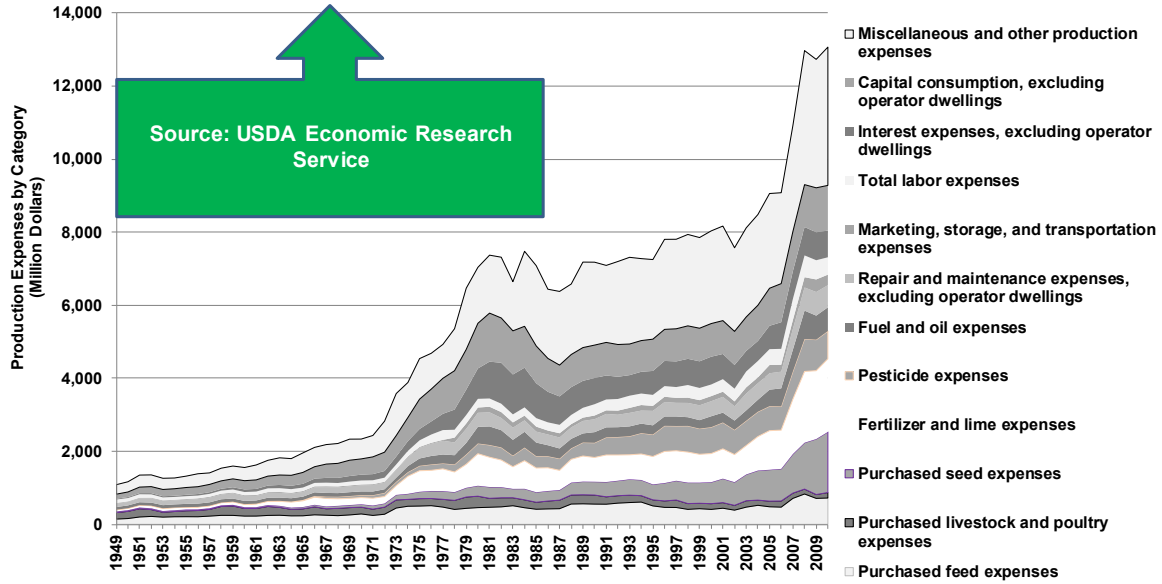
Source: Informa

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007

Source: US Census of Agriculture

Farm Input Trends: Farm Inputs by Type and by State, 1949-2010



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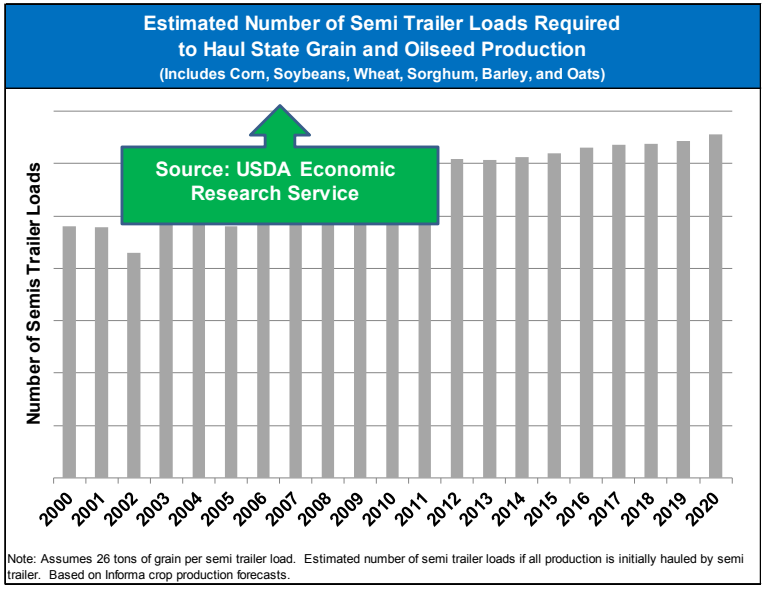
Sources of State Information on Agricultural Production and Rural Infrastructure

Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	USDA, Informa						
On Farm Storage (million bushels)	USDA, Informa						
Estimated Average Tractor Weight (lbs.)	USDA, Informa						
Railroad Miles	Association of American Railroads, American-rails.com						
Road Miles	Federal Highway Administration, Public Roads Administration						



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Illinois Agricultural Production and Rural Infrastructure

Illinois Trends in Agricultural Production and Infrastructure

Highlights

- The population in Illinois is nearly double that of Indiana and more than four times as large as that of Iowa (year 2010 population estimates), even though all of these states had agricultural production valued at over $10 billion in 2010.

- Illinois is a major hub for railroad and has maintained approximately 5% of total U.S. railroad trackage consistently since the 1920's.

- While the value of agricultural production in Illinois increased by 740% from 1950 to 2007, the number of farms decreased by 63%.

Production Consumed on Farm

- Home consumption of a farm's production has changed dramatically. In 1950, the value of farm production consumed at home in Illinois was 3.25%.

- In contrast, in 2010 just 0.07% of the value of production in Illinois was consumed at home. This shift amounts to an even greater reliance by agricultural producers on rural infrastructure to transport farm products.

Rural Population Trends

- In 1930 there were 1,994,927 people living in Illinois, with 26.1% of that population in rural areas.

- By comparison, in 2010 there were 12,830,632 people living in Illinois, with 11.5% of that population in rural areas.

Did you know?

- In Illinois in 2007, there were an average of 244 soybean acres per soybean farm, while for the U.S. the average soybean area per soybean farm was 229 acres.

- Broilers are a major consumer of soybean meal. In 2007, there were 0.33 million broilers sold in Illinois and 8,915 million broilers sold in the U.S.

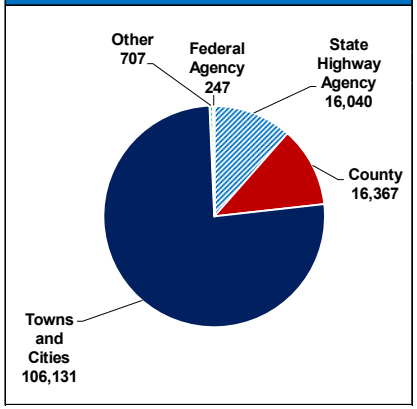
- Average farm size in the U.S. increased from 213 acres in 1950 to 418 acres in 2010, while average farm size in Illinois increased from 156 acres to 351 acres over the same period.

- In Illinois in 1945, there were 38,470 grain combines, while in 2007 there were 31,841 self-propelled grain and bean combines in the state.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1950	203,000	3.6%	2010	76,000	3.5%	-62.6%
Farmland Trends: Land in Farms (Acres)	1950	31,700,000	2.6%	2010	26,700,000	2.9%	-15.8%
Average Farm Size (Acres)	1950	156	73%	2010	351	84%	125%
Population Trends: Population Density (Pop. per Square Mile)	1930	137	394%	2010	231	264%	68.1%
Production Trends: Volume of Production (Million Bushels)	1940	545	11.5%	2011	2,413	13.5%	343%

Miles of Road by Owner for Illinois



Illinois Agriculture and Rural Infrastructure

Highlights

Roads	With 139,492 miles of road as of 2008, Illinois accounts for 3.5% of U.S. road miles.
Railroad	Illinois had 12,188 miles of railroad in 1920 (around the time of the peak rail mileage), but this mileage had fallen to 10,956 miles in 1965 and decreased even further to 7,313 freight railroad miles in 2009.
Waterways	Illinois has approximately 1,100 miles of inland waterways.
Bridges	Illinois has 26,436 bridges, and approximately 15.4 percent of those are considered structurally deficient or functionally obsolete.

Research, analysis and report funded by the soybean checkoff

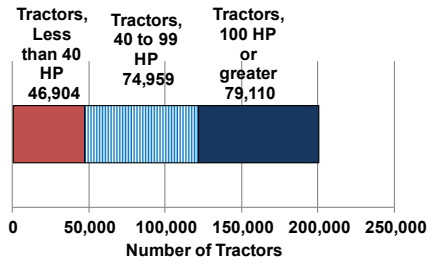
Illinois Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

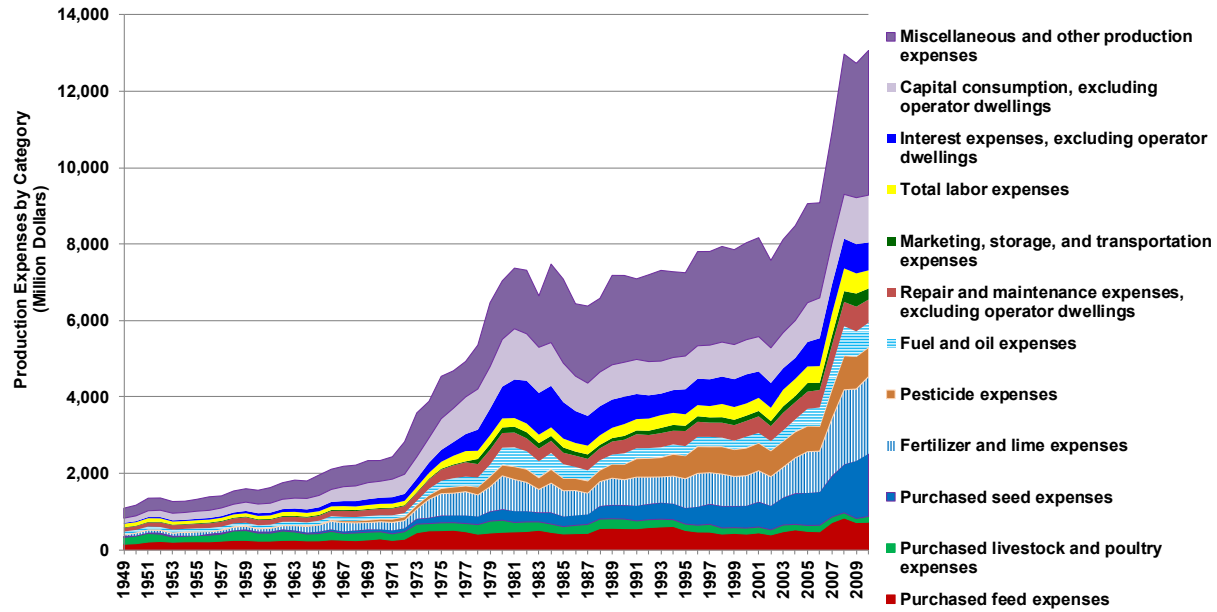
	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	146,747	58 acres	38,260	342 acres	-74%	493%
Soybeans	88,583	45 acres	33,945	244 acres	-62%	447%
Wheat	60,137	25 acres	9,416	95 acres	-84%	272%
Cattle and Calves Inventory	143,837	27 head	18,397	67 head	-87%	149%
Hogs Sold	100,513	69 head	3,063	4,308 head	-97%	6,153%
Broilers Sold	534	8,099 head	260	1,250 head	-51%	-85%
All Farms	175,543	173 acres	76,860	348 acres	-56%	101%

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007



Farm Input Trends: Illinois Farm Inputs by Type, 1949-2010

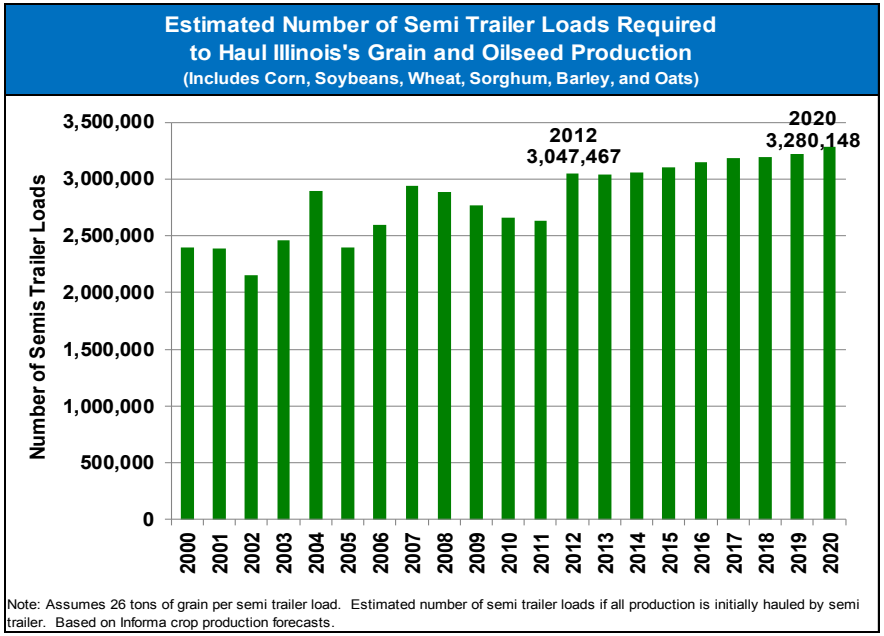


Research, analysis and report funded by the soybean checkoff
Informa Economics, Inc. for the Soy Transportation Coalition

Illinois Agricultural Production and Rural Infrastructure

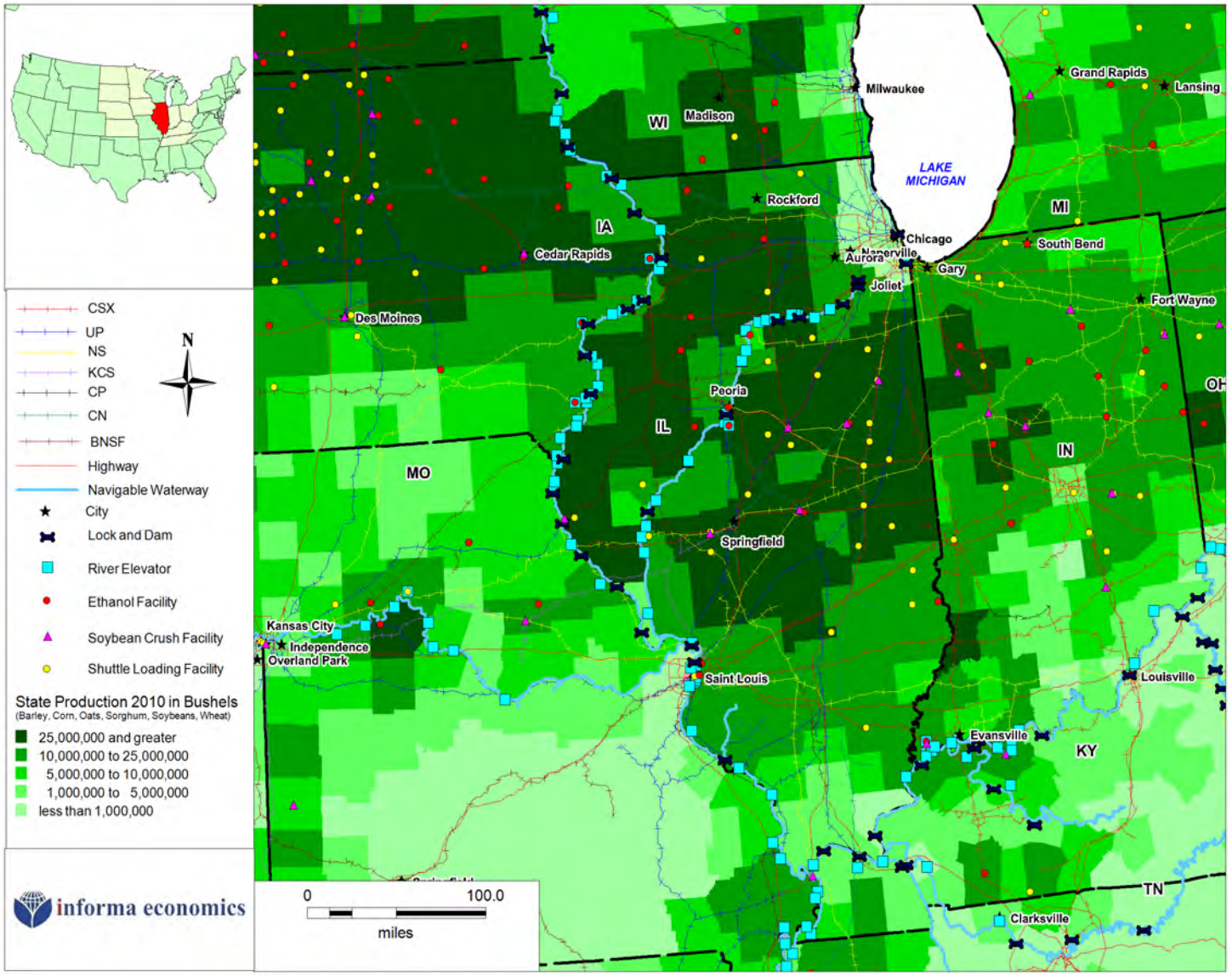
Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	1986	1,149	12.6%	2011	1,451	14.3%	26%
On Farm Storage (million bushels)	1986	1,322	9.6%	2011	1,460	11.4%	10%
Estimated Average Tractor Weight (lbs.)	1950	5,797	107.5%	2011	11,492	115.3%	98%
Railroad Miles	1920	12,188	4.9%	2009 freight	7,313	5.2%	-40%
Road Miles	1940	11,648	2.1%	2008	139,492	3.5%	1,098%



Research, analysis and report funded by the soybean checkoff

Illinois: Agricultural Production and Infrastructure



Infrastructure

- Illinois crop production consists primarily of corn and soybeans.
- Crops are moved from production regions by truck, rail or barge to elevators and processing facilities.
- Illinois has 2,236 miles of interstate; 7,313 miles of rail lines; 1,100 miles of waterways; 26,436 bridges and 139,492 miles of roadways.
- Illinois has seven soybean crush facilities; 40 shuttle facilities; 14 ethanol plants; 667 grain elevators and 65 river elevators.

Research, analysis and report funded by the soybean checkoff
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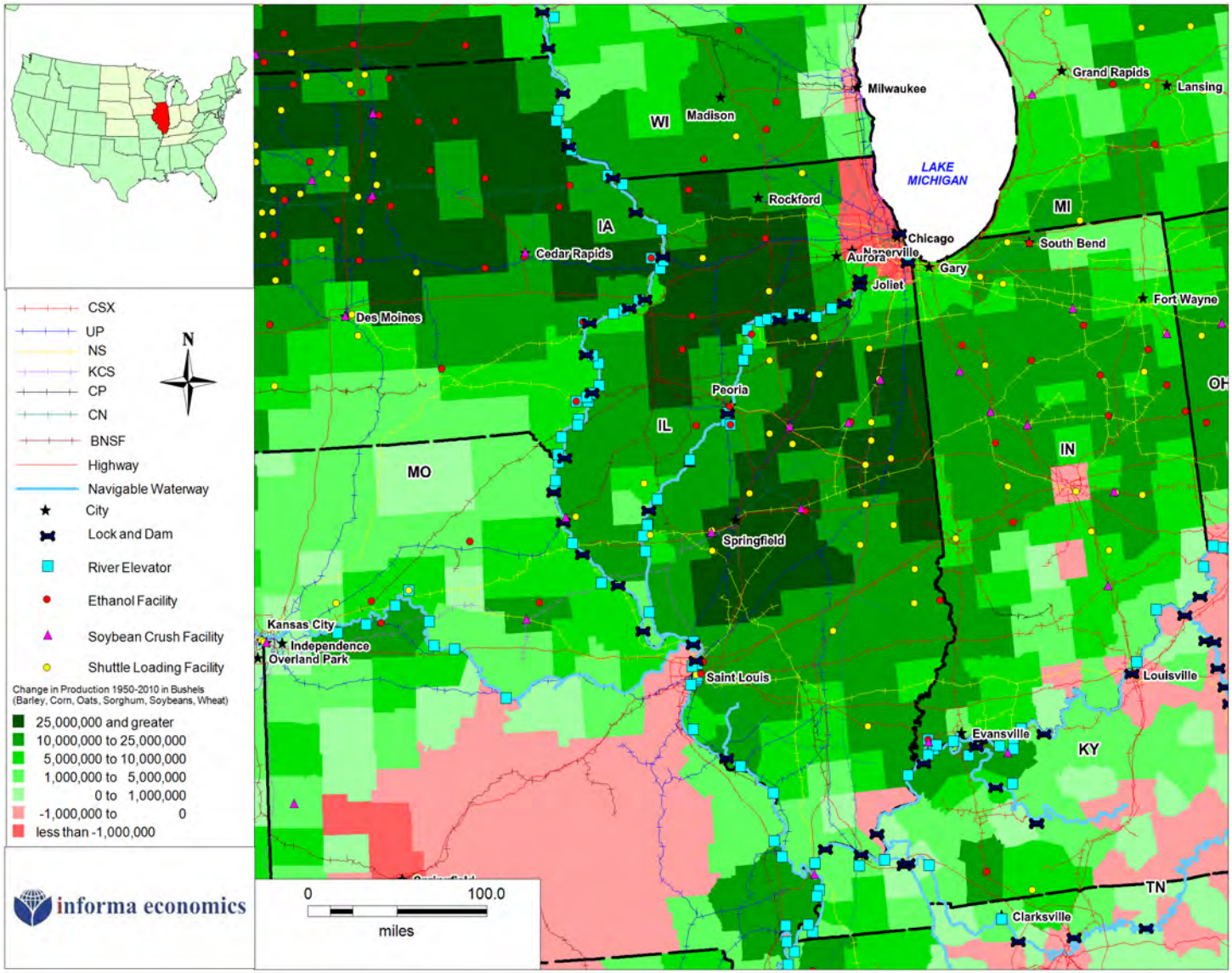
Illinois: Change in Production from 1950 to 2010



Production

- Crop production in the state of Illinois, with exception to the Chicago area, has been growing over the past six decades.
- Production of grains and soybeans has increased by 1.7 billion bushels from 1950 to 2010.
- In the past, Illinois supported a more diverse array of crops including primarily corn, oats, soybeans and wheat.
- Currently, the state focuses much of its production on corn and soybeans, with small amounts of oats, sorghum, and wheat produced within the state.

Research, analysis and report funded by the soybean checkoff

Illinois Grains and Soybeans Supply and Demand Balance, 2000-2011

		2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Beginning Stocks	Corn	235.2	254.7	255.4	105.1	119.7	362.6	296.6	189.4	289.1	298.9	246.3	156.6
	Sorghum	0.9	0.6	0.6	0.5	0.8	0.1	0.1	0.4	0.6	0.0	1.0	0.6
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	0.4	0.0
	Oats	2.5	2.1	2.2	2.7	1.7	2.0	2.1	0.9	1.4	0.6	1.1	0.7
	Wheat	49.4	38.2	21.6	26.4	26.4	27.6	45.2	34.3	49.4	58.3	46.9	61.3
	Soybean	39.0	34.7	27.2	23.3	16.5	51.4	73.4	96.6	34.7	21.9	20.7	29.3
Beginning Stocks Total		**326.9**	**330.4**	**307.0**	**158.0**	**165.0**	**443.7**	**417.4**	**321.6**	**375.9**	**380.2**	**316.5**	**248.5**
Acres Planted	Corn	11.2	11.0	11.1	11.2	11.8	12.1	11.3	13.2	12.1	12.0	12.6	12.6
	Sorghum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.8	0.7	0.9	0.9	0.6	0.9	1.0	1.2	0.9	0.3	0.8	0.7
	Soybean	10.5	10.7	10.6	10.3	10.0	9.5	10.1	8.3	9.2	9.4	9.1	8.9
Acres Planted Total		**22.6**	**22.5**	**22.7**	**22.6**	**22.5**	**22.7**	**22.5**	**22.8**	**22.3**	**21.8**	**22.6**	**22.2**
Acres Harvested	Corn	11.1	10.9	10.9	11.1	11.6	12.0	11.2	13.1	11.9	11.8	12.4	12.4
	Sorghum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.7	0.6	0.8	0.9	0.6	0.9	0.9	1.2	0.8	0.3	0.8	0.6
	Soybean	10.5	10.6	10.6	10.3	9.9	9.5	10.1	8.3	9.1	9.4	9.1	8.9
Acres Harvested Total		**22.3**	**22.2**	**22.4**	**22.4**	**22.2**	**22.4**	**22.2**	**22.6**	**21.9**	**21.5**	**22.3**	**21.9**
Yield	Corn	151.0	152.0	135.0	164.0	180.0	143.0	163.0	175.0	179.0	174.0	157.0	157.0
	Sorghum	95.0	105.0	83.0	82.0	109.0	92.0	89.0	81.0	103.0	82.0	96.0	91.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	80.0	73.0	89.0	70.0	79.0	77.0	62.0	70.0	65.0	65.0	68.0	70.0
	Wheat	61.0	49.0	65.0	59.0	61.0	67.0	55.0	64.0	56.0	56.0	61.0	63.0
	Soybean	44.0	45.0	43.0	37.0	50.0	46.5	48.0	43.5	47.0	46.0	51.5	47.0
Production	Corn	1,668.6	1,649.2	1,471.5	1,812.2	2,088.0	1,708.9	1,817.5	2,283.8	2,130.1	2,053.2	1,946.8	1,946.8
	Sorghum	8.1	8.1	6.3	8.6	8.9	7.6	6.4	6.2	7.8	3.0	3.2	1.8
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	3.2	3.3	4.5	2.5	3.2	3.1	1.5	2.1	1.6	2.0	1.4	1.4
	Wheat	43.9	30.9	52.7	53.1	36.6	61.0	49.0	73.6	45.9	16.5	46.7	39.1
	Soybean	459.8	477.9	453.7	379.6	495.0	439.4	482.4	360.2	428.6	430.1	466.1	416.4
Production Total		**2,183.5**	**2,169.3**	**1,988.6**	**2,256.0**	**2,631.7**	**2,220.0**	**2,356.7**	**2,725.9**	**2,614.1**	**2,504.7**	**2,464.1**	**2,405.5**
Total Supply	Corn	1,903.7	1,903.9	1,726.9	1,917.3	2,207.7	2,071.4	2,114.0	2,473.2	2,419.2	2,352.1	2,193.1	2,103.4
	Sorghum	9.0	8.7	6.9	9.1	9.7	7.7	6.5	6.6	8.4	3.0	4.1	2.5
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
	Oats	4.2	4.2	5.1	3.5	3.8	3.7	2.2	2.5	1.9	2.2	1.8	2.2
	Wheat	66.8	37.8	57.2	58.5	45.7	71.5	63.9	79.9	80.9	64.7	82.3	86.1
	Soybean	498.8	512.6	480.9	402.9	511.5	490.8	555.8	456.8	463.4	452.0	486.7	445.7
Total Supply Total		**2,482.4**	**2,467.3**	**2,277.0**	**2,391.4**	**2,778.3**	**2,645.3**	**2,742.4**	**3,019.0**	**2,973.9**	**2,874.0**	**2,768.1**	**2,639.8**
Exports	Corn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Processing	Corn	495.3	522.3	541.1	568.2	556.4	576.8	627.3	648.8	705.1	813.9	812.0	803.3
	Sorghum	0.6	0.4	0.4	0.8	1.1	1.0	1.0	0.4	1.6	0.7	0.8	0.8
	Barley	5.9	5.7	5.7	5.8	5.9	5.9	6.1	6.1	6.2	6.0	5.8	5.9
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	42.3	35.4	34.6	40.5	39.0	39.6	41.0	41.0	39.8	39.5	39.4	36.9
	Soybean	242.6	251.5	223.8	189.4	206.1	240.4	266.0	257.3	235.7	257.4	248.9	260.4
Processing Total		**786.7**	**815.3**	**805.5**	**804.7**	**808.5**	**863.7**	**941.4**	**953.7**	**988.4**	**1,117.6**	**1,106.9**	**1,107.2**
Ending Stocks	Corn	254.7	255.4	105.1	119.7	362.6	296.6	189.4	289.1	298.9	246.3	156.6	92.6
	Sorghum	0.6	0.6	0.5	0.8	0.1	0.1	0.4	0.6	0.0	1.0	0.6	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	0.4	0.0	0.0
	Oats	2.1	2.2	2.7	1.7	2.0	2.1	0.9	1.4	0.6	1.1	0.7	1.4
	Wheat	38.2	21.6	26.4	26.4	27.6	45.2	34.3	49.4	58.3	46.9	61.3	41.0
	Soybean	34.7	27.2	23.3	16.5	51.4	73.4	96.6	34.7	21.9	20.7	29.3	30.1
Ending Stocks Total		**330.4**	**307.0**	**158.0**	**165.0**	**443.7**	**417.4**	**321.6**	**375.9**	**380.2**	**316.5**	**248.5**	**165.2**

Indiana Agricultural Production and Rural Infrastructure

Indiana Trends in Agricultural Production and Infrastructure

Highlights

- In many states, the percentage of the state population designated by the U.S. Census Bureau as living in rural areas has declined; in Indiana, the absolute number of residents in rural areas has actually increased in recent decades.

- Although all expenses have been increasing, Indiana has seen a recent spike in purchased feed inputs in particular, which nearly increased over 170% from 2005 to 2010 and compare to a much smaller U.S. increase of 62%.

- While the value of agricultural production in Indiana increased by 860% from 1950 to 2007, the number of farms decreased by 64%.

Production Consumed on Farm

- Home consumption of a farm's production has changed dramatically. In 1950, the value of farm production consumed at home in Indiana was 4.30%.

- In contrast, in 2010 just 0.10% of the value of production in Indiana was consumed at home. This shift amounts to an even greater reliance by agricultural producers on rural infrastructure to transport farm products.

Rural Population Trends

- In 1930 there were 1,442,611 people living in Indiana, with 44.5% of that population in rural areas.

- By comparison, in 2010 there were 6,483,802 people living in Indiana, with 27.6% of that population in rural areas.

Did you know?

- In Indiana in 2007, there were an average of 218 soybean acres per soybean farm, while for the U.S. the average soybean area per soybean farm was 229 acres.

- Broilers are a major consumer of soybean meal. In 2007, there were 37.07 million broilers sold in Indiana and 8,915 million broilers sold in the U.S.

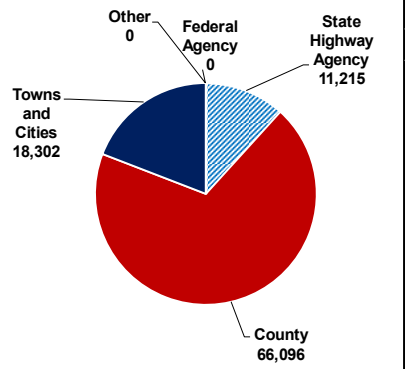
- Average farm size in the U.S. increased from 213 acres in 1950 to 418 acres in 2010, while average farm size in Indiana increased from 116 acres to 239 acres over the same period.

- In Indiana in 1945, there were 17,720 grain combines, while in 2007 there were 18,792 self-propelled grain and bean combines in the state.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1950	174,000	3.1%	2010	62,000	2.8%	-64.4%
Farmland Trends: Land in Farms (Acres)	1950	20,200,000	1.7%	2010	14,800,000	1.6%	-26.7%
Average Farm Size (Acres)	1950	116	55%	2010	239	57%	106%
Population Trends: Population Density (Pop. per Square Mile)	1930	90	259%	2010	181	207%	100.2%
Production Trends: Volume of Production (Million Bushels)	1940	226	4.8%	2011	1,103	6.2%	387%

Miles of Road by Owner for Indiana



Indiana Agriculture and Rural Infrastructure

Highlights

Roads	With 95,613 miles of road as of 2008, Indiana accounts for 2.4% of U.S. road miles.
Railroad	Indiana had 7,426 miles of railroad in 1920 (around the time of the peak rail mileage), but this mileage had fallen to 6,524 miles in 1965 and decreased even further to 4,475 freight railroad miles in 2009.
Waterways	Indiana has approximately 350 miles of inland waterways.
Bridges	Indiana has 18,640 bridges, and approximately 21.1 percent of those are considered structurally deficient or functionally obsolete.

Research, analysis and report funded by the soybean checkoff

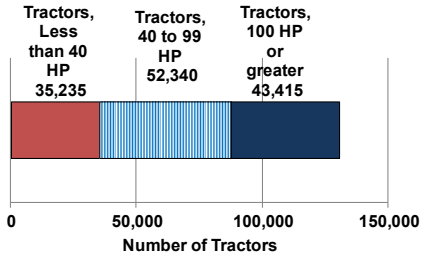
Indiana Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

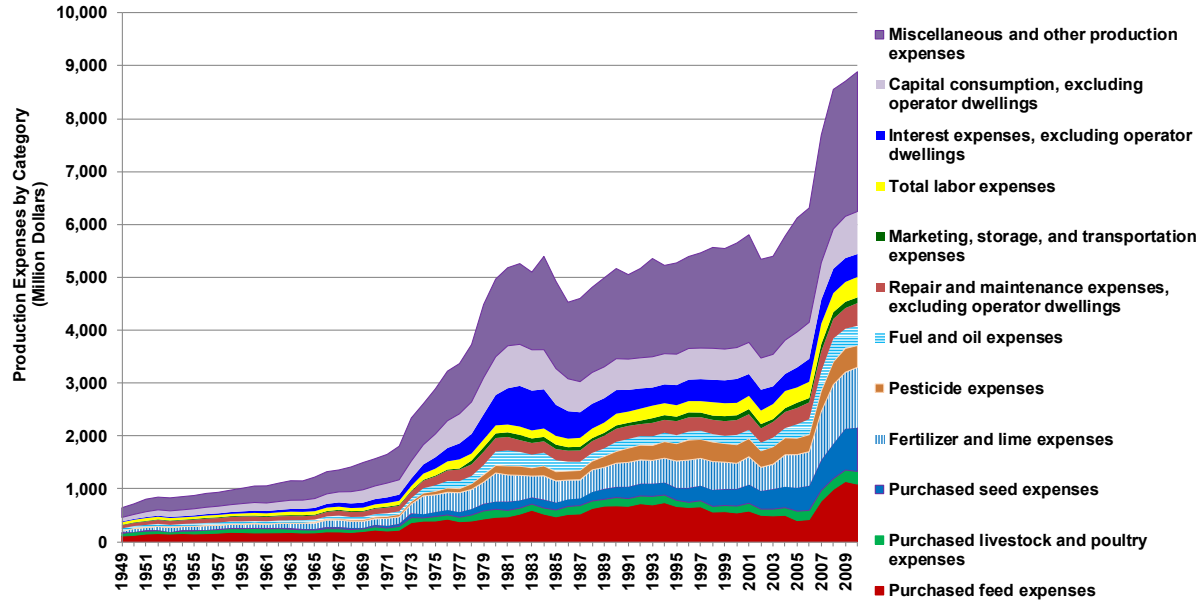
	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	119,837	40 acres	24,400	261 acres	-80%	555%
Soybeans	60,190	32 acres	21,973	218 acres	-63%	579%
Wheat	64,790	20 acres	5,058	72 acres	-92%	260%
Cattle and Calves Inventory	121,189	18 head	18,483	47 head	-85%	158%
Hogs Sold	79,714	69 head	3,790	2,513 head	-95%	3,550%
Broilers Sold	2,268	12,089 head	399	92,913 head	-82%	669%
All Farms	153,593	125 acres	60,938	242 acres	-60%	94%

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007



Farm Input Trends: Indiana Farm Inputs by Type, 1949-2010



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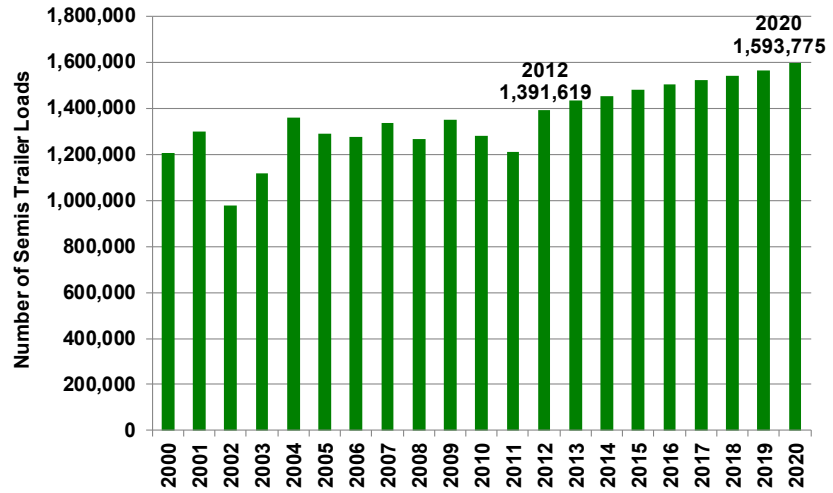
Indiana Agricultural Production and Rural Infrastructure

Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	1986	358	3.9%	2011	464	4.6%	29%
On Farm Storage (million bushels)	1986	759	5.5%	2011	800	6.3%	5%
Estimated Average Tractor Weight (lbs.)	1950	5,590	103.7%	2011	10,772	108.1%	93%
Railroad Miles	1920	7,426	3.0%	2009 freight	4,475	3.2%	-40%
Road Miles	1940	10,099	1.8%	2008	95,613	2.4%	847%

Estimated Number of Semi Trailer Loads Required to Haul Indiana's Grain and Oilseed Production

(Includes Corn, Soybeans, Wheat, Sorghum, Barley, and Oats)



Note: Assumes 26 tons of grain per semi trailer load. Estimated number of semi trailer loads if all production is initially hauled by semi trailer. Based on Informa crop production forecasts.

Research, analysis and report funded by the soybean checkoff
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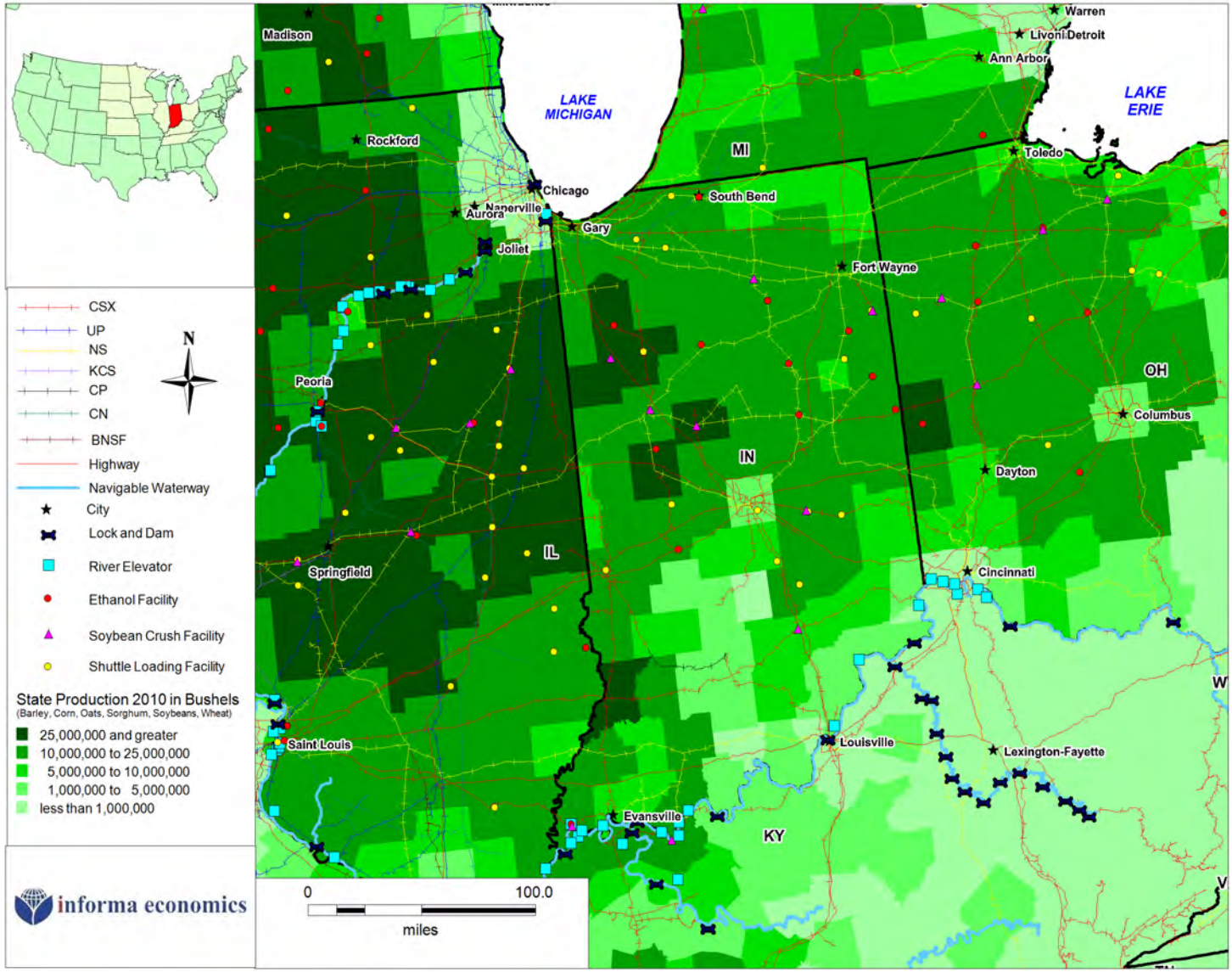
Indiana: Agricultural Production and Infrastructure



Infrastructure

- Indiana crop production consists primarily of corn, soybeans and wheat.
- Crops are moved from production regions by truck, rail or barge to elevators and processing facilities.
- Indiana has 1,343 miles of interstate; 4,475 miles of rail lines; 350 miles of waterways; 18,640 bridges and 95,613 miles of roadways.
- Indiana has eight soybean crush facilities; 17 shuttle facilities; 13 ethanol plants; 310 grain elevators; and 11 river elevators.

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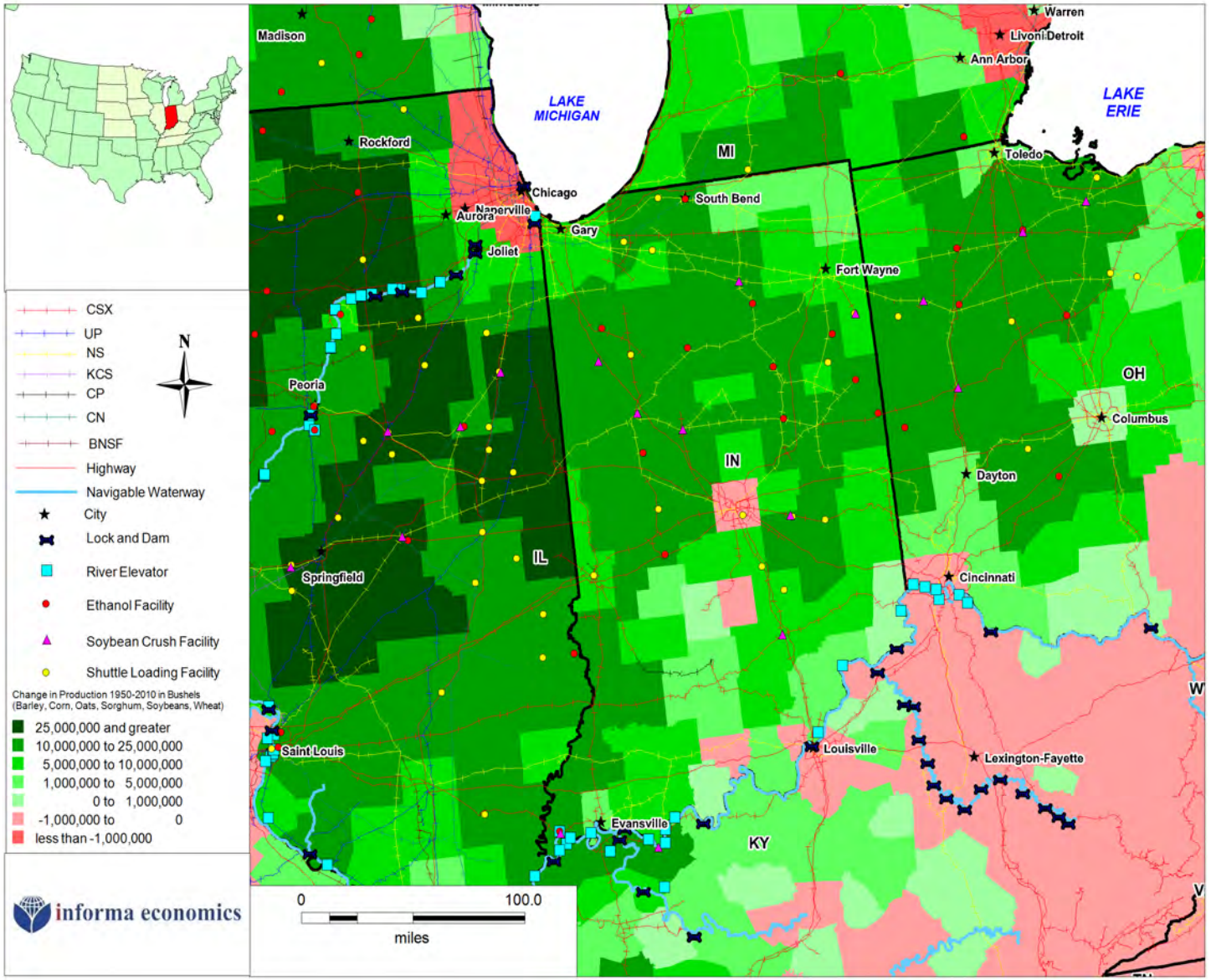
Indiana: Change in Production from 1950 to 2010



Production

- Crop production in the state of Indiana, with exception to five counties, has been growing over the past six decades.
- Production of grains and soybeans has increased by approximately 849 million bushels from 1950 to 2010.
- In the past, Indiana produced more oats than it did both soybeans and wheat.
- Currently, Indiana focuses much of its production on corn and soybeans, with small amounts of wheat.

Research, analysis and report funded by the soybean checkoff

Indiana Grains and Soybeans Supply and Demand Balance, 2000-2011

		2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Beginning Stocks	Corn	91.4	99.9	112.6	57.9	59.8	112.3	94.0	68.3	94.3	72.8	73.4	58.3
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	1.1	0.8	0.5	0.7	0.6	0.5	0.7	0.3	0.3	0.3	0.3	0.2
	Wheat	38.4	36.5	21.8	22.8	20.6	28.5	29.8	22.1	29.3	34.1	33.6	37.6
	Soybean	11.7	10.5	11.2	11.7	7.1	11.1	16.3	23.4	12.0	6.3	6.3	10.7
Beginning Stocks Total		**142.6**	**147.7**	**146.1**	**93.1**	**88.1**	**152.3**	**140.9**	**114.2**	**135.8**	**113.5**	**113.7**	**106.8**
Acres Planted	Corn	5.7	5.8	5.4	5.6	5.7	5.9	5.5	6.5	5.7	5.6	5.9	5.9
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.4	0.3	0.5	0.5	0.4	0.5	0.4	0.6	0.5	0.3	0.4	0.4
	Soybean	5.5	5.6	5.8	5.5	5.6	5.4	5.7	4.8	5.5	5.5	5.4	5.3
Acres Planted Total		**11.6**	**11.8**	**11.7**	**11.5**	**11.6**	**11.8**	**11.6**	**11.9**	**11.6**	**11.3**	**11.7**	**11.6**
Acres Harvested	Corn	5.6	5.7	5.2	5.4	5.5	5.8	5.4	6.4	5.5	5.5	5.7	5.8
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.4	0.3	0.4	0.4	0.3	0.5	0.4	0.6	0.5	0.2	0.4	0.4
	Soybean	5.5	5.6	5.8	5.4	5.5	5.4	5.7	4.8	5.4	5.4	5.3	5.3
Acres Harvested Total		**11.4**	**11.6**	**11.4**	**11.2**	**11.4**	**11.6**	**11.4**	**11.7**	**11.3**	**11.1**	**11.5**	**11.4**
Yield	Corn	146.0	156.0	121.0	146.0	168.0	154.0	157.0	154.0	160.0	171.0	157.0	146.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	80.0	62.0	70.0	75.0	69.0	80.0	53.0	75.0	69.0	66.0	61.0	75.0
	Wheat	66.0	53.0	68.0	62.0	72.0	68.0	56.0	69.0	67.0	60.0	62.0	68.0
	Soybean	46.0	49.0	41.5	38.0	51.5	49.0	50.0	46.0	45.0	49.0	48.5	45.0
Production	Corn	810.3	884.5	631.6	786.9	929.0	888.6	844.7	981.0	873.6	933.7	898.0	839.5
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	1.3	0.9	1.1	0.9	0.6	1.1	0.4	0.4	0.5	0.5	0.4	0.6
	Wheat	25.1	16.4	29.2	27.3	24.5	31.3	20.7	38.6	30.2	13.8	24.8	25.2
	Soybean	252.1	273.9	239.5	204.1	284.3	263.6	284.0	220.3	244.4	266.6	258.5	238.1
Production Total		**1,088.7**	**1,175.7**	**901.4**	**1,019.2**	**1,238.4**	**1,184.6**	**1,149.8**	**1,240.3**	**1,148.6**	**1,214.5**	**1,181.8**	**1,103.3**
Total Supply	Corn	901.7	984.5	744.2	844.8	988.9	1,000.8	938.7	1,049.3	967.9	1,006.4	971.5	897.8
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	1.7	1.2	1.3	1.2	0.9	1.4	0.7	0.5	0.6	0.7	0.6	0.9
	Wheat	47.4	25.4	33.6	31.6	30.7	42.3	34.5	47.2	48.1	42.2	50.0	59.1
	Soybean	263.8	284.4	250.6	215.8	291.3	274.7	300.3	243.8	256.3	272.8	264.8	248.7
Total Supply Total		**1,214.6**	**1,295.5**	**1,029.7**	**1,093.4**	**1,311.8**	**1,319.2**	**1,274.1**	**1,340.9**	**1,272.9**	**1,322.2**	**1,286.9**	**1,206.5**
Exports	Corn	47.7	39.5	21.4	30.9	28.6	60.7	39.1	24.9	11.9	8.4	7.5	7.8
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	8.4	15.2	2.1	2.9	1.0	0.0	8.8	14.2	1.6	2.1	2.1	5.4
	Soybean	18.4	21.2	15.9	17.6	27.5	23.8	33.0	16.3	13.3	26.1	24.9	12.4
Exports Total		**74.6**	**75.9**	**39.3**	**51.4**	**57.0**	**84.6**	**80.8**	**55.4**	**26.8**	**36.6**	**34.4**	**25.5**
Processing	Corn	154.6	155.9	157.8	167.9	165.7	168.3	197.5	312.2	367.4	418.5	503.4	543.5
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	27.1	27.1	27.1	29.3	29.4	29.8	30.4	30.7	29.8	29.5	29.5	27.7
	Soybean	181.4	188.1	177.7	166.0	181.3	179.6	183.9	177.8	198.1	214.2	200.5	209.8
Processing Total		**363.1**	**371.0**	**362.5**	**363.2**	**376.4**	**377.6**	**411.8**	**520.7**	**595.3**	**662.2**	**733.4**	**781.0**
Ending Stocks	Corn	99.9	112.6	57.9	59.8	112.3	94.0	68.3	94.3	72.8	73.4	58.3	39.8
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	36.5	21.8	22.8	20.6	28.5	29.8	22.1	29.3	34.1	33.6	37.6	33.9
	Soybean	10.5	11.2	11.7	7.1	11.1	16.3	23.4	12.0	6.3	6.3	10.7	11.3
Ending Stocks Total		**147.7**	**146.1**	**93.1**	**88.1**	**152.3**	**140.9**	**114.2**	**135.8**	**113.5**	**113.7**	**106.8**	**85.5**

Iowa Agricultural Production and Rural Infrastructure

Iowa Trends in Agricultural Production and Infrastructure

Highlights

- The rural population in Iowa decreased by about 350,000 people between 1930 and 2000, while the urban population increased by over 800,000 in the same period.

- At 333 acres, the average farm size in Iowa is actually smaller than the average farm size in the U.S. but even so, this average size has almost doubled since 1950.

- While the value of agricultural production in Iowa increased by 912% from 1950 to 2007, the number of farms decreased by 55%.

Production Consumed on Farm

- Home consumption of a farm's production has changed dramatically. In 1950, the value of farm production consumed at home in Iowa was 3.12%.

- In contrast, in 2010 just 0.06% of the value of production in Iowa was consumed at home. This shift amounts to an even greater reliance by agricultural producers on rural infrastructure to transport farm products.

Rural Population Trends

- In 1930 there were 1,491,647 people living in Iowa, with 60.4% of that population in rural areas.

- By comparison, in 2010 there were 3,046,355 people living in Iowa, with 36.0% of that population in rural areas.

Did you know?

- In Iowa in 2007, there were an average of 207 soybean acres per soybean farm, while for the U.S. the average soybean area per soybean farm was 229 acres.

- Broilers are a major consumer of soybean meal. In 2007, there were 10.26 million broilers sold in Iowa and 8,915 million broilers sold in the U.S.

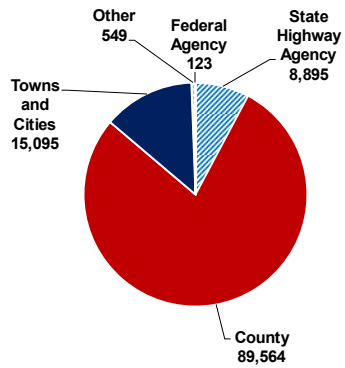
- Average farm size in the U.S. increased from 213 acres in 1950 to 418 acres in 2010, while average farm size in Iowa increased from 169 acres to 333 acres over the same period.

- In Iowa in 1945, there were 23,678 grain combines, while in 2007 there were 37,034 self-propelled grain and bean combines in the state.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1950	206,000	3.6%	2010	92,400	4.2%	-55.1%
Farmland Trends: Land in Farms (Acres)	1950	34,800,000	2.9%	2010	30,800,000	3.3%	-11.5%
Average Farm Size (Acres)	1950	169	79%	2010	333	80%	97%
Population Trends: Population Density (Pop. per Square Mile)	1930	44	127%	2010	55	62%	23.3%
Production Trends: Volume of Production (Million Bushels)	1940	687	14.5%	2011	2,826	15.8%	312%

Miles of Road by Owner for Iowa



Iowa Agriculture and Rural Infrastructure

Highlights

Roads	With 114,226 miles of road as of 2008, Iowa accounts for 2.8% of U.S. road miles.
Railroad	Iowa had 9,808 miles of railroad in 1920 (around the time of the peak rail mileage), but this mileage had fallen to 8,369 miles in 1965 and decreased even further to 3,925 freight railroad miles in 2009.
Waterways	Iowa has approximately 490 miles of inland waterways.
Bridges	Iowa has 24,537 bridges, and approximately 27.0 percent of those are considered structurally deficient or functionally obsolete.

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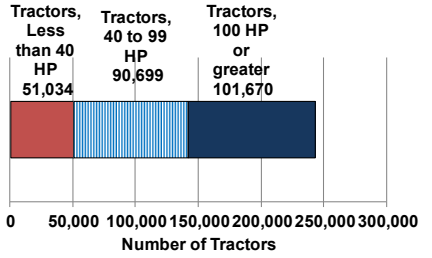
Iowa Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

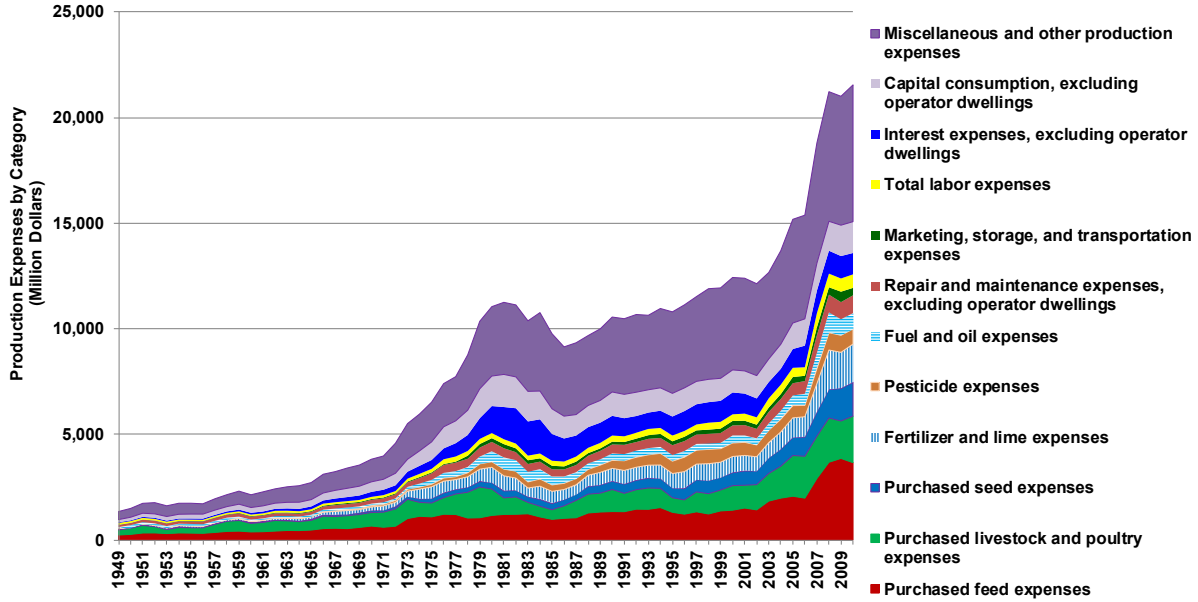
	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	173,780	56 acres	50,095	276 acres	-71%	391%
Soybeans	71,372	30 acres	41,524	207 acres	-42%	592%
Wheat	5,090	21 acres	577	51 acres	-89%	141%
Cattle and Calves Inventory	172,869	35 head	29,690	134 head	-83%	279%
Hogs Sold	153,619	93 head	8,758	5,398 head	-94%	5,681%
Broilers Sold	282	3,368 head	598	17,153 head	112%	409%
All Farms	192,933	176 acres	92,856	331 acres	-52%	88%

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007



Farm Input Trends: Iowa Farm Inputs by Type, 1949-2010



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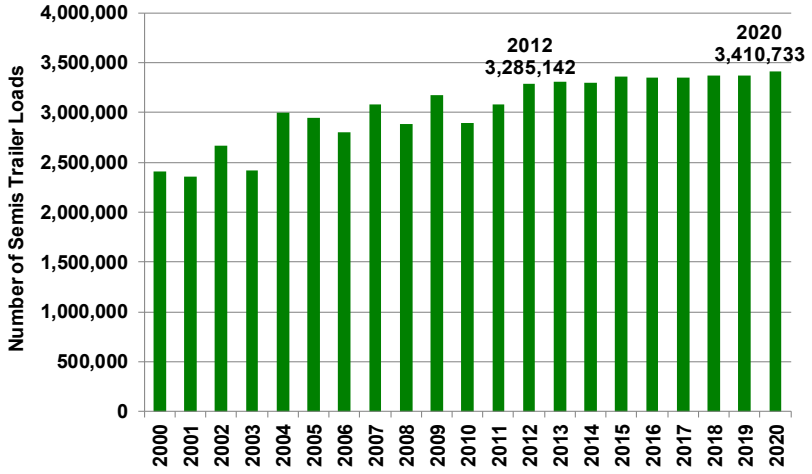
Iowa Agricultural Production and Rural Infrastructure

Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	1986	1,085	11.9%	2011	1,380	13.6%	27%
On Farm Storage (million bushels)	1986	2,020	14.6%	2011	2,050	16.0%	1%
Estimated Average Tractor Weight (lbs.)	1950	5,904	109.5%	2011	11,816	118.6%	100%
Railroad Miles	1920	9,808	3.9%	2009 freight	3,925	2.8%	-60%
Road Miles	1940	9,612	1.7%	2008	114,226	2.8%	1,088%

Estimated Number of Semi Trailer Loads Required to Haul Iowa's Grain and Oilseed Production
(Includes Corn, Soybeans, Wheat, Sorghum, Barley, and Oats)



Note: Assumes 26 tons of grain per semi trailer load. Estimated number of semi trailer loads if all production is initially hauled by semi trailer. Based on Informa crop production forecasts.

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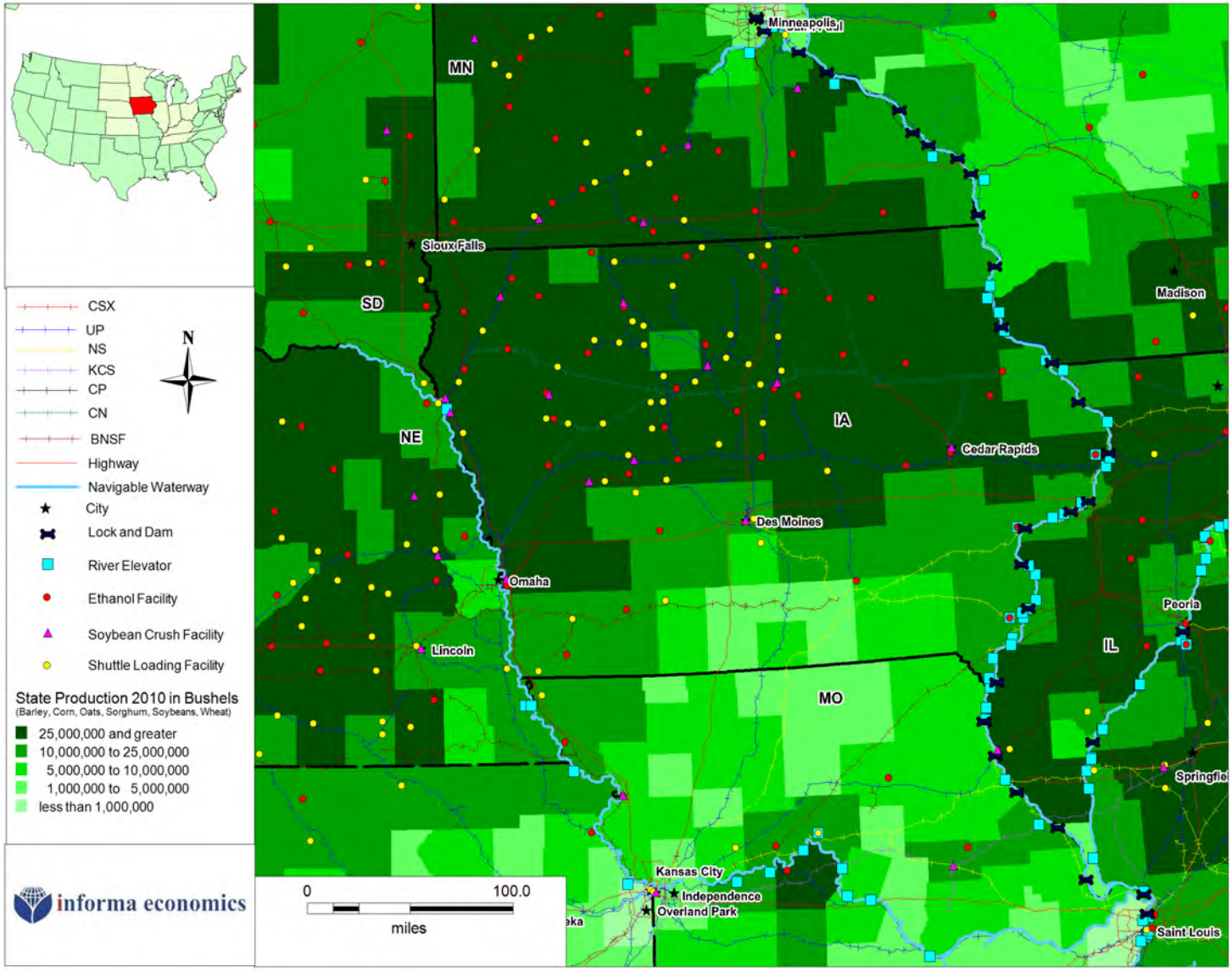
Iowa: Agricultural Production and Infrastructure

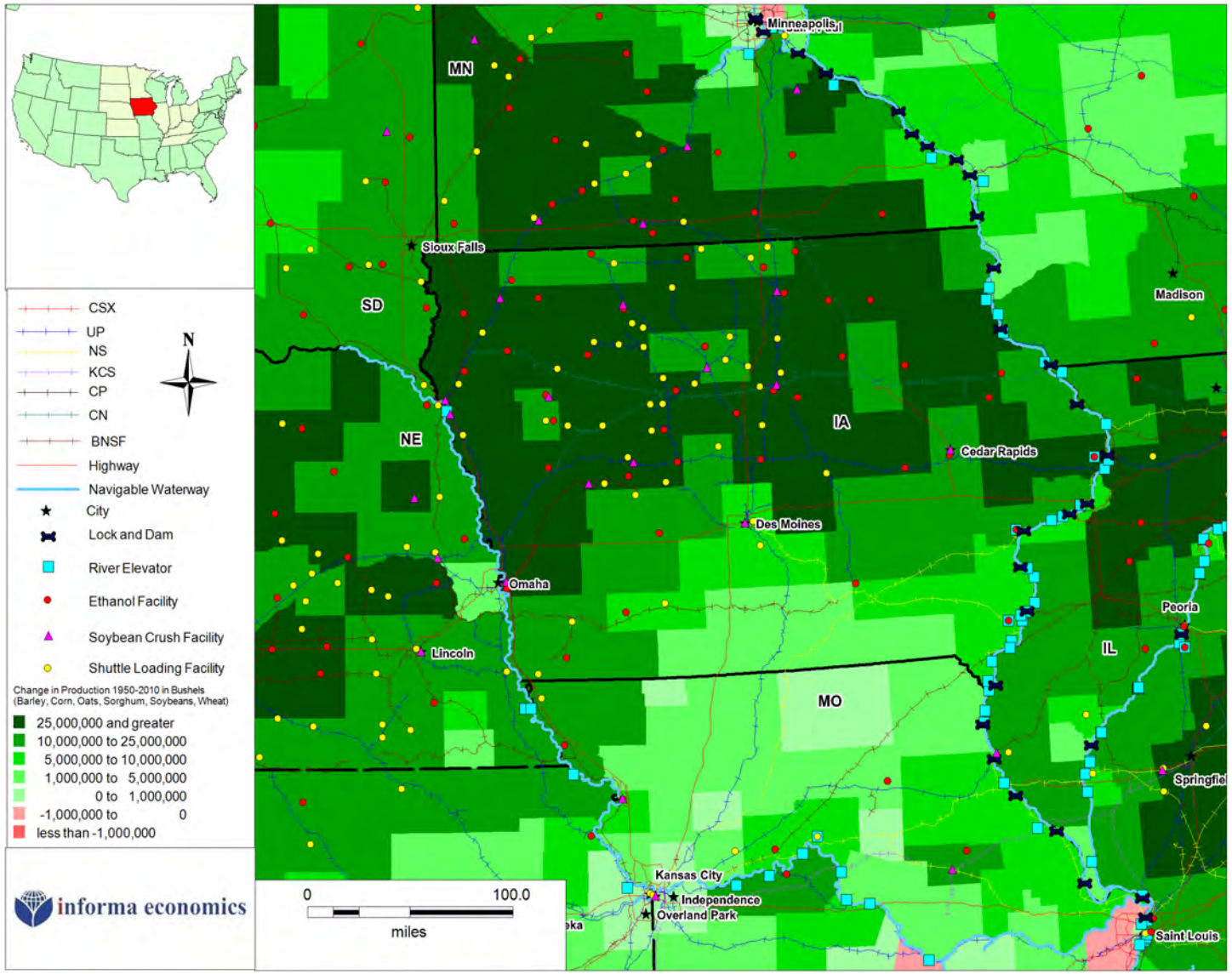


Infrastructure

- Iowa crop production consists primarily of corn, soybeans and oats.
- Crops are moved from production regions by truck, rail or barge to elevators and processing facilities.
- Iowa has 808 miles of interstate; 3,925 miles of rail lines; 490 miles of waterways; 24,537 bridges and 114,226 miles of roadways.
- Iowa has 14 soybean crush facilities; 52 shuttle facilities; 42 ethanol plants; 750 grain elevators; and 16 river elevators.

Research, analysis and report funded by the soybean checkoff

Iowa: Change in Production from 1950 to 2010



Production

- Crop production in the state of Iowa has been increasing over the past six decades.
- Production of grains and soybeans has increased by nearly 2.2 billion bushels from 1950 to 2010.
- Historically, Iowa produced primarily corn and soybeans.
- While corn is still the predominant crop in Iowa with soybean production following. Iowa also produced over 3 million bushels of oats in 2010.

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Iowa Grains and Soybeans Supply and Demand Balance, 2000-2011

		2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Beginning Stocks	Corn	447.7	477.2	361.1	288.5	222.5	493.9	459.8	356.9	414.6	356.9	411.6	268.3
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.9	1.7	0.0
	Oats	12.6	8.2	9.3	10.8	8.7	9.1	9.8	6.6	9.7	11.1	2.5	7.3
	Wheat	3.1	1.6	2.1	1.8	0.2	0.1	2.2	2.1	1.9	1.9	1.5	1.8
	Soybean	80.0	61.4	55.4	53.1	30.6	57.9	110.3	144.0	57.2	30.3	38.1	47.1
Beginning Stocks Total		**543.5**	**548.4**	**427.8**	**354.2**	**261.9**	**560.9**	**582.1**	**509.5**	**484.9**	**402.2**	**455.3**	**324.5**
Acres Planted	Corn	12.3	11.7	12.2	12.3	12.7	12.8	12.6	14.2	13.3	13.6	13.4	14.1
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1
	Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	10.7	11.0	10.5	10.6	10.2	10.1	10.2	8.7	9.8	9.6	9.8	9.4
Acres Planted Total		**23.3**	**23.0**	**22.9**	**23.1**	**23.1**	**23.1**	**22.9**	**23.0**	**23.3**	**23.4**	**23.3**	**23.6**
Acres Harvested	Corn	12.0	11.4	11.9	11.9	12.4	12.5	12.4	13.9	12.8	13.3	13.1	13.7
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	10.7	10.9	10.4	10.6	10.2	10.0	10.1	8.6	9.7	9.5	9.7	9.2
Acres Harvested Total		**22.8**	**22.5**	**22.4**	**22.6**	**22.7**	**22.6**	**22.5**	**22.6**	**22.6**	**22.9**	**22.8**	**23.0**
Yield	Corn	144.0	146.0	163.0	157.0	181.0	173.0	166.0	171.0	171.0	182.0	165.0	172.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	70.0	76.0	83.0	72.0	79.0	76.0	71.0	65.0	65.0	62.0	65.0	67.0
	Wheat	54.0	53.0	61.0	55.0	50.0	66.0	48.0	48.0	45.0	46.0	45.0	52.0
	Soybean	43.5	44.0	48.0	32.5	49.0	52.5	50.5	52.0	46.5	51.0	51.0	50.5
Production	Corn	1,728.0	1,664.4	1,931.6	1,868.3	2,244.4	2,162.5	2,050.1	2,376.9	2,188.8	2,420.6	2,153.3	2,356.4
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	9.1	13.3	10.8	10.1	9.9	8.4	4.8	4.9	6.2	4.3	3.3	4.4
	Wheat	1.0	0.8	1.3	1.3	0.8	1.2	1.3	1.7	1.0	0.5	0.7	1.0
	Soybean	464.6	480.5	499.2	342.9	497.4	525.0	510.1	448.8	449.7	486.0	496.2	466.1
Production Total		**2,202.7**	**2,159.0**	**2,442.8**	**2,222.6**	**2,752.4**	**2,697.0**	**2,566.3**	**2,832.2**	**2,645.6**	**2,911.4**	**2,653.5**	**2,827.9**
Total Supply	Corn	2,175.7	2,141.6	2,292.6	2,156.8	2,466.9	2,656.4	2,509.9	2,733.8	2,603.4	2,777.5	2,564.8	2,624.7
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.0
	Wheat	3.1	2.1	1.3	1.4	0.8	2.3	3.2	3.5	2.8	2.5	2.7	2.5
	Soybean	544.6	541.9	554.6	396.0	527.9	582.9	620.4	592.7	506.9	516.3	534.4	513.2
Total Supply Total		**2,734.5**	**2,705.1**	**2,865.2**	**2,573.5**	**3,013.7**	**3,256.8**	**3,146.0**	**3,341.2**	**3,127.5**	**3,301.5**	**3,111.9**	**3,156.5**
Exports	Corn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Processing	Corn	480.5	487.4	578.6	608.6	661.0	836.7	1,009.5	1,115.3	1,315.2	1,548.6	1,718.1	1,790.2
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	36.1	38.1	34.2	35.5	35.9	36.0	36.0	36.4	36.4	36.7	36.4	36.4
	Wheat	14.9	18.8	16.1	17.9	18.7	18.3	18.9	19.1	18.4	18.3	18.3	17.1
	Soybean	374.0	387.7	366.3	342.2	373.7	370.2	379.1	366.6	356.6	367.8	344.4	360.3
Processing Total		**905.5**	**932.0**	**995.2**	**1,004.1**	**1,089.3**	**1,261.1**	**1,443.5**	**1,537.5**	**1,726.7**	**1,971.4**	**2,117.2**	**2,204.1**
Ending Stocks	Corn	477.2	361.1	288.5	222.5	493.9	459.8	356.9	414.6	356.9	411.6	268.3	159.5
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.9	1.7	0.0	0.0
	Oats	8.2	9.3	10.8	8.7	9.1	9.8	6.6	9.7	11.1	2.5	7.3	8.5
	Wheat	1.6	2.1	1.8	0.2	0.1	2.2	2.1	1.9	1.9	1.5	1.8	2.3
	Soybean	61.4	55.4	53.1	30.6	57.9	110.3	144.0	57.2	30.3	38.1	47.1	60.3
Ending Stocks Total		**548.4**	**427.8**	**354.2**	**261.9**	**560.9**	**582.1**	**509.5**	**484.9**	**402.2**	**455.3**	**324.5**	**230.5**

Kansas Agricultural Production and Rural Infrastructure

Kansas Trends in Agricultural Production and Infrastructure

Highlights

- In 2010, purchased livestock and poultry expenses for Kansas were more than triple the expenses for any other single category at $3.4 billion and more than 27% of total farm production expenses.

- Road miles in Kansas have increased proportionately more than road miles in the U.S. since 1940, rising from 1.8% of U.S road miles in 1940 to 3.5% of U.S. road miles in 2008.

- While the value of agricultural production in Kansas increased by 1,174% from 1950 to 2007, the number of farms decreased by 51%.

Production Consumed on Farm

- Home consumption of a farm's production has changed dramatically. In 1950, the value of farm production consumed at home in Kansas was 3.34%.

- In contrast, in 2010 just 0.11% of the value of production in Kansas was consumed at home. This shift amounts to an even greater reliance by agricultural producers on rural infrastructure to transport farm products.

Rural Population Trends

- In 1930 there were 1,151,165 people living in Kansas, with 61.2% of that population in rural areas.

- By comparison, in 2010 there were 2,853,118 people living in Kansas, with 25.8% of that population in rural areas.

Did you know?

- In Kansas in 2007, there were an average of 196 soybean acres per soybean farm, while for the U.S. the average soybean area per soybean farm was 229 acres.

- Broilers are a major consumer of soybean meal. In 2007, there were 0.03 million broilers sold in Kansas and 8,915 million broilers sold in the U.S.

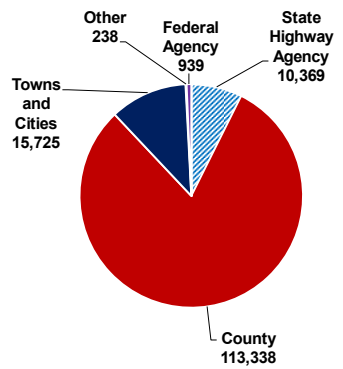
- Average farm size in the U.S. increased from 213 acres in 1950 to 418 acres in 2010, while average farm size in Kansas increased from 374 acres to 705 acres over the same period.

- In Kansas in 1945, there were 48,067 grain combines, while in 2007 there were 23,799 self-propelled grain and bean combines in the state.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1950	135,000	2.4%	2010	65,500	3.0%	-51.5%
Farmland Trends: Land in Farms (Acres)	1950	50,500,000	4.2%	2010	46,200,000	5.0%	-8.5%
Average Farm Size (Acres)	1950	374	176%	2010	705	169%	89%
Population Trends: Population Density (Pop. per Square Mile)	1930	23	66%	2010	35	40%	51.7%
Production Trends: Volume of Production (Million Bushels)	1940	253	5.3%	2011	938	5.3%	271%

Miles of Road by Owner for Kansas



Kansas Agriculture and Rural Infrastructure

Highlights

Roads	With 140,609 miles of road as of 2008, Kansas accounts for 3.5% of U.S. road miles.
Railroad	Kansas had 9,388 miles of railroad in 1920 (around the time of the peak rail mileage), but this mileage had fallen to 7,988 miles in 1965 and decreased even further to 4,890 freight railroad miles in 2009.
Waterways	Kansas has approximately 120 miles of inland waterways.
Bridges	Kansas has 25,233 bridges, and approximately 18.2 percent of those are considered structurally deficient or functionally obsolete.

Research, analysis and report funded by the soybean checkoff

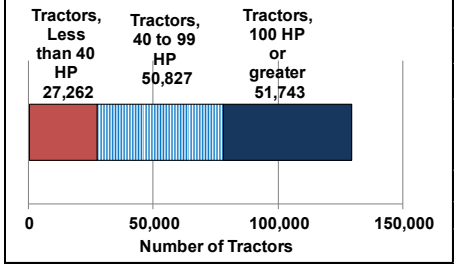
Kansas Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

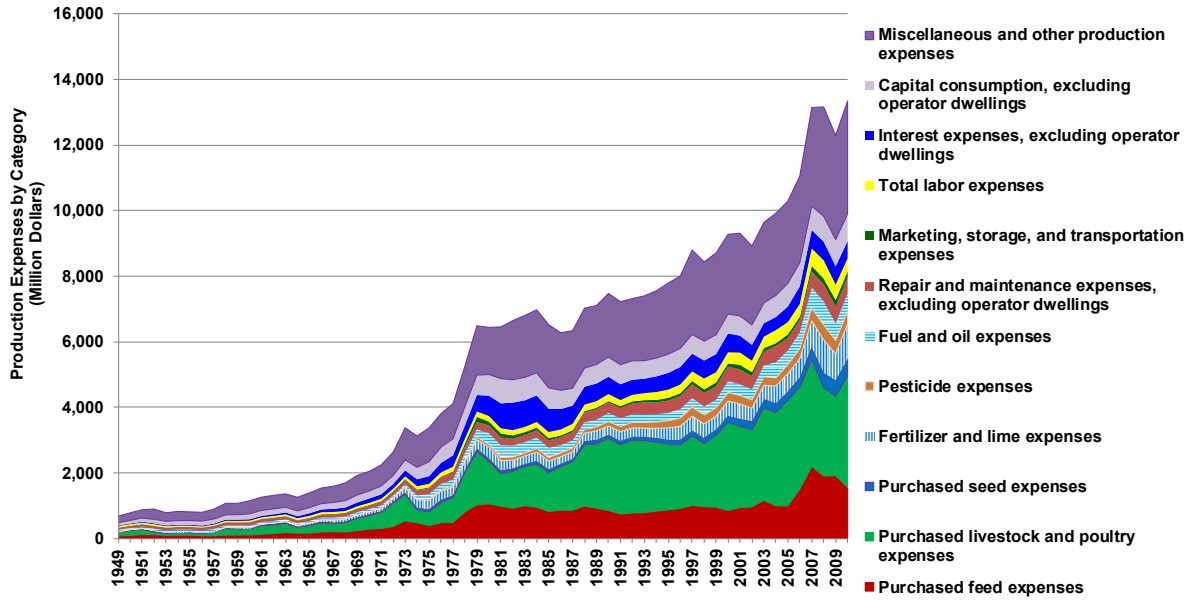
	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	29,601	44 acres	11,236	328 acres	-62%	644%
Soybeans	12,542	27 acres	13,232	196 acres	6%	625%
Wheat	84,865	113 acres	22,630	377 acres	-73%	235%
Cattle and Calves Inventory	103,103	42 head	30,017	222 head	-71%	428%
Hogs Sold	36,339	29 head	1,542	3,056 head	-96%	10,320%
Broilers Sold	110	7,650 head	158	171 head	44%	-98%
All Farms	120,167	416 acres	65,531	707 acres	-45%	70%

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007



Farm Input Trends: Kansas Farm Inputs by Type, 1949-2010



Research, analysis and report funded by the soybean checkoff
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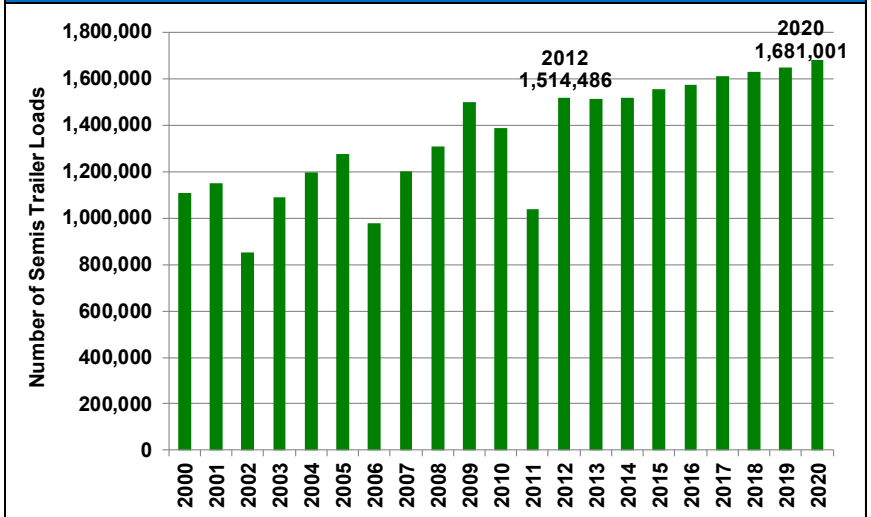
Kansas Agricultural Production and Rural Infrastructure

Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	1986	913	10.0%	2011	940	9.3%	3%
On Farm Storage (million bushels)	1986	474	3.4%	2011	380	3.0%	-20%
Estimated Average Tractor Weight (lbs.)	1950	5,870	108.9%	2011	11,642	116.8%	98%
Railroad Miles	1920	9,388	3.8%	2009 freight	4,890	3.5%	-48%
Road Miles	1940	9,863	1.8%	2008	140,609	3.5%	1,326%

Estimated Number of Semi Trailer Loads Required to Haul Kansas's Grain and Oilseed Production

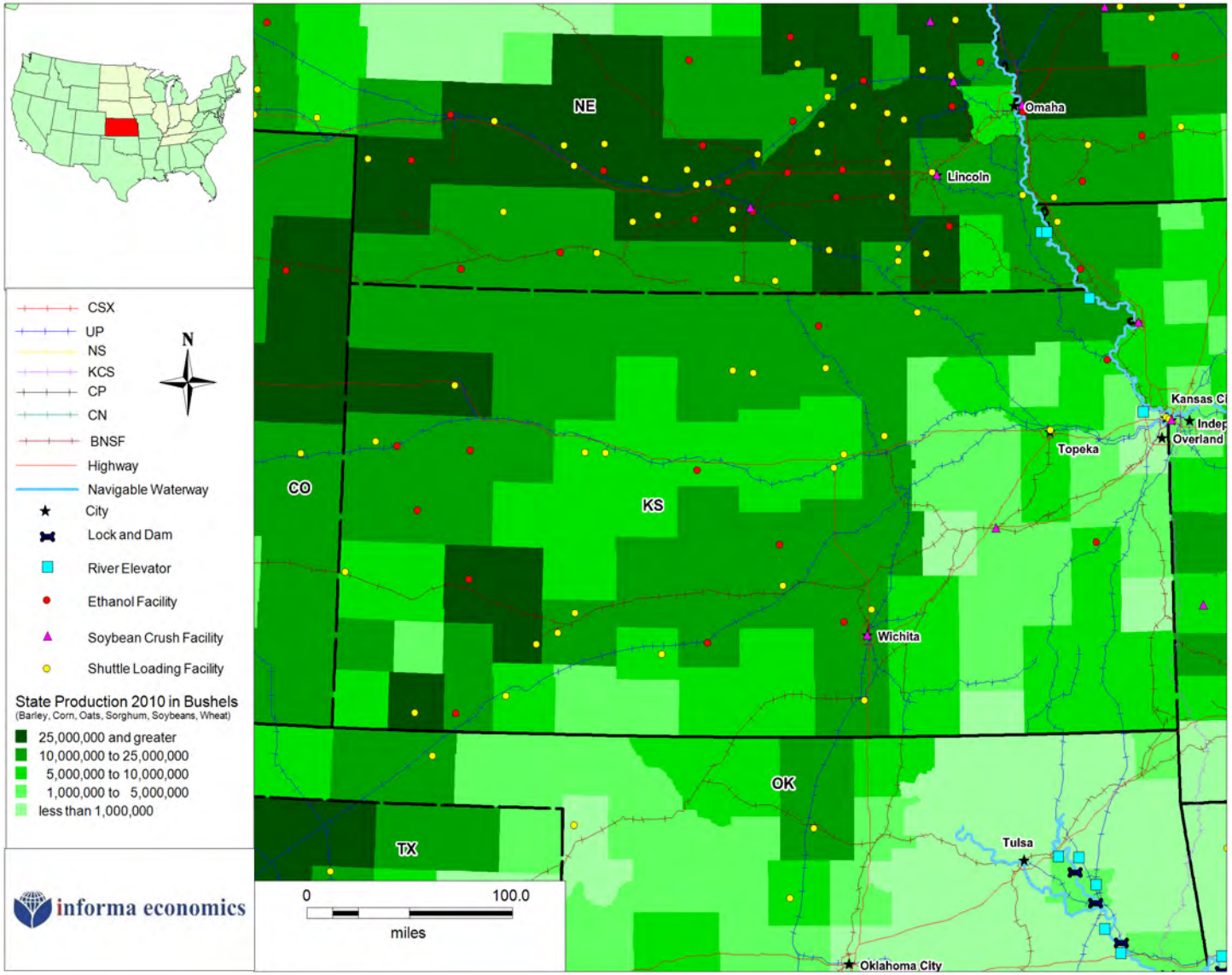
(Includes Corn, Soybeans, Wheat, Sorghum, Barley, and Oats)



Note: Assumes 26 tons of grain per semi trailer load. Estimated number of semi trailer loads if all production is initially hauled by semi trailer. Based on Informa crop production forecasts.

Research, analysis and report funded by the soybean checkoff
Informa Economics, Inc. for the Soy Transportation Coalition

Kansas: Agricultural Production and Infrastructure

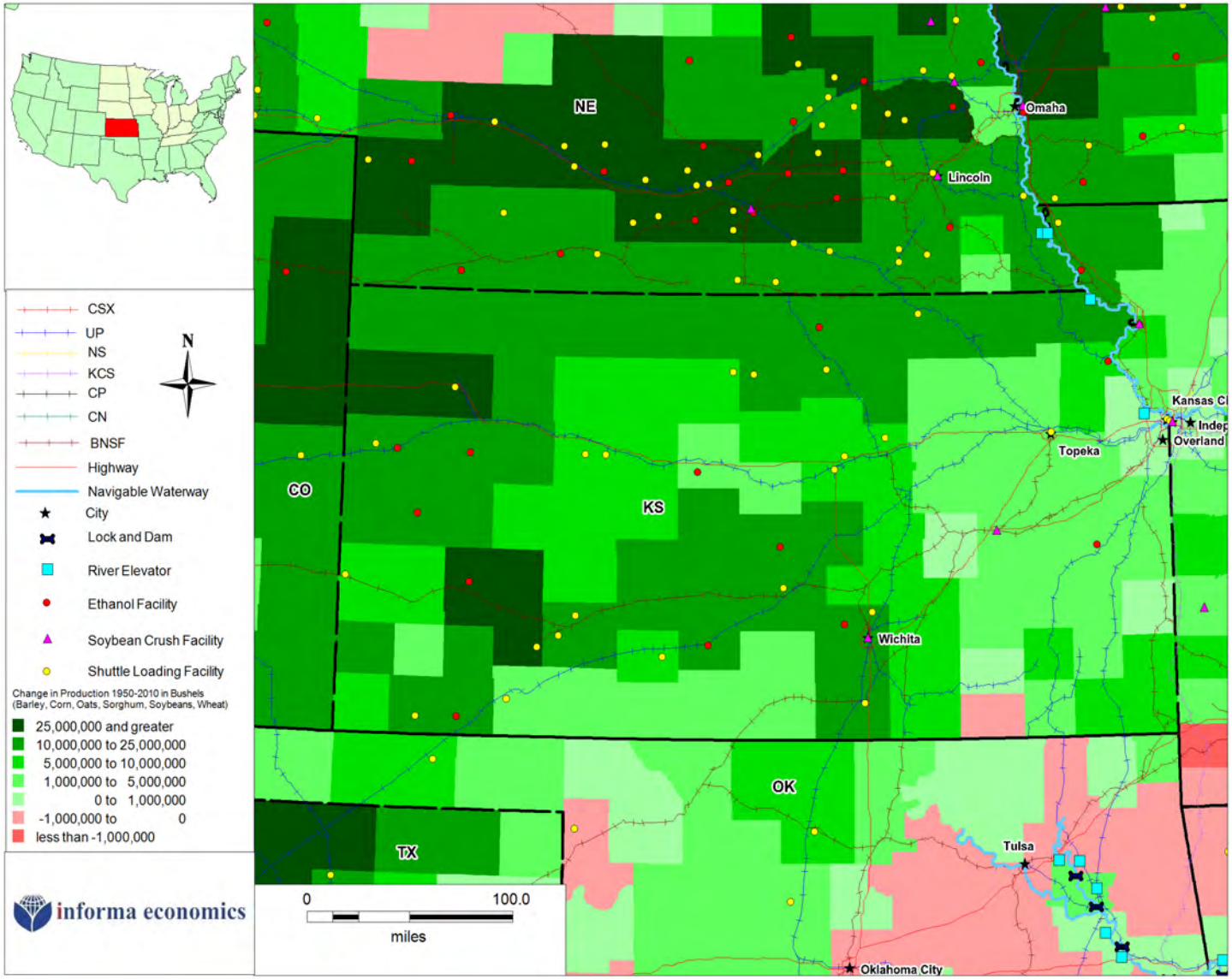


Infrastructure

- Kansas crop production consists primarily of corn, wheat, and sorghum.
- Crops are moved from production regions by truck, rail or barge to elevators and processing facilities.
- Kansas has 874 miles of interstate; 4,890 miles of rail lines; 120 miles of waterways; 25,233 bridges and 140,609 miles of roadways.
- Kansas has two soybean crush facilities; 31 shuttle facilities; 11 ethanol plants; 556 grain elevators; and two river elevators.

Research, analysis and report funded by the soybean checkoff

Kansas: Change in Production from 1950 to 2010



Production

- Crop production in most of the state of Kansas, has been increasing over the past six decades.
- Production of grains and soybeans has increased by nearly 960 million bushels from 1950 to 2010.
- Historically, Kansas has primarily produced wheat, sorghum and soybeans.
- Corn has edged out wheat as the primary crop in Kansas, while the state continues to produce sorghum, soybeans and small amounts of oats.

Research, analysis and report funded by the soybean checkoff

Kansas Grains and Soybeans Supply and Demand Balance, 2000-2011

		2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Beginning Stocks	Corn	53.0	48.7	52.3	41.5	27.0	73.7	77.5	56.6	59.4	78.3	70.7	51.8
	Sorghum	34.9	22.9	31.2	23.7	13.9	29.4	26.0	16.1	29.8	28.1	22.0	15.3
	Barley	0.1	0.3	0.1	0.2	0.2	0.3	0.3	0.3	0.1	0.2	0.1	0.1
	Oats	1.7	1.5	2.1	3.4	1.5	1.9	1.6	1.2	1.0	1.4	0.9	0.6
	Wheat	384.5	377.3	268.0	373.8	273.4	308.7	270.7	282.1	273.4	351.0	400.5	361.9
	Soybean	9.9	7.4	5.1	3.7	2.7	6.0	19.0	25.5	5.9	4.6	4.6	6.3
Beginning Stocks Total		**484.1**	**458.1**	**358.9**	**446.4**	**318.7**	**420.1**	**395.1**	**381.8**	**369.7**	**463.5**	**498.7**	**435.9**
Acres Planted	Corn	3.5	3.5	3.3	2.9	3.1	3.7	3.4	3.9	3.9	4.1	4.9	4.9
	Sorghum	3.5	4.0	3.8	3.6	3.2	2.8	2.8	2.8	2.9	2.7	2.4	2.6
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Wheat	9.8	9.7	10.5	10.0	10.0	9.8	10.4	9.6	9.3	8.4	8.8	9.5
	Soybean	3.0	2.9	2.8	2.6	2.8	2.9	3.2	2.7	3.3	3.7	4.3	4.0
Acres Planted Total		**19.8**	**20.1**	**20.4**	**19.2**	**19.2**	**19.2**	**19.8**	**19.0**	**19.4**	**19.0**	**20.4**	**21.1**
Acres Harvested	Corn	3.2	3.1	2.6	2.5	2.9	3.5	3.0	3.7	3.6	3.9	4.7	4.2
	Sorghum	3.2	3.8	3.0	2.9	2.9	2.6	2.5	2.7	2.8	2.6	2.3	2.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Wheat	8.2	8.2	10.0	8.5	9.5	9.1	8.6	8.9	8.8	8.0	7.9	9.0
	Soybean	2.5	2.7	2.5	2.5	2.7	2.9	3.1	2.6	3.3	3.7	4.3	3.8
Acres Harvested Total		**17.1**	**17.8**	**18.2**	**16.4**	**18.0**	**18.1**	**17.2**	**17.9**	**18.5**	**18.1**	**19.1**	**19.0**
Yield	Corn	130.0	127.0	116.0	120.0	150.0	135.0	115.0	138.0	134.0	155.0	125.0	107.0
	Sorghum	59.0	62.0	45.0	45.0	76.0	75.0	58.0	79.0	78.0	88.0	76.0	55.0
	Barley	50.0	37.0	57.0	28.0	42.0	27.0	52.0	37.0	51.0	43.0	29.0	46.0
	Oats	53.0	52.0	65.0	43.0	59.0	46.0	45.0	53.0	53.0	50.0	38.0	55.0
	Wheat	40.0	33.0	48.0	37.0	40.0	32.0	33.0	40.0	42.0	45.0	35.0	42.0
	Soybean	20.0	32.0	23.0	23.0	41.0	37.0	32.0	33.0	37.0	44.0	32.5	27.0
Production	Corn	412.1	387.4	301.6	300.0	432.0	465.8	345.0	507.8	486.4	598.3	581.3	449.4
	Sorghum	188.8	232.5	135.0	130.5	220.4	195.0	145.0	209.4	214.5	224.4	171.0	110.0
	Barley	0.4	0.3	0.5	0.3	0.6	0.5	0.7	0.4	0.5	0.3	0.2	0.4
	Oats	2.1	3.1	4.6	1.7	2.4	1.8	1.6	1.3	1.9	1.3	1.0	2.8
	Wheat	328.0	270.6	480.0	314.5	380.0	291.2	283.8	356.0	369.6	360.0	276.5	378.0
	Soybean	50.0	87.4	58.4	57.0	111.1	105.5	98.6	86.1	120.3	160.6	138.1	101.3
Production Total		**981.4**	**981.2**	**980.0**	**804.1**	**1,146.5**	**1,059.7**	**874.6**	**1,161.0**	**1,193.1**	**1,344.9**	**1,168.0**	**1,041.8**
Total Supply	Corn	465.1	436.1	353.9	341.5	459.0	539.5	422.5	564.5	545.9	676.6	651.9	501.2
	Sorghum	223.7	255.4	166.2	154.2	234.3	224.4	171.0	225.5	244.3	252.5	193.0	125.3
	Barley	0.4	0.3	0.5	0.4	0.6	0.6	0.7	0.4	0.5	0.3	0.2	0.5
	Oats	2.8	3.7	5.3	2.9	3.0	2.7	2.2	1.9	2.3	1.7	1.3	3.5
	Wheat	484.2	392.2	533.6	391.1	437.0	363.3	337.8	396.4	450.8	518.7	456.6	515.0
	Soybean	59.9	94.8	63.5	60.8	113.8	111.5	117.6	111.6	126.1	165.2	142.7	107.5
Total Supply Total		**1,236.1**	**1,182.5**	**1,122.9**	**950.9**	**1,247.8**	**1,242.0**	**1,051.7**	**1,300.3**	**1,369.9**	**1,615.1**	**1,445.7**	**1,253.0**
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Processing	Corn	32.7	33.4	34.8	36.9	51.9	68.3	86.8	148.7	159.4	171.6	169.4	169.5
	Sorghum	14.1	10.4	9.0	12.7	26.7	24.8	23.6	14.8	43.1	52.7	42.1	46.2
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	1.8	1.9	2.3	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5
	Wheat	89.0	84.0	79.7	91.2	90.0	90.6	93.5	93.9	91.0	90.4	90.3	84.4
	Soybean	73.2	75.8	71.7	66.9	73.1	72.4	74.2	71.7	59.8	60.9	57.0	59.6
Processing Total		**210.7**	**205.6**	**197.5**	**210.2**	**244.1**	**258.5**	**280.5**	**331.6**	**355.8**	**378.1**	**361.3**	**362.2**
Ending Stocks	Corn	48.7	52.3	41.5	27.0	73.7	77.5	56.6	59.4	78.3	70.7	51.8	30.6
	Sorghum	22.9	31.2	23.7	13.9	29.4	26.0	16.1	29.8	28.1	22.0	15.3	12.9
	Barley	0.3	0.1	0.2	0.2	0.3	0.3	0.3	0.1	0.2	0.1	0.1	0.3
	Oats	1.5	2.1	3.4	1.5	1.9	1.6	1.2	1.0	1.4	0.9	0.6	1.5
	Wheat	377.3	268.0	373.8	273.4	308.7	270.7	282.1	273.4	351.0	400.5	361.9	391.8
	Soybean	7.4	5.1	3.7	2.7	6.0	19.0	25.5	5.9	4.6	4.6	6.3	9.7
Ending Stocks Total		**458.1**	**358.9**	**446.4**	**318.7**	**420.1**	**395.1**	**381.8**	**369.7**	**463.5**	**498.7**	**435.9**	**446.8**

Kentucky Agricultural Production and Rural Infrastructure

Kentucky Trends in Agricultural Production and Infrastructure

Highlights

- While the number of farms producing many crops and types of livestock have decreased since 1954 in Kentucky, the number of soybean farms has remained virtually unchanged and the number of farms selling broilers has increased by more than 80% in addition to the increases in average farm size.
- Inland waterways are plentiful in Kentucky with its access to the Ohio, Tennessee, Green, and Cumberland Rivers. However, grain movements are much smaller than shipments of coal and aggregates (i.e. limestone, sand, and gravel).
- While the value of agricultural production in Kentucky increased by 713% from 1950 to 2007, the number of farms decreased by 63%.

Production Consumed on Farm

- Home consumption of a farm's production has changed dramatically. In 1950, the value of farm production consumed at home in Kentucky was 14.32%.
- In contrast, in 2010 just 0.36% of the value of production in Kentucky was consumed at home. This shift amounts to an even greater reliance by agricultural producers on rural infrastructure to transport farm products.

Rural Population Trends

- In 1930 there were 1,815,563 people living in Kentucky, with 69.4% of that population in rural areas.
- By comparison, in 2010 there were 4,339,367 people living in Kentucky, with 41.6% of that population in rural areas.

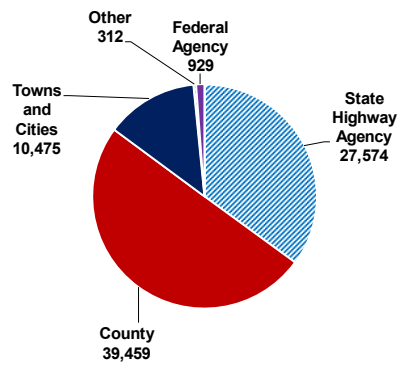
Did you know?

- In Kentucky in 2007, there were an average of 263 soybean acres per soybean farm, while for the U.S. the average soybean area per soybean farm was 229 acres.
- Broilers are a major consumer of soybean meal. In 2007, there were 309.77 million broilers sold in Kentucky and 8,915 million broilers sold in the U.S.
- Average farm size in the U.S. increased from 213 acres in 1950 to 418 acres in 2010, while average farm size in Kentucky increased from 86 acres to 163 acres over the same period.
- In Kentucky in 1945, there were 2,422 grain combines, while in 2007 there were 4,724 self-propelled grain and bean combines in the state.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1950	230,000	4.1%	2010	85,700	3.9%	-62.7%
Farmland Trends: Land in Farms (Acres)	1950	19,800,000	1.6%	2010	14,000,000	1.5%	-29.3%
Average Farm Size (Acres)	1950	86	40%	2010	163	39%	90%
Population Trends: Population Density (Pop. per Square Mile)	1930	66	190%	2010	110	125%	66.0%
Production Trends: Volume of Production (Million Bushels)	1940	70	1.5%	2011	269	1.5%	283%

Miles of Road by Owner for Kentucky



Kentucky Agriculture and Rural Infrastructure

Highlights

Roads	With 78,749 miles of road as of 2008, Kentucky accounts for 1.9% of U.S. road miles.
Railroad	Kentucky had 3,929 miles of railroad in 1920 (around the time of the peak rail mileage), but this mileage had fallen to 3,534 miles in 1965 and decreased even further to 2,558 freight railroad miles in 2009.
Waterways	Kentucky has approximately 1,590 miles of inland waterways.
Bridges	Kentucky has 13,948 bridges, and approximately 30.5 percent of those are considered structurally deficient or functionally obsolete.

Research, analysis and report funded by the soybean checkoff

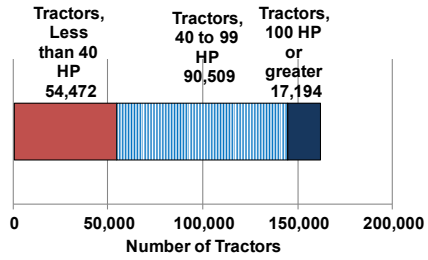
Kentucky Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

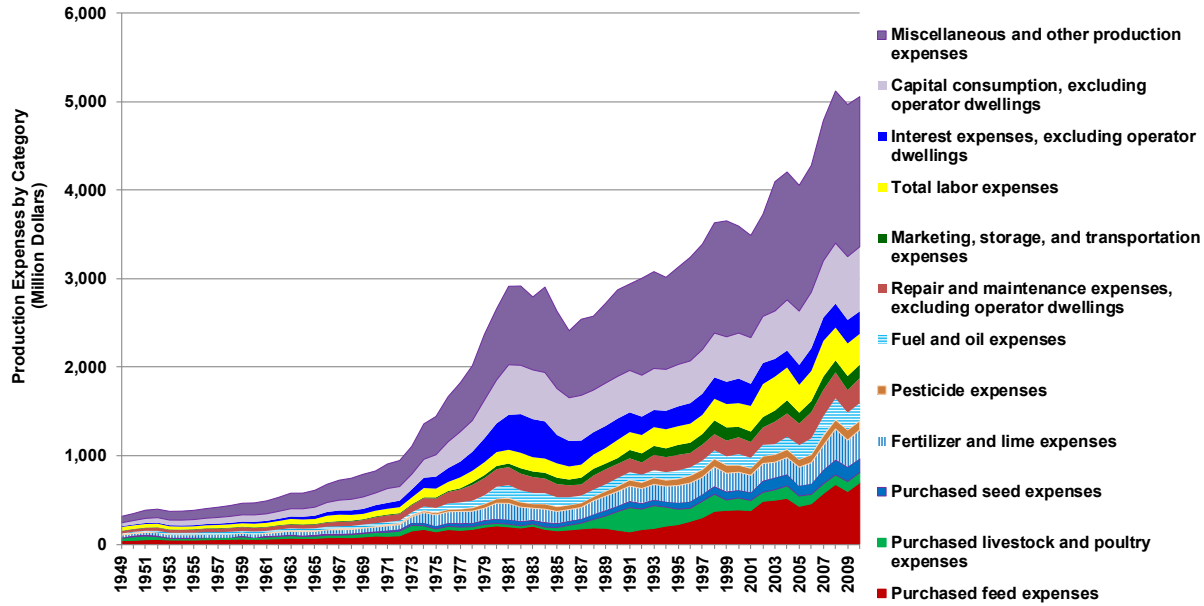
	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	133,432	14 acres	7,060	186 acres	-95%	1,235%
Soybeans	4,151	30 acres	4,129	263 acres	-1%	775%
Wheat	16,660	13 acres	1,414	169 acres	-92%	1,225%
Cattle and Calves Inventory	154,252	11 head	43,681	55 head	-72%	397%
Hogs Sold	52,098	20 head	1,210	663 head	-98%	3,301%
Broilers Sold	353	16,482 head	647	478,778 head	83%	2,805%
All Farms	193,487	93 acres	85,260	164 acres	-56%	76%

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007



Farm Input Trends: Kentucky Farm Inputs by Type, 1949-2010



Research, analysis and report funded by the soybean checkoff
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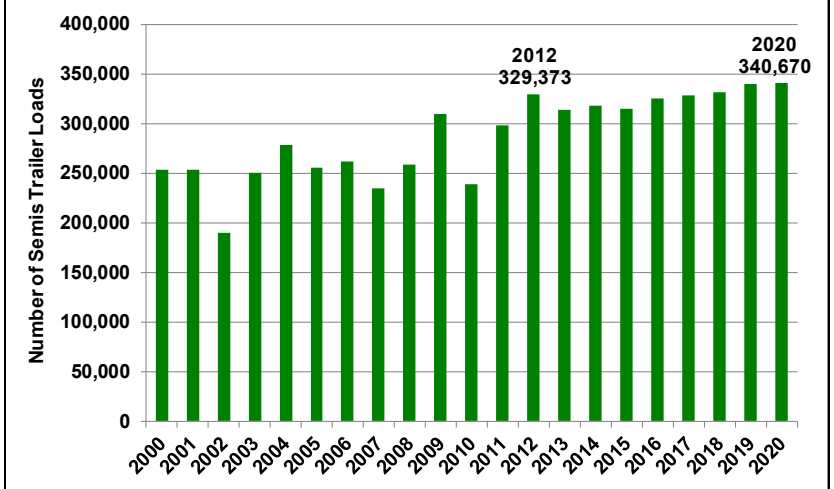
Kentucky Agricultural Production and Rural Infrastructure

Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	1986	69	0.8%	2011	70	0.7%	2%
On Farm Storage (million bushels)	1986	215	1.6%	2011	195	1.5%	-9%
Estimated Average Tractor Weight (lbs.)	1950	5,012	93.0%	2011	8,443	84.7%	68%
Railroad Miles	1920	3,929	1.6%	2009 freight	2,558	1.8%	-35%
Road Miles	1940	9,853	1.8%	2008	78,749	1.9%	699%

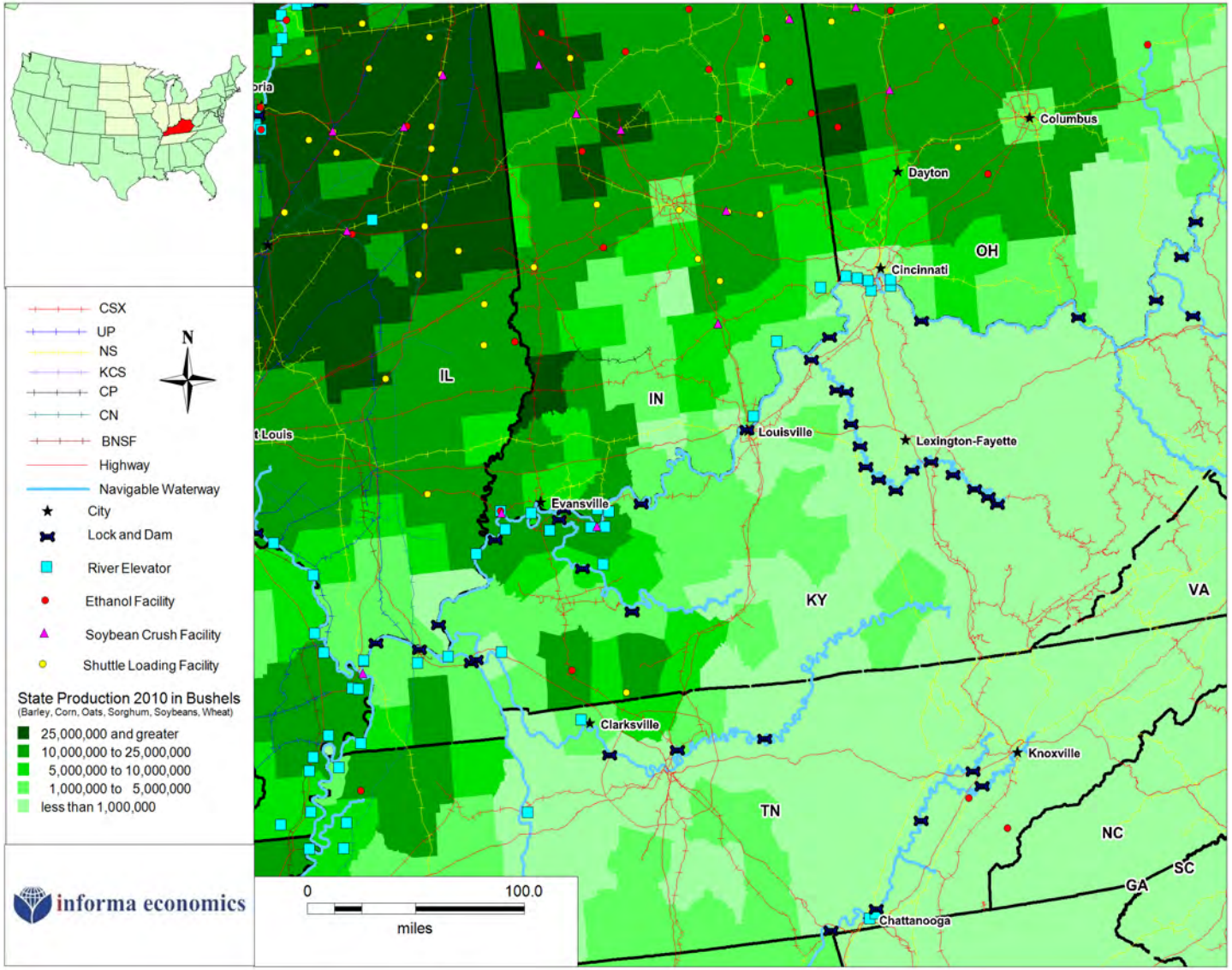
Estimated Number of Semi Trailer Loads Required to Haul Kentucky's Grain and Oilseed Production
(Includes Corn, Soybeans, Wheat, Sorghum, Barley, and Oats)



Note: Assumes 26 tons of grain per semi trailer load. Estimated number of semi trailer loads if all production is initially hauled by semi trailer. Based on Informa crop production forecasts.

Research, analysis and report funded by the soybean checkoff

Kentucky: Agricultural Production and Infrastructure

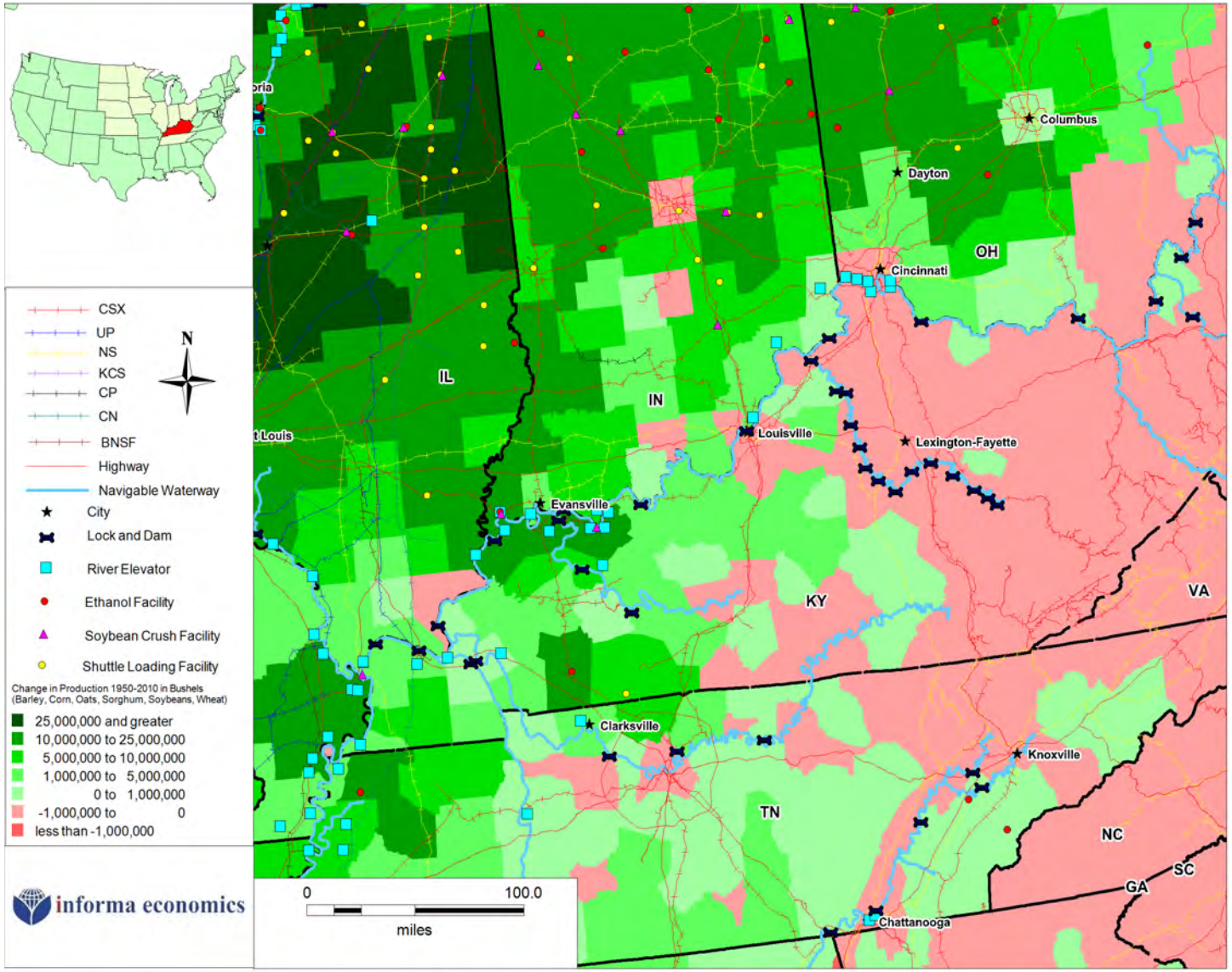


Infrastructure

- Kentucky crop production consists primarily of corn, soybeans, and wheat.
- Crops are moved from production regions by truck, rail or barge to elevators and processing facilities.
- Kentucky has 782 miles of interstate; 2,558 miles of rail lines; 1,590 miles of waterways; 13,948 bridges and 78,749 miles of roadways.
- Kentucky has one soybean crush facility; one shuttle facility; two ethanol plants; 62 grain elevators; and 14 river elevators.

Research, analysis and report funded by the soybean checkoff

Kentucky: Change in Production from 1950 to 2010



Production

- Crop production in much of the state has been decreasing, while the remainder of the state has been growing.
- Production of grains and soybeans has provided a net increase of 134 million bushels from 1950 to 2010.
- Historically, Kentucky produced primarily corn.
- In recent years, the state has diversified further into corn soybeans and wheat.

Research, analysis and report funded by the soybean checkoff
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Kentucky Grains and Soybeans Supply and Demand Balance, 2000-2011

		2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Beginning Stocks	Corn	9.4	10.1	11.2	6.3	8.1	13.5	7.5	8.1	7.4	10.9	10.6	5.2
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.2	0.2	0.1	0.2	0.2	0.3	0.5	0.0	0.2	0.2	0.1	0.0
	Oats	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0
	Wheat	15.7	14.0	10.5	11.6	13.0	15.1	16.1	8.6	18.9	20.6	17.2	23.4
	Soybean	2.1	3.3	2.6	0.4	0.3	1.2	2.4	2.4	0.2	0.5	0.4	0.3
Beginning Stocks Total		**27.5**	**27.9**	**24.5**	**18.7**	**21.7**	**30.3**	**26.6**	**19.2**	**26.7**	**32.3**	**28.4**	**28.9**
Acres Planted	Corn	1.3	1.2	1.2	1.2	1.2	1.3	1.1	1.4	1.2	1.2	1.3	1.4
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.6	0.5	0.4	0.5	0.6
	Soybean	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.1	1.4	1.4	1.4	1.5
Acres Planted Total		**3.1**	**3.0**	**3.0**	**3.0**	**2.9**	**3.0**	**3.0**	**3.2**	**3.1**	**3.0**	**3.3**	**3.5**
Acres Harvested	Corn	1.2	1.1	1.1	1.1	1.1	1.2	1.0	1.3	1.1	1.2	1.2	1.3
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.4	0.3	0.4	0.4	0.3	0.3	0.3	0.5	0.4	0.3	0.4	0.4
	Soybean	1.2	1.2	1.3	1.2	1.3	1.2	1.4	1.1	1.4	1.4	1.4	1.5
Acres Harvested Total		**2.8**	**2.7**	**2.7**	**2.7**	**2.8**	**2.8**	**2.7**	**2.9**	**2.9**	**2.8**	**3.1**	**3.2**
Yield	Corn	130.0	142.0	104.0	137.0	152.0	132.0	146.0	128.0	136.0	165.0	124.0	139.0
	Sorghum	85.0	85.0	75.0	95.0	80.0	90.0	85.0	90.0	90.0	0.0	0.0	0.0
	Barley	85.0	65.0	75.0	77.0	83.0	88.0	37.0	88.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	66.0	52.0	62.0	54.0	68.0	71.0	48.0	71.0	57.0	66.0	70.0	66.0
	Soybean	39.0	40.0	33.0	43.5	44.0	43.0	44.0	27.5	34.5	48.0	34.0	39.0
Production	Corn	159.9	156.2	111.3	148.0	173.3	155.8	151.8	171.5	152.3	189.8	152.5	180.7
	Sorghum	0.8	0.9	0.8	3.0	1.0	2.2	1.4	1.1	1.0	0.0	0.0	0.0
	Barley	0.7	0.5	0.6	0.6	0.7	1.2	0.1	0.6	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	23.8	17.2	21.7	20.5	20.4	22.7	12.0	32.7	22.2	16.5	30.8	29.0
	Soybean	45.2	48.8	42.6	53.9	57.2	53.3	60.3	30.3	47.6	68.2	47.3	57.7
Production Total		**230.3**	**223.5**	**176.9**	**226.1**	**252.7**	**235.2**	**225.6**	**236.1**	**223.2**	**274.4**	**230.6**	**267.5**
Total Supply	Corn	169.3	166.3	122.5	154.3	181.3	169.3	159.3	179.6	159.7	200.7	163.2	185.9
	Sorghum	0.8	0.9	0.8	3.0	1.1	2.2	1.4	1.1	1.0	0.0	0.0	0.0
	Barley	0.7	0.5	0.6	0.6	0.8	1.3	0.2	0.6	0.0	0.0	0.0	0.0
	Oats	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
	Wheat	27.9	19.9	24.1	23.2	26.1	26.4	14.5	32.8	31.3	25.8	37.3	39.2
	Soybean	47.4	52.1	45.2	54.4	57.5	54.5	62.7	32.6	47.8	68.7	47.7	58.0
Total Supply Total		**246.2**	**239.6**	**193.2**	**235.7**	**266.8**	**253.8**	**238.2**	**246.7**	**239.9**	**295.2**	**248.1**	**283.2**
Exports	Corn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Processing	Corn	5.7	5.8	5.7	12.8	17.0	18.0	18.9	18.6	18.1	19.0	18.9	17.0
	Sorghum	0.1	0.0	0.1	0.3	0.1	0.3	0.2	0.1	0.2	0.2	0.2	0.2
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	7.5	7.7	8.0	8.4	8.5	8.6	8.8	8.9	8.6	8.5	8.5	8.0
	Soybean	47.5	49.3	46.5	43.5	47.5	47.0	50.3	49.7	41.4	42.2	39.5	41.3
Processing Total		**60.8**	**62.8**	**60.3**	**64.9**	**73.1**	**74.0**	**78.1**	**77.2**	**68.3**	**69.9**	**67.1**	**66.5**
Ending Stocks	Corn	10.1	11.2	6.3	8.1	13.5	7.5	8.1	7.4	10.9	10.6	5.2	2.9
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.2	0.1	0.2	0.2	0.3	0.5	0.0	0.2	0.2	0.1	0.0	0.3
	Oats	0.3	0.1	0.2	0.1	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0
	Wheat	14.0	10.5	11.6	13.0	15.1	16.1	8.6	18.9	20.6	17.2	23.4	13.6
	Soybean	3.3	2.6	0.4	0.3	1.2	2.4	2.4	0.2	0.5	0.4	0.3	1.3
Ending Stocks Total		**27.9**	**24.5**	**18.7**	**21.7**	**30.3**	**26.6**	**19.2**	**26.7**	**32.3**	**28.4**	**28.9**	**18.0**

Minnesota Agricultural Production and Rural Infrastructure

Minnesota Trends in Agricultural Production and Infrastructure

Highlights

- In many states the percentage of the state population designated by the U.S. Census Bureau as living in rural areas has declined, but in contrast in Minnesota, the absolute number of residents in rural areas has increased in recent decades.

- Minnesota's production of crops has nearly quadrupled since 1940, increasing from 407 million bushels in 1940 to 1,551 million bushels in 2011.

- While the value of agricultural production in Minnesota increased by 1,202% from 1950 to 2007, the number of farms decreased by 56%.

Production Consumed on Farm

- Home consumption of a farm's production has changed dramatically. In 1950, the value of farm production consumed at home in Minnesota was 4.66%.

- In contrast, in 2010 just 0.11% of the value of production in Minnesota was consumed at home. This shift amounts to an even greater reliance by agricultural producers on rural infrastructure to transport farm products.

Rural Population Trends

- In 1930 there were 1,306,337 people living in Minnesota, with 51.0% of that population in rural areas.

- By comparison, in 2010 there were 5,303,925 people living in Minnesota, with 26.7% of that population in rural areas.

Did you know?

- In Minnesota in 2007, there were an average of 232 soybean acres per soybean farm, while for the U.S. the average soybean area per soybean farm was 229 acres.

- Broilers are a major consumer of soybean meal. In 2007, there were 47.95 million broilers sold in Minnesota and 8,915 million broilers sold in the U.S.

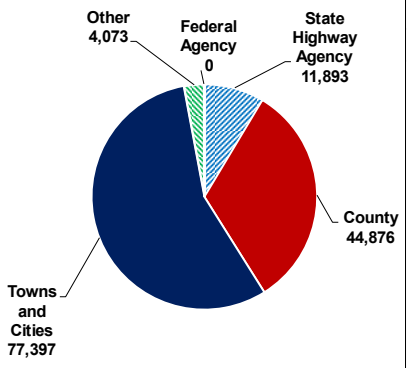
- Average farm size in the U.S. increased from 213 acres in 1950 to 418 acres in 2010, while average farm size in Minnesota increased from 181 acres to 332 acres over the same period.

- In Minnesota in 1945, there were 16,021 grain combines, while in 2007 there were 29,232 self-propelled grain and bean combines in the state.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1950	184,000	3.3%	2010	81,000	3.7%	-56.0%
Farmland Trends: Land in Farms (Acres)	1950	33,300,000	2.8%	2010	26,900,000	2.9%	-19.2%
Average Farm Size (Acres)	1950	181	85%	2010	332	79%	84%
Population Trends: Population Density (Pop. per Square Mile)	1930	32	92%	2010	67	76%	106.9%
Production Trends: Volume of Production (Million Bushels)	1940	407	8.6%	2011	1,551	8.7%	281%

Miles of Road by Owner for Minnesota



Minnesota Agriculture and Rural Infrastructure

Highlights

Roads	With 138,239 miles of road as of 2008, Minnesota accounts for 3.4% of U.S. road miles.
Railroad	Minnesota had 9,114 miles of railroad in 1920 (around the time of the peak rail mileage), but this mileage had fallen to 8,001 miles in 1965 and decreased even further to 4,528 freight railroad miles in 2009.
Waterways	Minnesota has approximately 260 miles of inland waterways.
Bridges	Minnesota has 13,117 bridges, and approximately 11.1 percent of those are considered structurally deficient or functionally obsolete.

Research, analysis and report funded by the soybean checkoff
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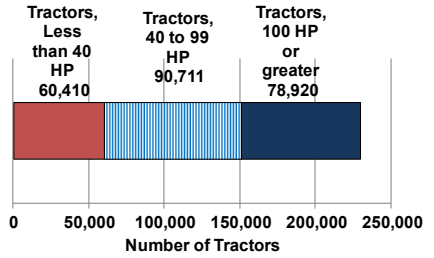
Minnesota Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

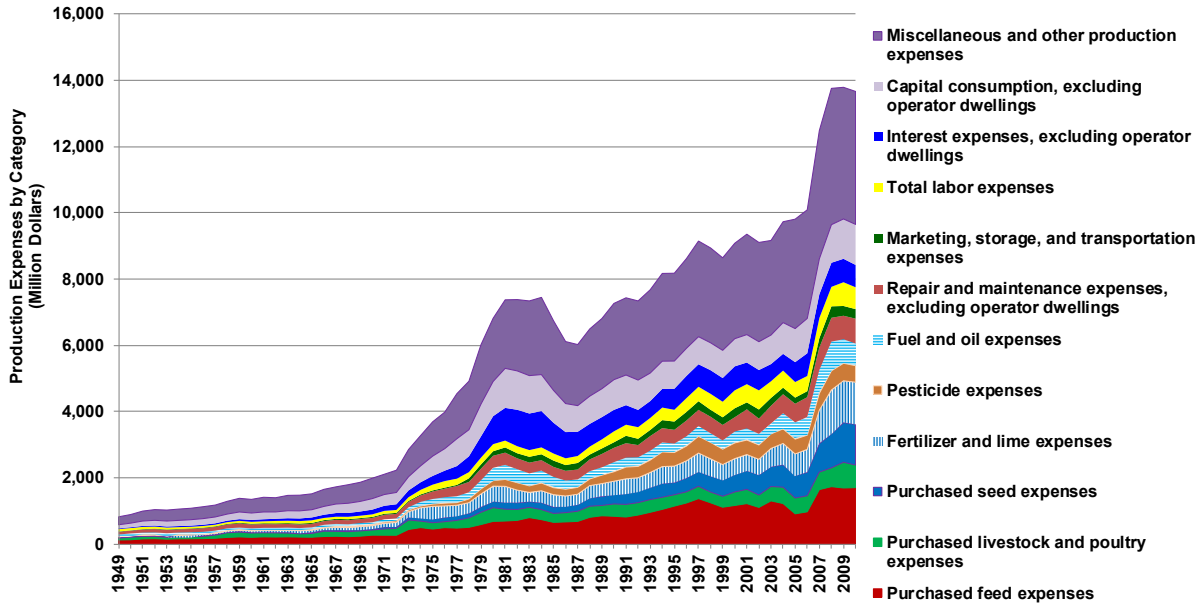
	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	114,592	40 acres	30,976	252 acres	-73%	527%
Soybeans	55,697	34 acres	27,040	232 acres	-51%	577%
Wheat	21,408	33 acres	6,727	255 acres	-69%	679%
Cattle and Calves Inventory	139,586	26 head	24,685	97 head	-82%	268%
Hogs Sold	89,301	50 head	4,748	4,805 head	-95%	9,556%
Broilers Sold	240	10,429 head	940	51,009 head	292%	389%
All Farms	165,225	195 acres	80,992	332 acres	-51%	70%

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007



Farm Input Trends: Minnesota Farm Inputs by Type, 1949-2010



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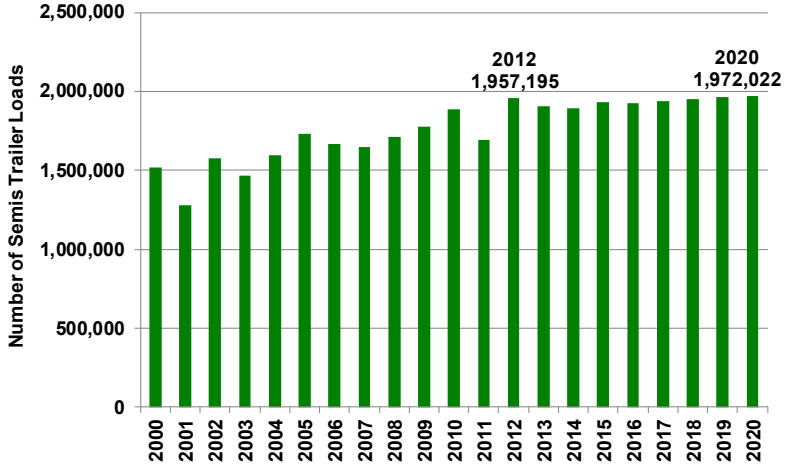
Minnesota Agricultural Production and Rural Infrastructure

Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	1986	555	6.1%	2011	660	6.5%	19%
On Farm Storage (million bushels)	1986	1,460	10.6%	2011	1,450	11.4%	-1%
Estimated Average Tractor Weight (lbs.)	1950	5,628	104.4%	2011	10,906	109.4%	94%
Railroad Miles	1920	9,114	3.7%	2009 freight	4,528	3.2%	-50%
Road Miles	1940	11,306	2.0%	2008	138,239	3.4%	1,123%

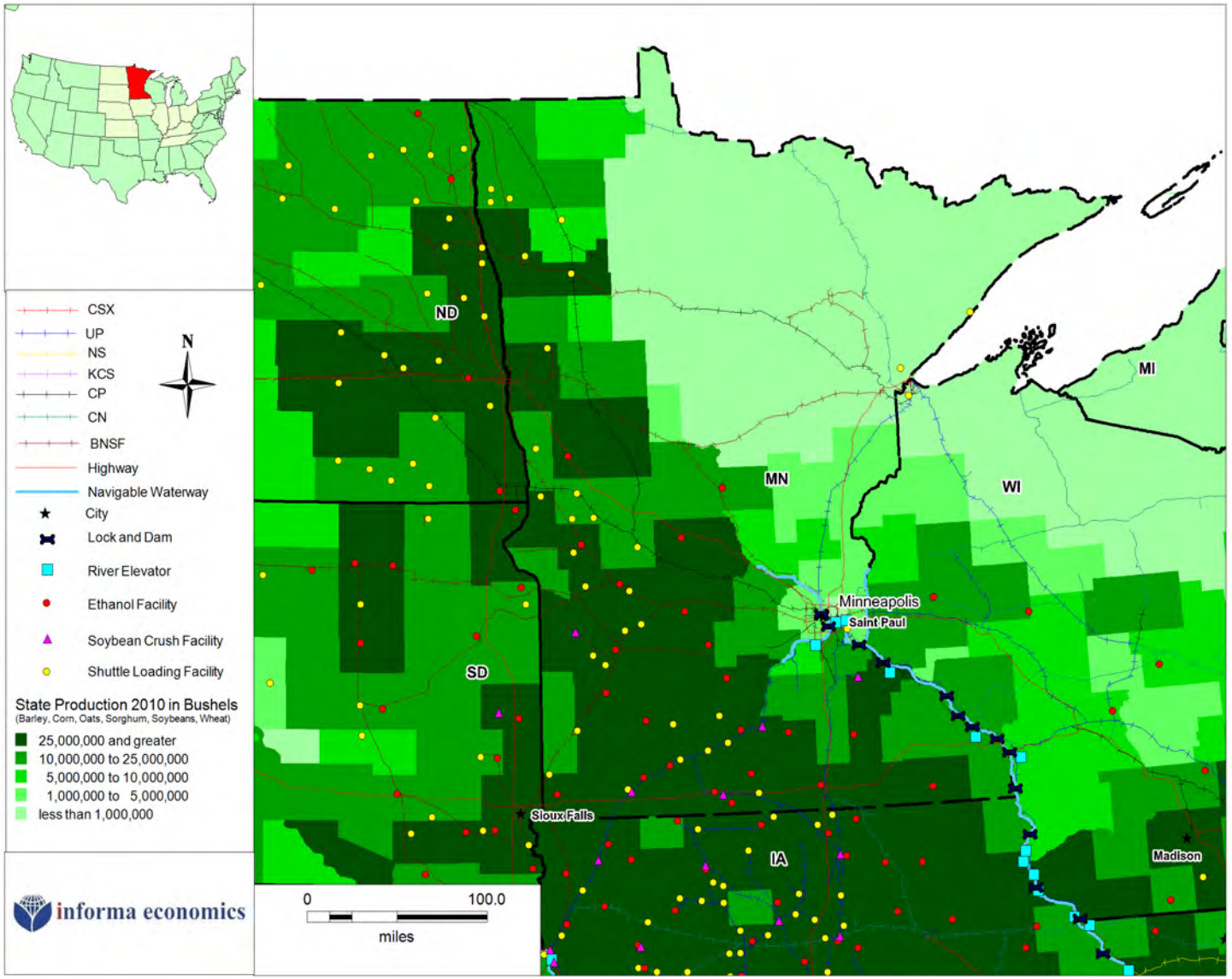
Estimated Number of Semi Trailer Loads Required to Haul Minnesota's Grain and Oilseed Production
(Includes Corn, Soybeans, Wheat, Sorghum, Barley, and Oats)



Note: Assumes 26 tons of grain per semi trailer load. Estimated number of semi trailer loads if all production is initially hauled by semi trailer. Based on Informa crop production forecasts.

Research, analysis and report funded by the soybean checkoff
Informa Economics, Inc. for the Soy Transportation Coalition

Minnesota: Agricultural Production and Infrastructure

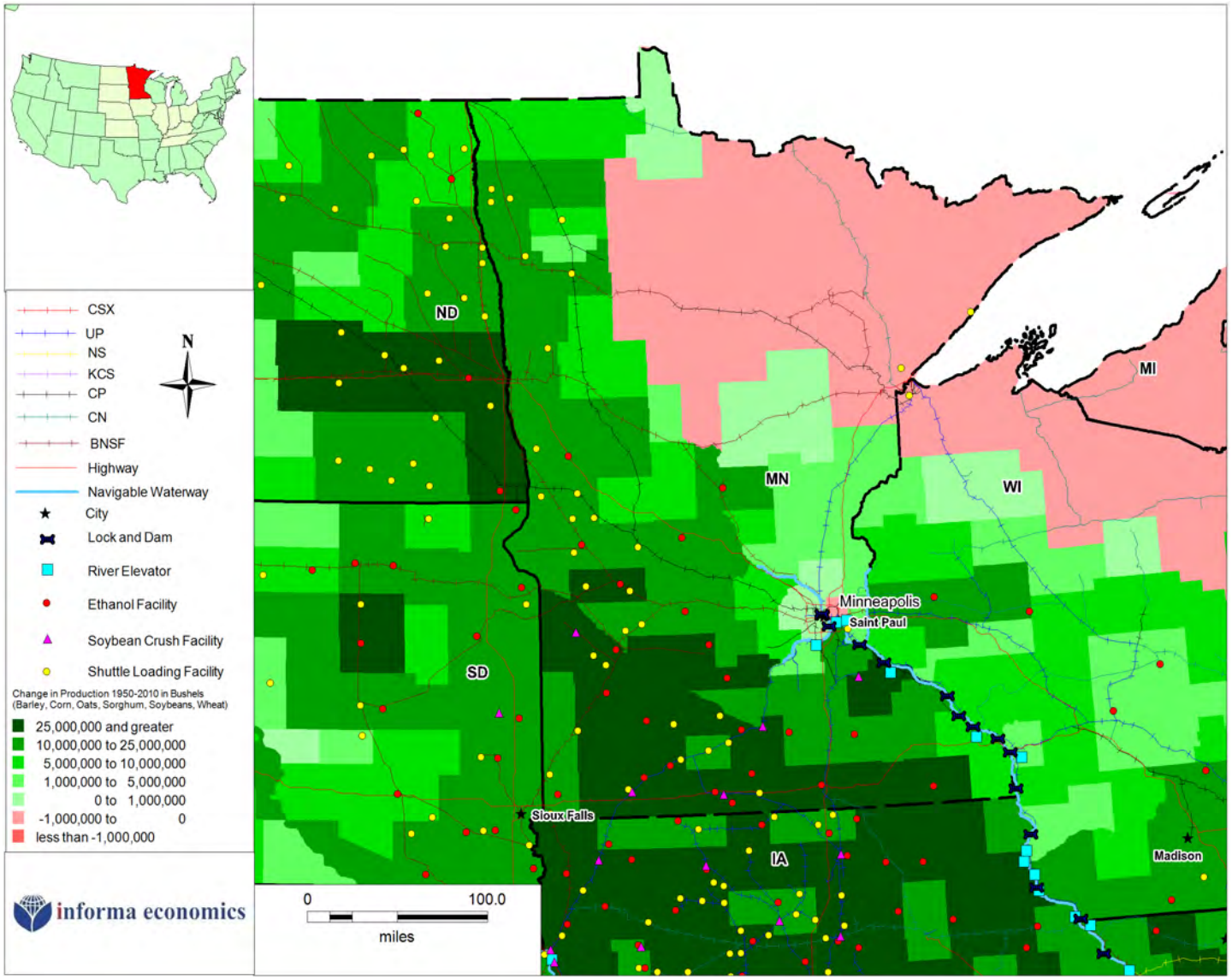


Infrastructure

- Minnesota crop production consists primarily of corn, soybeans, and wheat.
- Crops are moved from production regions by truck, rail or barge to elevators and processing facilities.
- Minnesota has 953 miles of interstate; 4,528 miles of rail lines; 260 miles of waterways; 13,117 bridges and 138,239 miles of roadways.
- Minnesota has six soybean crush facilities; 40 shuttle facilities; 21 ethanol plants; 408 grain elevators; and nine river elevators.

Research, analysis and report funded by the soybean checkoff

Minnesota: Change in Production from 1950 to 2010



Production

- Crop production in much of the state has been increasing, while production in the north central and northeastern portion of the state has been decreasing.
- Production of grains and soybeans has increased by nearly 1.2 billion bushels from 1950 to 2010.
- Historically, Minnesota has produced predominantly corn and oats along with a mix of other grains and soybeans.
- Corn production in Minnesota has increased to over one billion bushels, while soybeans have edged past oat production. The state also produces barley and wheat.

Research, analysis and report funded by the soybean checkoff
Informa Economics, Inc. for the Soy Transportation Coalition

Minnesota Grains and Soybeans Supply and Demand Balance, 2000-2011

		2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Beginning Stocks	Corn	251.8	284.2	167.5	123.1	120.5	269.2	275.3	133.2	157.4	172.2	197.4	148.3
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	37.6	28.4	18.5	21.6	29.0	23.5	17.1	11.3	18.1	15.3	13.5	9.8
	Oats	29.8	20.7	20.4	26.0	21.9	18.2	20.7	17.8	37.0	44.6	40.2	28.8
	Wheat	122.3	109.1	88.5	130.1	110.3	78.2	88.6	77.3	97.1	102.1	107.5	69.9
	Soybean	40.6	34.9	27.7	19.6	12.8	29.3	64.5	68.9	21.1	14.2	14.9	25.2
Beginning Stocks Total		**482.1**	**477.3**	**322.6**	**320.4**	**294.5**	**418.5**	**466.2**	**308.5**	**330.7**	**348.4**	**373.5**	**282.0**
Acres Planted	Corn	7.2	6.8	7.2	7.2	7.5	7.3	7.3	8.4	7.7	7.6	7.7	8.1
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Oats	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2
	Wheat	1.9	2.0	1.9	1.7	1.8	1.8	1.8	1.9	1.7	1.7	1.6	1.5
	Soybean	7.3	7.3	7.2	7.5	7.3	6.9	7.4	6.4	7.1	7.2	7.4	7.1
Acres Planted Total		**16.8**	**16.8**	**16.8**	**16.9**	**17.1**	**16.3**	**16.8**	**17.1**	**16.8**	**16.8**	**16.9**	**17.0**
Acres Harvested	Corn	6.7	6.2	6.7	6.7	7.1	6.9	6.9	7.9	7.2	7.2	7.3	7.7
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Oats	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
	Wheat	1.8	1.8	1.8	1.6	1.7	1.7	1.7	1.9	1.6	1.6	1.5	1.4
	Soybean	7.2	7.2	7.1	7.5	7.1	6.8	7.3	6.3	7.0	7.1	7.3	7.0
Acres Harvested Total		**16.0**	**15.6**	**16.1**	**16.0**	**16.1**	**15.6**	**16.1**	**16.3**	**16.0**	**16.1**	**16.3**	**16.4**
Yield	Corn	145.0	130.0	157.0	146.0	159.0	174.0	161.0	146.0	164.0	174.0	177.0	156.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	55.0	41.0	75.0	68.0	43.0	60.0	54.0	65.0	61.0	62.0	51.0	62.0
	Oats	60.0	56.0	71.0	70.0	62.0	56.0	60.0	68.0	71.0	69.0	54.0	68.0
	Wheat	43.9	34.0	57.8	54.8	41.0	47.4	47.9	55.9	52.8	54.7	46.2	53.0
	Soybean	41.0	37.0	43.5	32.0	33.0	45.5	44.5	42.5	38.0	40.0	45.0	38.5
Production	Corn	964.3	806.0	1,051.9	970.9	1,121.0	1,191.9	1,102.9	1,146.1	1,180.8	1,244.1	1,292.1	1,201.2
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	8.0	6.2	12.8	7.8	3.9	5.4	5.9	7.2	4.9	4.3	3.1	6.0
	Oats	12.6	14.8	18.8	13.3	12.7	11.2	10.8	11.9	12.1	11.4	5.9	9.2
	Wheat	79.7	62.4	105.5	89.6	71.5	80.3	81.9	104.4	84.2	88.1	70.5	74.5
	Soybean	293.2	266.4	308.9	238.4	232.7	309.4	322.6	267.3	264.9	284.8	329.0	270.3
Production Total		**1,357.6**	**1,155.8**	**1,497.8**	**1,320.0**	**1,441.7**	**1,598.2**	**1,524.1**	**1,536.9**	**1,546.8**	**1,632.7**	**1,700.5**	**1,561.2**
Total Supply	Corn	1,216.0	1,090.2	1,219.4	1,094.0	1,241.5	1,461.1	1,378.1	1,279.3	1,338.2	1,416.3	1,489.5	1,349.5
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	33.7	22.3	26.9	37.8	23.6	20.1	14.8	22.5	17.5	15.8	10.4	12.7
	Oats	29.8	30.4	32.1	26.4	25.0	24.1	25.4	37.4	51.3	49.2	37.0	26.6
	Wheat	116.3	92.7	134.8	123.1	98.7	103.9	98.1	115.3	112.9	137.5	99.8	96.7
	Soybean	333.7	301.3	336.6	258.0	245.4	338.7	387.1	336.2	286.0	299.0	343.8	295.5
Total Supply Total		**1,729.6**	**1,536.9**	**1,749.7**	**1,539.2**	**1,634.3**	**1,947.9**	**1,903.6**	**1,790.7**	**1,805.8**	**1,917.9**	**1,980.6**	**1,781.0**
Exports	Corn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	4.7	1.4	0.5	0.3	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports Total		**4.7**	**1.4**	**0.7**	**0.3**	**0.0**	**1.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Processing	Corn	111.3	128.7	161.7	182.2	202.0	212.6	225.6	274.7	315.3	417.5	423.4	429.1
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	36.3	35.4	35.3	35.9	36.5	36.5	38.1	38.0	38.6	37.2	36.2	36.6
	Oats	9.6	10.1	12.2	12.7	12.8	12.8	12.9	13.0	13.0	13.1	13.0	13.0
	Wheat	70.2	66.2	60.9	71.2	70.0	70.1	72.7	73.0	70.6	70.2	70.1	65.5
	Soybean	103.5	107.3	124.2	156.8	174.6	182.1	191.5	185.2	154.4	160.3	150.4	157.4
Processing Total		**331.0**	**347.7**	**394.2**	**458.7**	**495.9**	**514.2**	**540.7**	**583.8**	**592.0**	**698.4**	**693.2**	**701.6**
Ending Stocks	Corn	284.2	167.5	123.1	120.5	269.2	275.3	133.2	157.4	172.2	197.4	148.3	76.9
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	28.4	18.5	21.6	29.0	23.5	17.1	11.3	18.1	15.3	13.5	9.8	14.6
	Oats	20.7	20.4	26.0	21.9	18.2	20.7	17.8	37.0	44.6	40.2	28.8	22.3
	Wheat	109.1	88.5	130.1	110.3	78.2	88.6	77.3	97.1	102.1	107.5	69.9	82.8
	Soybean	34.9	27.7	19.6	12.8	29.3	64.5	68.9	21.1	14.2	14.9	25.2	23.1
Ending Stocks Total		**477.3**	**322.6**	**320.4**	**294.5**	**418.5**	**466.2**	**308.5**	**330.7**	**348.4**	**373.5**	**282.0**	**219.7**

Nebraska Agricultural Production and Rural Infrastructure

Nebraska Trends in Agricultural Production and Infrastructure

Highlights

- In 1954, the average corn farm, soybean farm, and wheat farm all grew less than 100 acres of those respective crops, while in 2007 the average for farms with production of these crops was over 200 acres for soybeans and wheat and over 400 acres for corn for grain.
- Although purchased feed expenses in Nebraska were considerably higher from 2005 to 2010 compared to previous periods, in 2010 purchased feed expenses were 12% of total expenses and a smaller percentage of total expenses than they were in 1949 at 16%.
- While the value of agricultural production in Nebraska increased by 1,378% from 1950 to 2007, the number of farms decreased by 57%.

Production Consumed on Farm

- Home consumption of a farm's production has changed dramatically. In 1950, the value of farm production consumed at home in Nebraska was 2.98%.
- In contrast, in 2010 just 0.06% of the value of production in Nebraska was consumed at home. This shift amounts to an even greater reliance by agricultural producers on rural infrastructure to transport farm products.

Rural Population Trends

- In 1930 there were 891,856 people living in Nebraska, with 64.7% of that population in rural areas.
- By comparison, in 2010 there were 1,826,341 people living in Nebraska, with 26.9% of that population in rural areas.

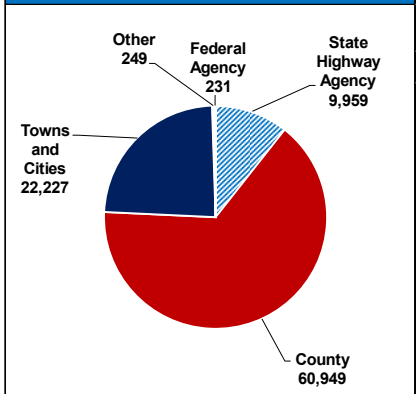
Did you know?

- In Nebraska in 2007, there were an average of 231 soybean acres per soybean farm, while for the U.S. the average soybean area per soybean farm was 229 acres.
- Broilers are a major consumer of soybean meal. In 2007, there were 4.89 million broilers sold in Nebraska and 8,915 million broilers sold in the U.S.
- Average farm size in the U.S. increased from 213 acres in 1950 to 418 acres in 2010, while average farm size in Nebraska increased from 444 acres to 966 acres over the same period.
- In Nebraska in 1945, there were 20,591 grain combines, while in 2007 there were 19,500 self-propelled grain and bean combines in the state.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1950	109,000	1.9%	2010	47,200	2.1%	-56.7%
Farmland Trends: Land in Farms (Acres)	1950	48,400,000	4.0%	2010	45,600,000	5.0%	-5.8%
Average Farm Size (Acres)	1950	444	209%	2010	966	231%	118%
Population Trends: Population Density (Pop. per Square Mile)	1930	18	51%	2010	24	27%	32.5%
Production Trends: Volume of Production (Million Bushels)	1940	192	4.1%	2011	1,868	10.5%	870%

Miles of Road by Owner for Nebraska



Nebraska Agriculture and Rural Infrastructure

Highlights

Roads	With 93,615 miles of road as of 2008, Nebraska accounts for 2.3% of U.S. road miles.
Railroad	Nebraska had 6,166 miles of railroad in 1920 (around the time of the peak rail mileage), but this mileage had fallen to 5,553 miles in 1965 and decreased even further to 3,215 freight railroad miles in 2009.
Waterways	Nebraska has approximately 320 miles of inland waterways.
Bridges	Nebraska has 15,395 bridges, and approximately 24.2 percent of those are considered structurally deficient or functionally obsolete.

Research, analysis and report funded by the soybean checkoff
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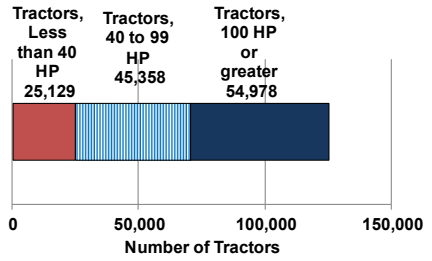
Nebraska Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

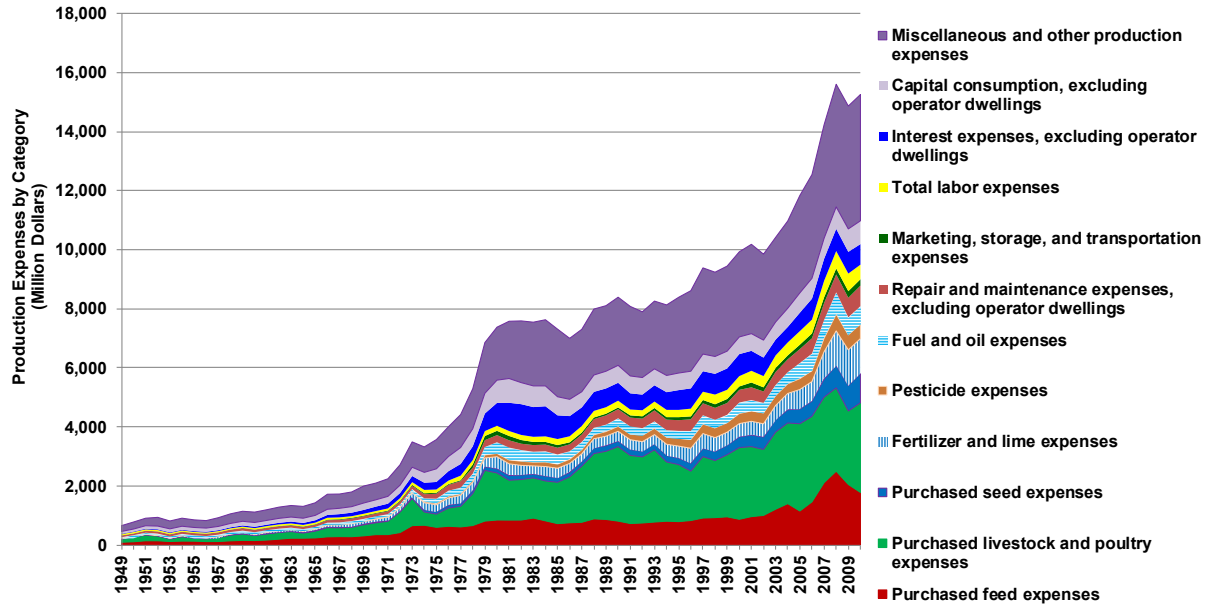
	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	81,863	78 acres	22,812	403 acres	-72%	418%
Soybeans	7,758	23 acres	16,620	231 acres	114%	899%
Wheat	46,186	64 acres	8,037	244 acres	-83%	283%
Cattle and Calves Inventory	90,060	54 head	21,424	307 head	-76%	467%
Hogs Sold	58,302	51 head	2,482	4,384 head	-96%	8,574%
Broilers Sold	137	15,875 head	206	23,757 head	50%	50%
All Farms	100,845	487 acres	47,712	953 acres	-53%	96%

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007



Farm Input Trends: Nebraska Farm Inputs by Type, 1949-2010



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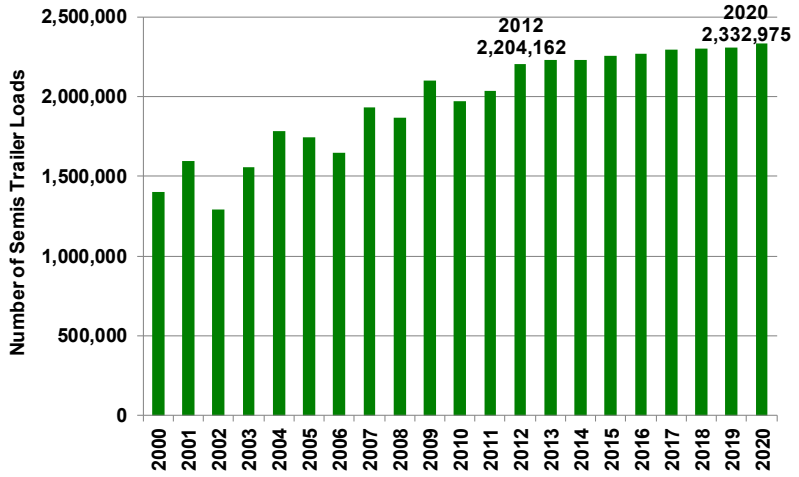
Nebraska Agricultural Production and Rural Infrastructure

Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	1986	813	8.9%	2011	860	8.5%	6%
On Farm Storage (million bushels)	1986	1,288	9.3%	2011	1,110	8.7%	-14%
Estimated Average Tractor Weight (lbs.)	1950	5,966	110.7%	2011	12,042	120.8%	102%
Railroad Miles	1920	6,166	2.5%	2009 freight	3,215	2.3%	-48%
Road Miles	1940	9,056	1.6%	2008	93,615	2.3%	934%

Estimated Number of Semi Trailer Loads Required to Haul Nebraska's Grain and Oilseed Production
(Includes Corn, Soybeans, Wheat, Sorghum, Barley, and Oats)



Note: Assumes 26 tons of grain per semi trailer load. Estimated number of semi trailer loads if all production is initially hauled by semi trailer. Based on Informa crop production forecasts.

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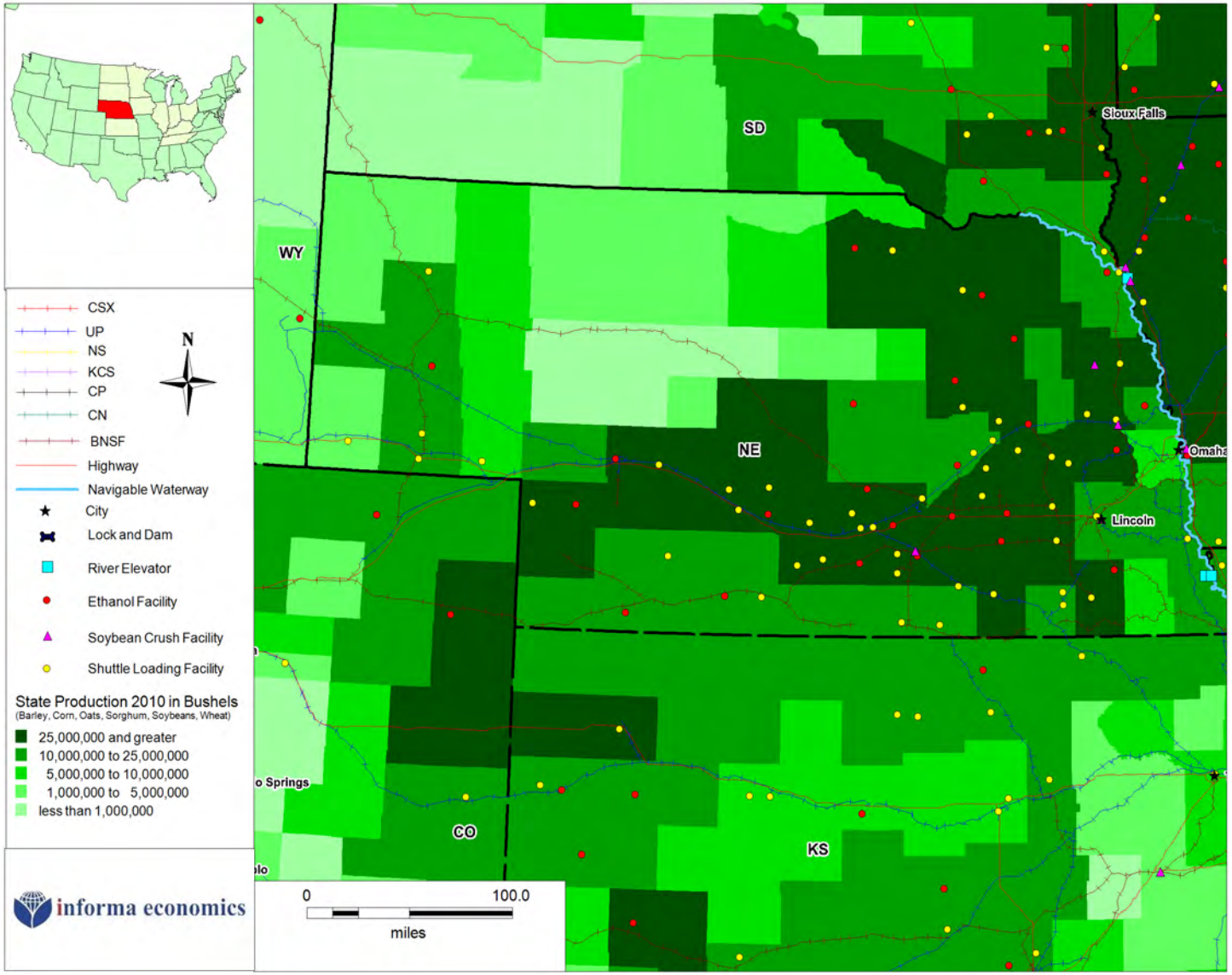
Nebraska: Agricultural Production and Infrastructure

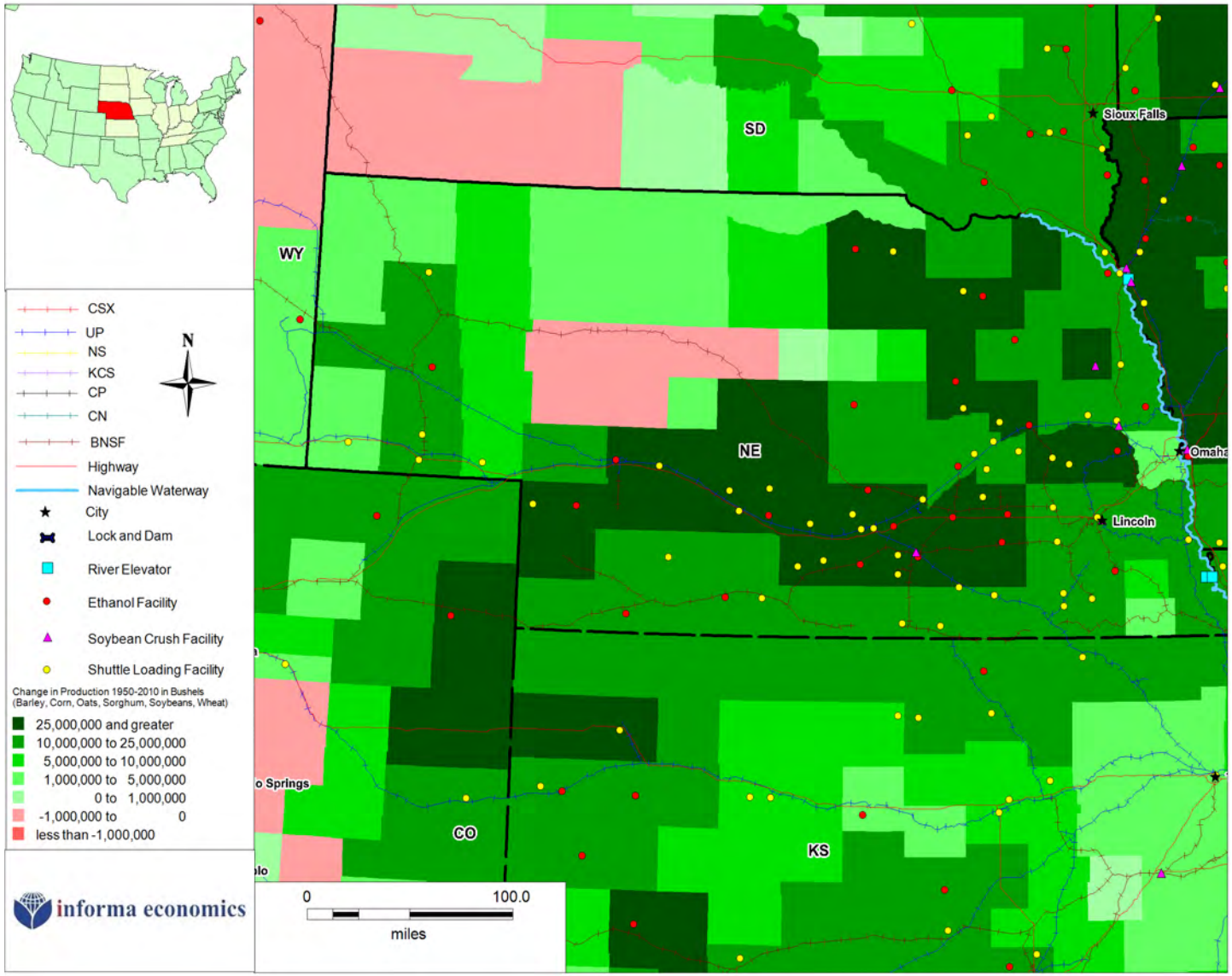


Infrastructure

- Nebraska crop production consists primarily of corn, soybeans, and wheat.
- Crops are moved from production regions by truck, rail and/or some barge to elevators and processing facilities.
- Nebraska has 482 miles of interstate; 3,215 miles of rail lines; 320 miles of waterways; 15,395 bridges and 93,615 miles of roadways.
- Nebraska has four soybean crush facilities; 64 shuttle facilities; 27 ethanol plants; 414 grain elevators; and two river elevators.

Research, analysis and report funded by the soybean checkoff

Nebraska: Change in Production from 1950 to 2010



Production

- Crop production in the state has been increasing in the majority of the state, with exception to a few counties in the central west.
- Production of grains and soybeans has increased by nearly 1.6 billion bushels from 1950 to 2010.
- Historically, Nebraska has produced predominantly corn and sorghum.
- Corn production in Nebraska has increased to nearly 1.5 billion bushels, while soybean production totals nearly 267 million bushels. The state produces sorghum and oats.

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Nebraska Grains and Soybeans Supply and Demand Balance, 2000-2011

		2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Beginning Stocks	Corn	230.1	256.3	231.3	154.2	114.6	280.3	239.2	154.5	166.5	196.5	211.2	119.2
	Sorghum	13.2	7.9	11.3	5.9	5.5	7.1	3.3	3.1	7.2	3.2	2.8	1.8
	Barley	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.7	0.6	0.7	0.0
	Oats	1.8	2.0	1.6	4.5	1.8	1.7	2.7	1.0	1.0	1.4	0.8	1.1
	Wheat	88.6	82.5	71.2	86.6	65.6	66.5	54.5	67.7	58.9	80.2	96.3	78.3
	Soybean	22.3	16.0	13.2	11.9	6.5	15.8	35.3	59.2	14.9	8.2	9.2	15.4
Beginning Stocks Total		**356.0**	**364.7**	**328.6**	**263.3**	**194.1**	**371.4**	**335.1**	**285.6**	**249.2**	**290.1**	**321.0**	**215.7**
Acres Planted	Corn	8.5	8.1	8.4	8.1	8.3	8.5	8.1	9.4	8.8	9.2	9.2	9.9
	Sorghum	0.6	0.6	0.5	0.7	0.6	0.3	0.4	0.4	0.3	0.2	0.2	0.2
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
	Wheat	1.8	1.7	1.9	1.9	1.9	1.8	2.1	1.8	1.7	1.6	1.5	1.4
	Soybean	4.7	5.0	4.7	4.6	4.8	4.7	5.1	3.9	4.9	4.8	5.2	4.9
Acres Planted Total		**15.7**	**15.4**	**15.7**	**15.3**	**15.6**	**15.5**	**15.7**	**15.5**	**15.8**	**15.9**	**16.0**	**16.3**
Acres Harvested	Corn	8.1	7.8	7.4	7.7	8.0	8.3	7.8	9.2	8.6	8.9	8.9	9.6
	Sorghum	0.5	0.4	0.3	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	1.6	1.5	1.8	1.7	1.8	1.7	2.0	1.7	1.6	1.5	1.5	1.3
	Soybean	4.6	4.9	4.6	4.5	4.8	4.7	5.0	3.9	4.9	4.8	5.1	4.8
Acres Harvested Total		**14.8**	**14.7**	**14.2**	**14.4**	**14.9**	**14.9**	**15.0**	**15.0**	**15.3**	**15.3**	**15.5**	**15.8**
Yield	Corn	126.0	147.0	128.0	146.0	166.0	154.0	152.0	160.0	163.0	178.0	166.0	160.0
	Sorghum	70.0	84.0	50.0	62.0	78.0	87.0	78.0	94.0	91.0	93.0	90.0	94.0
	Barley	45.0	32.0	50.0	54.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	61.0	43.0	73.0	68.0	73.0	45.0	61.0	70.0	69.0	68.0	65.0	68.0
	Wheat	37.0	33.0	46.0	37.0	39.0	36.0	43.0	44.0	48.0	43.0	45.0	47.0
	Soybean	38.0	45.5	38.5	40.5	46.0	50.5	50.0	51.0	46.5	54.5	52.5	53.5
Production	Corn	1,014.3	1,139.3	940.8	1,124.2	1,319.7	1,270.5	1,178.0	1,472.0	1,393.7	1,575.3	1,469.1	1,536.0
	Sorghum	35.0	35.7	16.0	31.0	32.4	21.8	18.7	22.6	19.1	13.0	6.8	6.6
	Barley	0.2	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	3.7	2.4	6.6	3.4	4.4	2.0	2.1	2.5	2.1	1.7	1.3	1.7
	Wheat	59.2	50.2	83.7	61.1	68.6	61.2	84.3	73.5	76.8	64.1	65.3	58.8
	Soybean	173.9	223.0	176.3	182.3	218.5	235.3	250.5	196.4	226.0	259.4	267.8	258.4
Production Total		**1,286.2**	**1,450.6**	**1,223.6**	**1,402.1**	**1,643.6**	**1,590.8**	**1,533.6**	**1,766.8**	**1,717.6**	**1,913.5**	**1,810.2**	**1,861.4**
Total Supply	Corn	1,244.4	1,395.5	1,172.1	1,278.4	1,434.3	1,550.8	1,417.2	1,626.5	1,560.2	1,771.8	1,680.3	1,655.2
	Sorghum	48.2	43.6	27.3	36.9	37.9	28.8	22.0	25.7	26.3	16.2	9.5	8.3
	Barley	0.2	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0
	Oats	4.2	2.9	7.0	4.5	4.9	2.8	2.5	2.7	2.4	2.0	1.5	2.2
	Wheat	96.8	83.3	100.5	80.4	84.7	77.7	97.8	83.4	93.9	100.7	100.5	81.5
	Soybean	196.2	238.9	189.6	194.2	225.0	251.1	285.8	255.5	240.9	267.6	276.9	273.8
Total Supply Total		**1,590.0**	**1,764.4**	**1,496.5**	**1,594.6**	**1,786.8**	**1,911.3**	**1,825.4**	**1,993.8**	**1,923.8**	**2,158.4**	**2,068.8**	**2,020.9**
Exports	Corn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Processing	Corn	247.2	255.8	285.5	304.0	355.3	360.9	409.7	588.9	600.3	815.0	843.3	842.4
	Sorghum	2.6	1.6	1.1	3.0	3.9	2.8	3.0	1.6	3.8	3.1	1.7	2.8
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	5.8	6.1	7.3	7.6	7.7	7.7	7.7	7.8	7.8	7.9	7.8	7.8
	Wheat	21.3	21.3	20.2	22.6	22.7	22.7	23.4	23.6	22.8	22.7	22.7	21.2
	Soybean	89.6	92.9	87.8	82.0	89.5	88.7	90.8	87.8	76.8	98.3	92.0	96.3
Processing Total		**366.5**	**377.7**	**401.9**	**419.2**	**479.1**	**482.8**	**534.7**	**709.7**	**711.5**	**946.9**	**967.4**	**970.4**
Ending Stocks	Corn	256.3	231.3	154.2	114.6	280.3	239.2	154.5	166.5	196.5	211.2	119.2	83.0
	Sorghum	7.9	11.3	5.9	5.5	7.1	3.3	3.1	7.2	3.2	2.8	1.8	2.5
	Barley	0.1	0.0	0.1	0.1	0.1	0.1	0.0	0.7	0.6	0.7	0.0	0.0
	Oats	2.0	1.6	4.5	1.8	1.7	2.7	1.0	1.0	1.4	0.8	1.1	3.1
	Wheat	82.5	71.2	86.6	65.6	66.5	54.5	67.7	58.9	80.2	96.3	78.3	84.6
	Soybean	16.0	13.2	11.9	6.5	15.8	35.3	59.2	14.9	8.2	9.2	15.4	26.2
Ending Stocks Total		**364.7**	**328.6**	**263.3**	**194.1**	**371.4**	**335.1**	**285.6**	**249.2**	**290.1**	**321.0**	**215.7**	**199.3**

North Dakota Agricultural Production and Rural Infrastructure

North Dakota Trends in Agricultural Production and Infrastructure

Highlights

- With no navigable waterways, North Dakota is heavily reliant on rail movements of its grain production.
- The population density of North Dakota is virtually unchanged from its level in 1930, with an average of 10 people per square mile.
- While the value of agricultural production in North Dakota increased by 1,174% from 1950 to 2007, the number of farms decreased by 52%.

Production Consumed on Farm

- Home consumption of a farm's production has changed dramatically. In 1950, the value of farm production consumed at home in North Dakota was 3.50%.
- In contrast, in 2010 just 0.08% of the value of production in North Dakota was consumed at home. This shift amounts to an even greater reliance by agricultural producers on rural infrastructure to transport farm products.

Rural Population Trends

- In 1930 there were 567,539 people living in North Dakota, with 83.4% of that population in rural areas.
- By comparison, in 2010 there were 672,591 people living in North Dakota, with 40.1% of that population in rural areas.

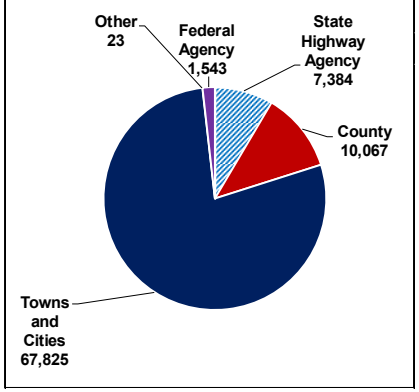
Did you know?

- In North Dakota in 2007, there were an average of 532 soybean acres per soybean farm, while for the U.S. the average soybean area per soybean farm was 229 acres.
- Broilers are a major consumer of soybean meal. In 2007, there were 0.01 million broilers sold in North Dakota and 8,915 million broilers sold in the U.S.
- Average farm size in the U.S. increased from 213 acres in 1950 to 418 acres in 2010, while average farm size in North Dakota increased from 647 acres to 1,241 acres over the same period.
- In North Dakota in 1945, there were 23,261 grain combines, while in 2007 there were 17,586 self-propelled grain and bean combines in the state.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1950	66,000	1.2%	2010	31,900	1.4%	-51.7%
Farmland Trends: Land in Farms (Acres)	1950	42,700,000	3.6%	2010	39,600,000	4.3%	-7.3%
Average Farm Size (Acres)	1950	647	304%	2010	1,241	297%	92%
Population Trends: Population Density (Pop. per Square Mile)	1930	10	28%	2010	10	11%	-1.2%
Production Trends: Volume of Production (Million Bushels)	1940	168	3.6%	2011	550	3.1%	226%

Miles of Road by Owner for North Dakota



North Dakota Agriculture and Rural Infrastructure

Highlights

Roads	With 86,842 miles of road as of 2008, North Dakota accounts for 2.1% of U.S. road miles.
Railroad	North Dakota had 5,311 miles of railroad in 1920 (around the time of the peak rail mileage), but this mileage had fallen to 5,195 miles in 1965 and decreased even further to 3,413 freight railroad miles in 2009.
Waterways	North Dakota has 0 miles of inland waterways.
Bridges	North Dakota has 4,910 bridges, and approximately 21.3 percent of those are considered structurally deficient or functionally obsolete.

Research, analysis and report funded by the soybean checkoff

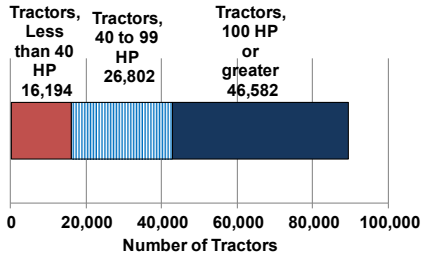
North Dakota Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

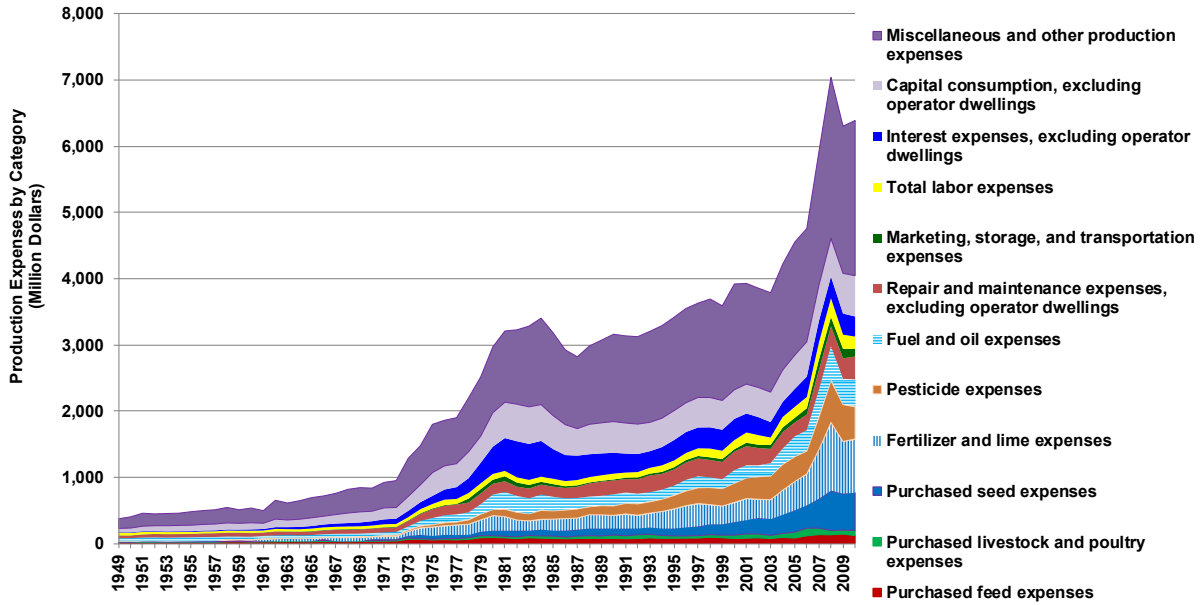
	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	11,829	33 acres	5,809	404 acres	-51%	1,113%
Soybeans	NA	NA acres	5,779	532 acres	NA	NA
Wheat	63,250	121 acres	12,303	685 acres	-81%	467%
Cattle and Calves Inventory	49,410	43 head	10,508	172 head	-79%	304%
Hogs Sold	21,657	19 head	351	1,925 head	-98%	10,080%
Broilers Sold	47	14,926 head	75	193 head	60%	-99%
All Farms	61,943	676 acres	31,970	1,241 acres	-48%	84%

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007



Farm Input Trends: North Dakota Farm Inputs by Type, 1949-2010



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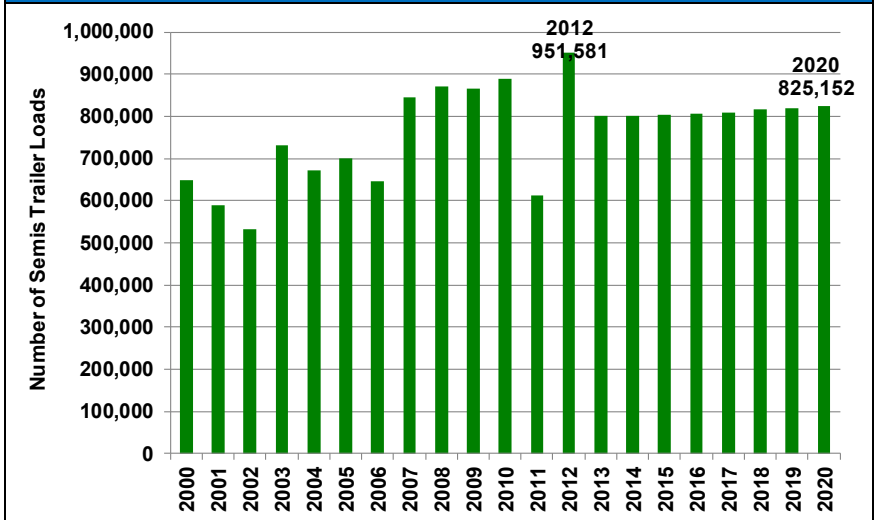
North Dakota Agricultural Production and Rural Infrastructure

Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	1986	229	2.5%	2011	343	3.4%	50%
On Farm Storage (million bushels)	1986	901	6.5%	2011	830	6.5%	-8%
Estimated Average Tractor Weight (lbs.)	1950	6,163	114.3%	2011	12,867	129.1%	109%
Railroad Miles	1920	5,311	2.1%	2009 freight	3,413	2.4%	-36%
Road Miles	1940	7,382	1.3%	2008	86,842	2.1%	1,076%

Estimated Number of Semi Trailer Loads Required to Haul North Dakota's Grain and Oilseed Production
(Includes Corn, Soybeans, Wheat, Sorghum, Barley, and Oats)



Note: Assumes 26 tons of grain per semi trailer load. Estimated number of semi trailer loads if all production is initially hauled by semi trailer. Based on Informa crop production forecasts.

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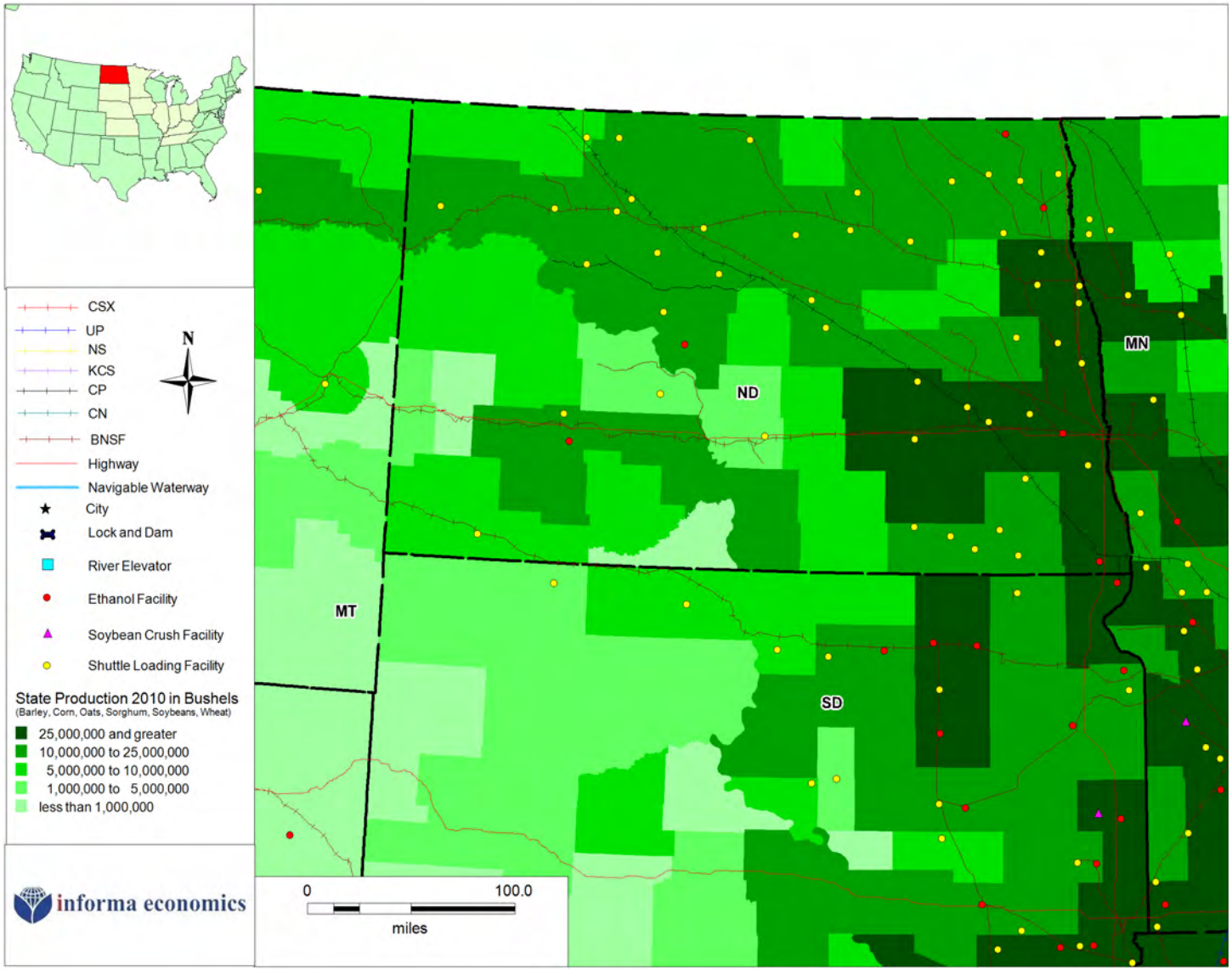
North Dakota: Agricultural Production and Infrastructure

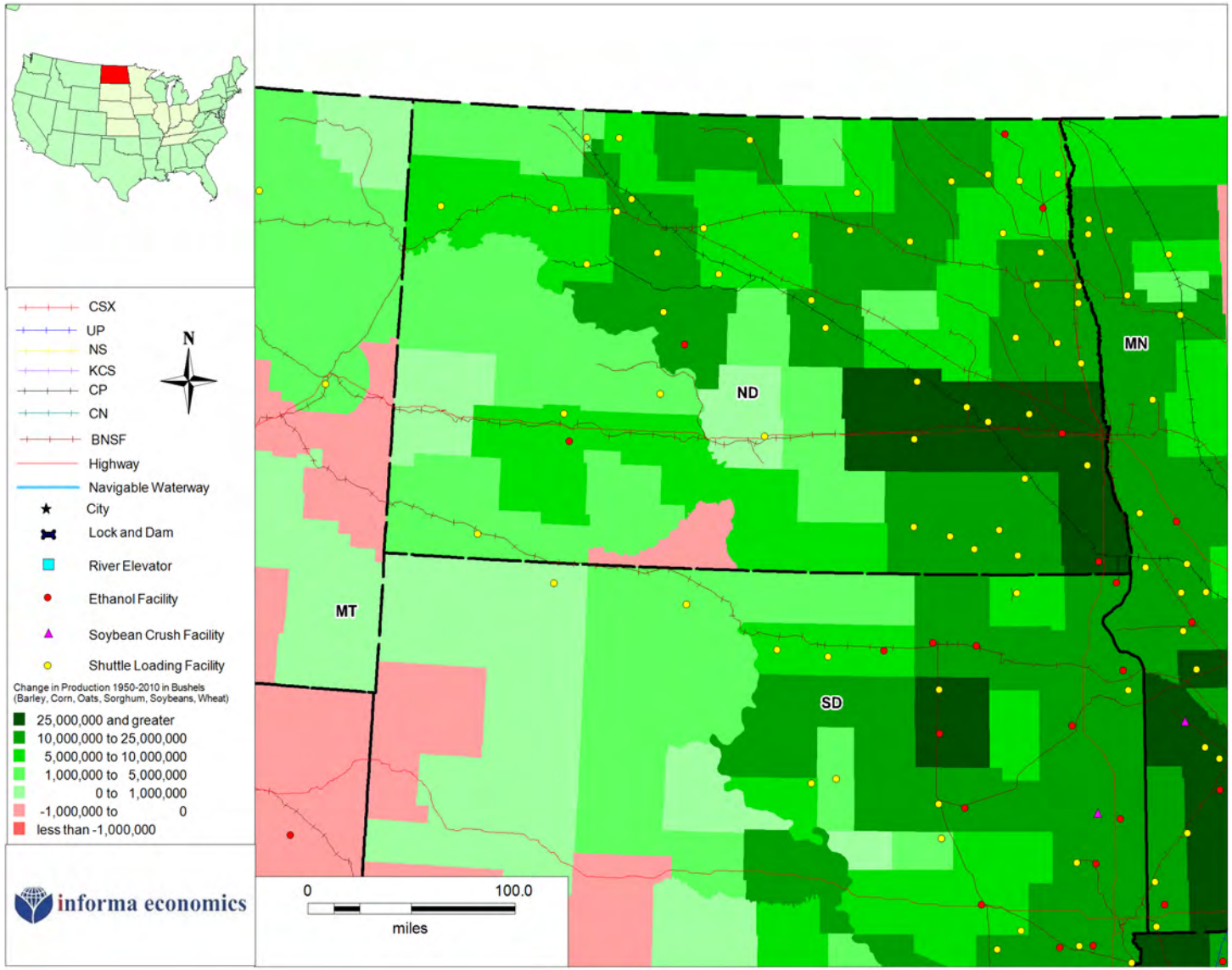


Infrastructure

- North Dakota crop production consists primarily of wheat, corn, and soybeans.
- Crops are moved from production regions by truck or rail to elevators and processing facilities.
- North Dakota has 571 miles of interstate; 4,410 miles of rail lines; and 86,842 miles of roadways.
- North Dakota has 49 shuttle facilities; five ethanol plants; and 367 grain elevators.

Research, analysis and report funded by the soybean checkoff

North Dakota: Change in Production from 1950 to 2010



Production

- Crop production in the state has been increasing, with exception to a south central county.
- Production of grains and soybeans in the state has increased by over 500 million bushels from 1950 to 2010.
- Since 1950, the state has been a key producer of wheat, oats, barley and corn.
- Wheat remains the predominant crop, with corn and soybeans following closely behind. The state also continues to produce barley and oats; however, oat production has declined.

Research, analysis and report funded by the soybean checkoff

North Dakota Grains and Soybeans Supply and Demand Balance, 2000-2011

		2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Beginning Stocks	Corn	12.2	15.8	7.6	12.9	7.9	18.8	17.3	16.5	26.1	59.7	37.9	19.5
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	75.8	75.6	60.0	87.8	91.5	66.9	50.0	57.2	65.9	83.1	66.5	40.3
	Oats	15.1	11.7	14.6	17.3	15.6	14.6	9.2	11.8	7.6	11.4	5.8	5.5
	Wheat	305.1	304.1	262.5	289.0	298.5	288.0	224.5	227.2	239.8	364.4	372.5	223.5
	Soybean	2.2	2.7	2.2	3.0	1.8	4.7	13.6	18.9	4.7	3.1	4.1	8.0
Beginning Stocks Total		**410.3**	**409.8**	**346.9**	**410.0**	**415.4**	**393.0**	**314.6**	**331.6**	**344.0**	**521.7**	**486.9**	**296.7**
Acres Planted	Corn	1.1	0.9	1.2	1.5	1.8	1.4	1.7	2.6	2.6	2.0	2.1	2.2
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	1.5	1.6	2.1	1.6	1.2	1.1	1.5	1.7	1.2	0.7	0.4	1.0
	Oats	0.6	0.7	0.6	0.5	0.5	0.4	0.5	0.3	0.4	0.3	0.2	0.2
	Wheat	9.5	9.1	8.6	8.2	9.1	8.8	8.6	9.2	8.7	8.5	6.8	8.1
	Soybean	1.9	2.2	2.7	3.2	3.8	3.0	3.9	3.1	3.8	3.9	4.1	4.0
Acres Planted Total		**14.5**	**14.4**	**15.2**	**14.9**	**16.3**	**14.7**	**16.1**	**16.9**	**16.6**	**15.4**	**13.5**	**15.5**
Acres Harvested	Corn	0.9	0.7	1.0	1.2	1.2	1.2	1.4	2.4	2.3	1.7	1.9	2.1
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	1.5	1.3	2.0	1.5	1.1	1.0	1.4	1.5	1.1	0.7	0.4	0.9
	Oats	0.2	0.3	0.4	0.2	0.2	0.1	0.3	0.1	0.2	0.1	0.1	0.1
	Wheat	9.1	7.9	8.5	7.8	8.8	8.3	8.4	8.6	8.4	8.4	6.6	7.8
	Soybean	1.9	2.1	2.6	3.1	3.6	2.9	3.9	3.1	3.8	3.9	4.1	4.0
Acres Harvested Total		**13.6**	**12.3**	**14.5**	**13.7**	**14.9**	**13.5**	**15.3**	**15.7**	**15.8**	**14.8**	**13.0**	**14.8**
Yield	Corn	112.0	115.0	114.0	112.0	105.0	129.0	111.0	116.0	124.0	115.0	132.0	105.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	55.0	45.0	60.0	62.0	54.0	49.0	56.0	56.0	70.0	65.0	47.0	59.0
	Oats	62.0	42.0	59.0	64.0	59.0	41.0	59.0	51.0	68.0	61.0	52.0	60.0
	Wheat	32.2	27.3	37.3	39.4	34.3	30.3	35.6	36.0	44.8	43.0	30.3	40.3
	Soybean	32.0	33.5	33.0	29.0	23.0	36.5	31.5	35.5	28.0	30.0	34.0	28.5
Production	Corn	104.2	81.1	113.4	131.0	120.8	154.8	155.4	272.6	285.2	200.1	248.2	216.3
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	79.8	58.5	118.8	91.8	57.2	48.8	77.8	86.2	79.1	43.6	16.5	53.1
	Oats	14.9	12.6	21.2	14.1	14.2	4.9	15.3	6.6	11.2	6.4	4.4	5.4
	Wheat	292.4	216.1	317.0	306.4	303.5	251.6	298.9	311.2	377.2	361.6	199.9	313.6
	Soybean	59.2	70.7	86.8	88.5	82.1	105.9	121.9	108.6	105.3	116.1	138.4	112.6
Production Total		**550.4**	**439.0**	**657.2**	**631.8**	**577.7**	**565.9**	**669.4**	**785.3**	**858.0**	**727.7**	**607.3**	**701.0**
Total Supply	Corn	116.3	96.8	121.0	143.9	128.7	173.6	172.7	289.1	311.3	259.8	286.0	235.8
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	107.8	83.5	132.4	122.0	96.0	72.5	94.7	103.0	109.1	88.2	48.8	65.4
	Oats	21.0	18.2	25.7	19.6	20.2	10.6	18.2	10.1	14.6	9.8	7.3	12.2
	Wheat	411.9	343.6	399.5	390.2	395.9	325.5	359.2	339.9	450.4	485.3	289.0	370.4
	Soybean	61.4	73.3	89.0	91.4	84.0	110.6	135.5	127.5	109.9	119.2	142.5	120.6
Total Supply Total		**718.4**	**615.5**	**767.5**	**767.2**	**724.7**	**692.6**	**780.2**	**869.6**	**995.3**	**962.2**	**773.5**	**804.5**
Exports	Corn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Processing	Corn	80.0	81.1	82.4	83.7	81.4	81.3	103.7	116.8	142.3	191.8	199.2	151.1
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	2.2	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.2	2.2	2.2
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	32.8	38.9	40.6	40.4	42.3	42.8	43.1	43.9	42.5	42.1	42.1	39.5
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Processing Total		**115.0**	**122.0**	**125.1**	**126.2**	**125.9**	**126.2**	**149.1**	**163.0**	**187.1**	**236.1**	**243.5**	**192.7**
Ending Stocks	Corn	15.8	7.6	12.9	7.9	18.8	17.3	16.5	26.1	59.7	37.9	19.5	12.3
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	75.6	60.0	87.8	91.5	66.9	50.0	57.2	65.9	83.1	66.5	40.3	44.1
	Oats	11.7	14.6	17.3	15.6	14.6	9.2	11.8	7.6	11.4	5.8	5.5	11.5
	Wheat	304.1	262.5	289.0	298.5	288.0	224.5	227.2	239.8	364.4	372.5	223.5	288.2
	Soybean	2.7	2.2	3.0	1.8	4.7	13.6	18.9	4.7	3.1	4.1	8.0	6.8
Ending Stocks Total		**409.8**	**346.9**	**410.0**	**415.4**	**393.0**	**314.6**	**331.6**	**344.0**	**521.7**	**486.9**	**296.7**	**362.7**

Ohio Agricultural Production and Rural Infrastructure

Ohio Trends in Agricultural Production and Infrastructure

Highlights

- In many states the percentage of the state population designated by the U.S. Census Bureau as living in rural areas has declined, but in Ohio, the absolute number of residents in rural areas has actually increased in recent decades to 2.6 million people in 2000.

- Farm products make up approximately 12% of total rail freight tons originating in Ohio.

- While the value of agricultural production in Ohio increased by 732% from 1950 to 2007, the number of farms decreased by 64%.

Production Consumed on Farm

- Home consumption of a farm's production has changed dramatically. In 1950, the value of farm production consumed at home in Ohio was 6.42%.

- In contrast, in 2010 just 0.16% of the value of production in Ohio was consumed at home. This shift amounts to an even greater reliance by agricultural producers on rural infrastructure to transport farm products.

Rural Population Trends

- In 1930 there were 2,139,326 people living in Ohio, with 32.2% of that population in rural areas.

- By comparison, in 2010 there were 11,536,504 people living in Ohio, with 22.1% of that population in rural areas.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1950	208,000	3.7%	2010	74,700	3.4%	-64.1%
Farmland Trends: Land in Farms (Acres)	1950	21,800,000	1.8%	2010	13,700,000	1.5%	-37.2%
Average Farm Size (Acres)	1950	105	49%	2010	183	44%	75%
Population Trends: Population Density (Pop. per Square Mile)	1930	163	466%	2010	282	322%	73.6%
Production Trends: Volume of Production (Million Bushels)	1940	211	4.4%	2011	776	4.3%	268%

Ohio Agriculture and Rural Infrastructure

Highlights

Roads	With 122,973 miles of road as of 2008, Ohio accounts for 3.0% of U.S. road miles.
Railroad	Ohio had 9,002 miles of railroad in 1920 (around the time of the peak rail mileage), but this mileage had fallen to 8,131 miles in 1965 and decreased even further to 5,286 freight railroad miles in 2009.
Waterways	Ohio has approximately 440 miles of inland waterways.
Bridges	Ohio has 27,403 bridges, and approximately 23.3 percent of those are considered structurally deficient or functionally obsolete.

Did you know?

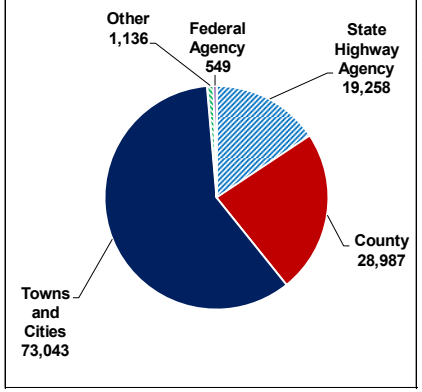
- In Ohio in 2007, there were an average of 177 soybean acres per soybean farm, while for the U.S. the average soybean area per soybean farm was 229 acres.

- Broilers are a major consumer of soybean meal. In 2007, there were 49.66 million broilers sold in Ohio and 8,915 million broilers sold in the U.S.

- Average farm size in the U.S. increased from 213 acres in 1950 to 418 acres in 2010, while average farm size in Ohio increased from 105 acres to 183 acres over the same period.

- In Ohio in 1945, there were 19,545 grain combines, while in 2007 there were 20,299 self-propelled grain and bean combines in the state.

Miles of Road by Owner for Ohio



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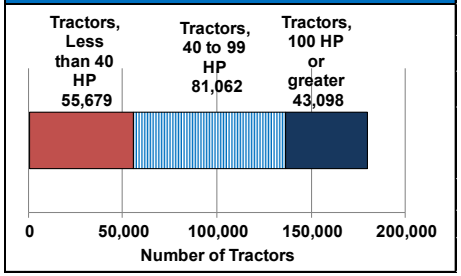
Ohio Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

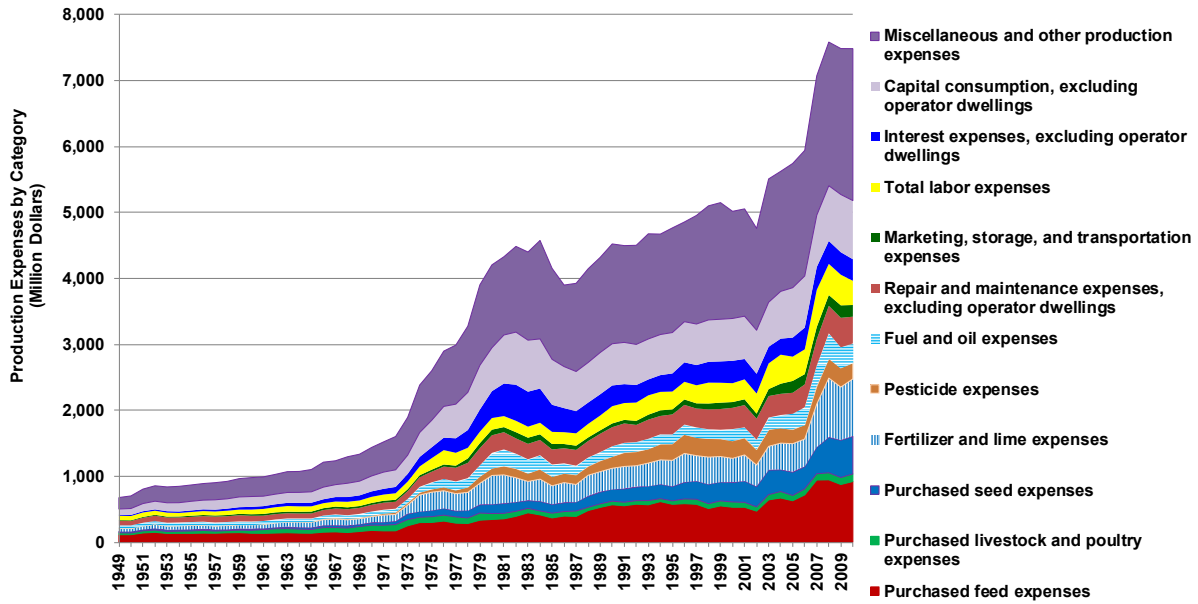
	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	134,577	25 acres	24,436	148 acres	-82%	484%
Soybeans	40,666	26 acres	23,892	177 acres	-41%	574%
Wheat	99,354	17 acres	11,485	64 acres	-88%	272%
Cattle and Calves Inventory	137,003	18 head	26,105	49 head	-81%	178%
Hogs Sold	68,331	48 head	4,505	1,305 head	-93%	2,629%
Broilers Sold	1,461	9,331 head	791	62,776 head	-46%	573%
All Farms	177,074	113 acres	75,861	184 acres	-57%	63%

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007



Farm Input Trends: Ohio Farm Inputs by Type, 1949-2010



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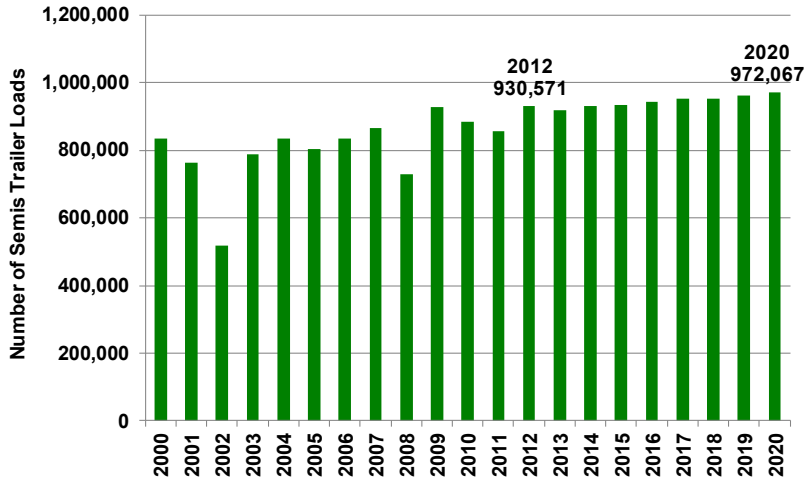
Ohio Agricultural Production and Rural Infrastructure

Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	1986	318	3.5%	2011	412	4.1%	29%
On Farm Storage (million bushels)	1986	436	3.2%	2011	500	3.9%	15%
Estimated Average Tractor Weight (lbs.)	1950	5,318	98.6%	2011	9,764	98.0%	84%
Railroad Miles	1920	9,002	3.6%	2009 freight	5,286	3.8%	-41%
Road Miles	1940	18,592	3.4%	2008	122,973	3.0%	561%

Estimated Number of Semi Trailer Loads Required to Haul Ohio's Grain and Oilseed Production
(Includes Corn, Soybeans, Wheat, Sorghum, Barley, and Oats)



Note: Assumes 26 tons of grain per semi trailer load. Estimated number of semi trailer loads if all production is initially hauled by semi trailer. Based on Informa crop production forecasts.

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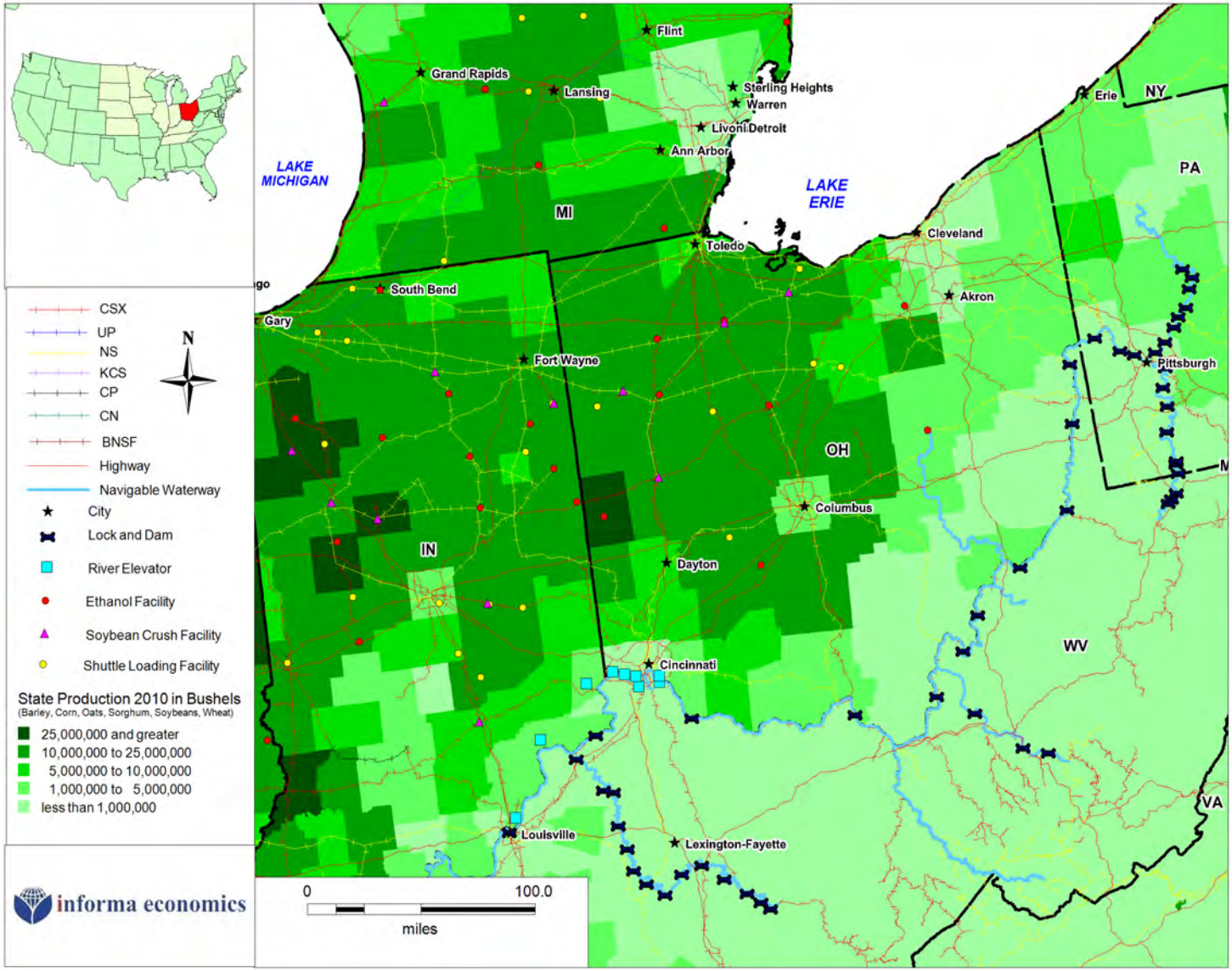
Ohio: Agricultural Production and Infrastructure

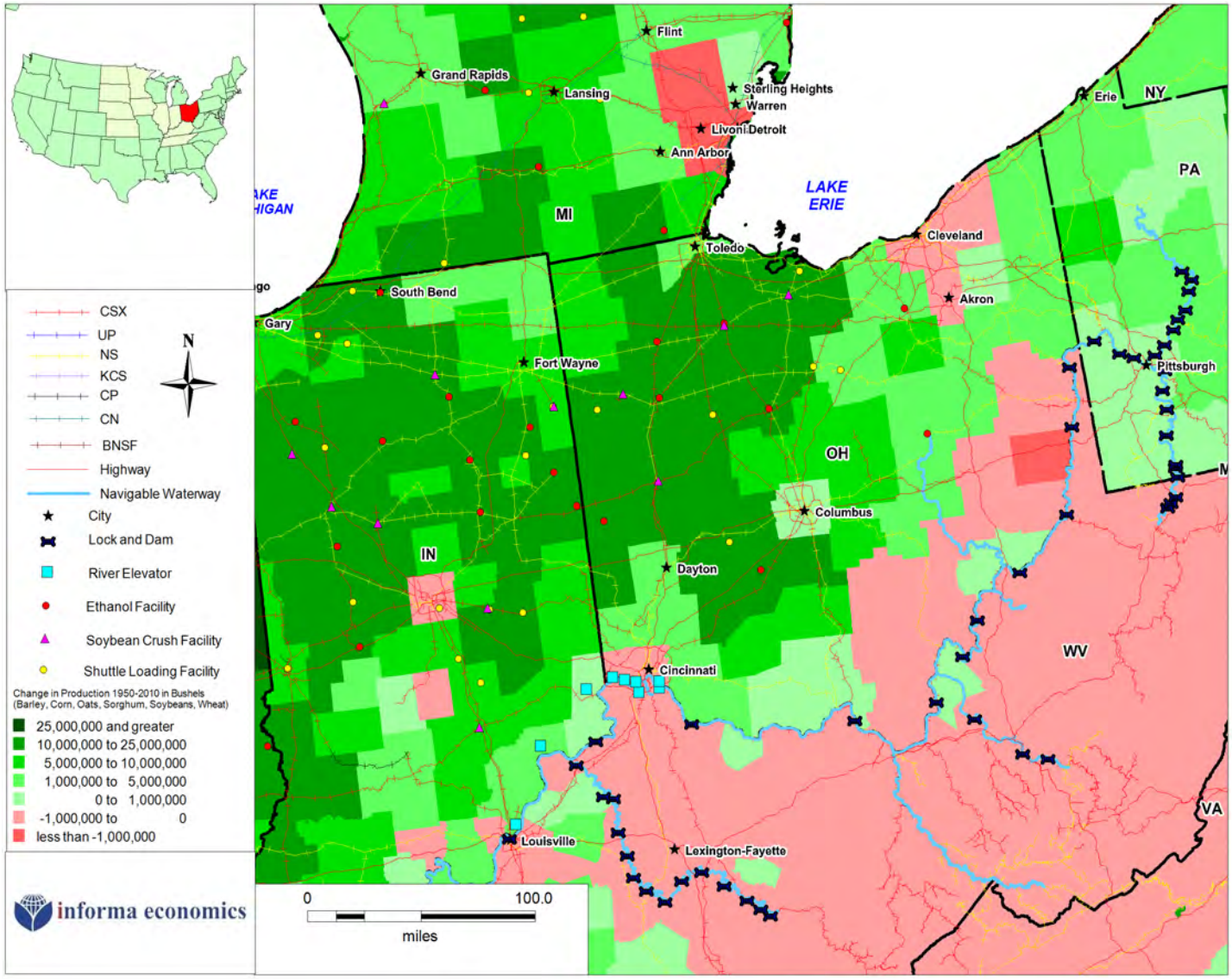


Infrastructure

- Ohio crop production consists primarily of corn and soybeans.
- Crops are moved from production regions by truck, rail, and/or barge to elevators and processing facilities.
- Ohio has 1,726 miles of interstate; 5,286 miles of rail lines; 440 miles of waterways; 27,403 bridges and 122,973 miles of roadways.
- Ohio has four soybean crush facilities; nine shuttle facilities; seven ethanol plants; four river elevators; and 354 grain elevators.

Research, analysis and report funded by the soybean checkoff

Ohio: Change in Production from 1950 to 2010



Production

- Crop production has been increasing in the majority of the state, except within a number of counties in central eastern and south eastern Ohio.
- Production of grains and soybeans in the state has increased by approximately 520 million bushels from 1950 to 2010.
- Historically, Ohio has produced mostly corn, in addition to wheat, oats and soybeans.
- Corn production in Ohio has tripled with production over 531 million bushels. Soybeans have also grown. Ohio also produces wheat and oats.

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Ohio Grains and Soybeans Supply and Demand Balance, 2000-2011

		2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Beginning Stocks	Corn	58.8	66.3	71.1	36.5	39.6	75.1	57.4	41.3	75.4	50.4	57.0	37.8
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0
	Oats	6.1	4.9	3.1	3.8	2.5	3.9	3.8	2.6	3.0	1.8	1.5	0.8
	Wheat	92.7	73.3	65.5	70.4	64.2	74.8	87.3	60.2	70.7	89.2	79.1	84.7
	Soybean	11.3	8.0	12.6	9.6	3.6	9.6	14.8	23.6	7.6	5.7	6.3	16.7
Beginning Stocks Total		**169.2**	**152.6**	**152.4**	**120.3**	**109.9**	**163.5**	**163.4**	**127.8**	**156.7**	**147.2**	**143.9**	**139.9**
Acres Planted	Corn	3.6	3.4	3.3	3.3	3.4	3.5	3.2	3.9	3.3	3.4	3.5	3.4
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Wheat	1.0	0.9	1.1	0.9	0.9	1.0	0.8	1.1	1.0	0.8	0.9	0.6
	Soybean	4.5	4.6	4.8	4.3	4.5	4.5	4.7	4.3	4.5	4.6	4.6	4.6
Acres Planted Total		**9.1**	**8.9**	**9.1**	**8.6**	**8.7**	**9.0**	**8.7**	**9.3**	**8.9**	**8.7**	**9.0**	**8.6**
Acres Harvested	Corn	3.3	3.2	3.0	3.1	3.1	3.3	3.0	3.6	3.1	3.1	3.3	3.2
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0
	Wheat	0.9	0.8	1.0	0.9	0.8	1.0	0.7	1.1	1.0	0.8	0.9	0.6
	Soybean	4.4	4.6	4.7	4.3	4.4	4.5	4.6	4.2	4.5	4.5	4.6	4.5
Acres Harvested Total		**8.7**	**8.6**	**8.8**	**8.3**	**8.4**	**8.7**	**8.4**	**9.0**	**8.6**	**8.5**	**8.7**	**8.4**
Yield	Corn	147.0	138.0	89.0	156.0	158.0	143.0	159.0	150.0	135.0	174.0	163.0	158.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	76.0	55.0	58.0	50.0	60.0	68.0	53.0	72.0	0.0	0.0	0.0	0.0
	Oats	73.0	61.0	66.0	63.0	60.0	75.0	62.0	70.0	75.0	70.0	54.0	62.0
	Wheat	67.0	62.0	68.0	62.0	71.0	68.0	61.0	68.0	72.0	61.0	58.0	68.0
	Soybean	42.0	41.0	32.0	38.5	47.0	45.0	47.0	47.0	36.0	49.0	48.0	47.5
Production	Corn	485.1	437.5	264.3	478.9	491.4	464.8	470.6	541.5	421.2	546.4	533.0	508.8
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.4	0.3	0.3	0.2	0.3	0.3	0.2	0.4	0.0	0.0	0.0	0.0
	Oats	6.2	3.4	4.0	3.2	3.6	4.1	3.1	3.5	3.4	3.5	2.1	2.8
	Wheat	60.3	50.2	68.0	55.2	58.9	65.3	44.5	74.1	70.6	45.8	49.3	38.1
	Soybean	186.5	187.8	151.0	164.8	207.7	201.6	217.1	199.3	161.3	222.0	220.3	215.7
Production Total		**738.5**	**679.1**	**487.7**	**702.2**	**762.0**	**736.0**	**735.6**	**818.8**	**656.4**	**817.6**	**804.7**	**765.3**
Total Supply	Corn	543.9	503.7	335.5	515.4	530.9	539.8	528.1	582.8	496.6	596.8	590.0	546.5
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.4	0.3	0.4	0.2	0.3	0.3	0.2	0.4	0.0	0.0	0.0	0.0
	Oats	9.0	5.7	5.8	5.9	5.7	6.6	4.6	4.9	3.8	3.9	2.4	5.1
	Wheat	107.1	80.4	89.2	82.6	88.8	107.2	78.6	91.7	118.2	99.6	98.6	85.1
	Soybean	197.7	195.8	163.6	174.3	211.4	211.2	232.0	222.9	168.8	227.7	226.6	232.4
Total Supply Total		**858.2**	**786.0**	**594.4**	**778.5**	**837.1**	**865.1**	**843.3**	**902.6**	**787.4**	**928.0**	**917.6**	**869.0**
Exports	Corn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Processing	Corn	65.4	65.6	65.7	67.4	67.7	70.1	70.5	140.6	183.9	189.3	219.6	196.7
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	57.1	50.2	47.9	56.0	54.4	54.9	56.8	56.9	55.2	54.9	54.8	51.3
	Soybean	132.3	137.2	129.6	121.1	132.2	131.0	134.1	129.7	108.1	110.1	103.1	107.9
Processing Total		**254.8**	**253.0**	**243.2**	**244.5**	**254.3**	**256.0**	**261.5**	**327.2**	**347.2**	**354.2**	**377.4**	**355.8**
Ending Stocks	Corn	66.3	71.1	36.5	39.6	75.1	57.4	41.3	75.4	50.4	57.0	37.8	22.7
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
	Oats	4.9	3.1	3.8	2.5	3.9	3.8	2.6	3.0	1.8	1.5	0.8	3.3
	Wheat	73.3	65.5	70.4	64.2	74.8	87.3	60.2	70.7	89.2	79.1	84.7	76.7
	Soybean	8.0	12.6	9.6	3.6	9.6	14.8	23.6	7.6	5.7	6.3	16.7	10.6
Ending Stocks Total		**152.6**	**152.4**	**120.3**	**109.9**	**163.5**	**163.4**	**127.8**	**156.7**	**147.2**	**143.9**	**139.9**	**113.3**

South Dakota Agricultural Production and Rural Infrastructure

South Dakota Trends in Agricultural Production and Infrastructure

Highlights

- South Dakota's population density has increase by an average of just 2 people per square mile between 1930 and 2010 to 11 people per square mile, compared to an increase in the U.S. average population density by 53 people per square mile to 88 people per square mile.

- South Dakota, in contrast to many other states, has seen increases in both on farm and off farm storage between 1986 and 2011, and now accounts for 5.4% of U.S. on farm storage.

- While the value of agricultural production in South Dakota increased by 1,303% from 1950 to 2007, the number of farms decreased by 53%.

Production Consumed on Farm

- Home consumption of a farm's production has changed dramatically. In 1950, the value of farm production consumed at home in South Dakota was 3.34%.

- In contrast, in 2010 just 0.07% of the value of production in South Dakota was consumed at home. This shift amounts to an even greater reliance by agricultural producers on rural infrastructure to transport farm products.

Rural Population Trends

- In 1930 there were 561,942 people living in South Dakota, with 81.1% of that population in rural areas.

- By comparison, in 2010 there were 814,180 people living in South Dakota, with 43.3% of that population in rural areas.

Did you know?

- In South Dakota in 2007, there were an average of 327 soybean acres per soybean farm, while for the U.S. the average soybean area per soybean farm was 229 acres.

- Broilers are a major consumer of soybean meal. In 2007, there were 0.27 million broilers sold in South Dakota and 8,915 million broilers sold in the U.S.

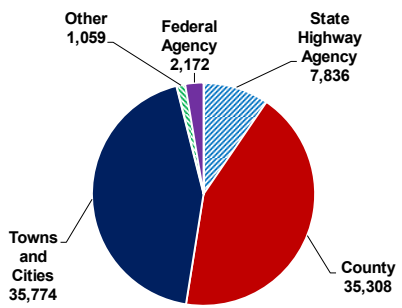
- Average farm size in the U.S. increased from 213 acres in 1950 to 418 acres in 2010, while average farm size in South Dakota increased from 669 acres to 1,374 acres over the same period.

- In South Dakota in 1945, there were 10,831 grain combines, while in 2007 there were 12,320 self-propelled grain and bean combines in the state.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1950	67,100	1.2%	2010	31,800	1.4%	-52.6%
Farmland Trends: Land in Farms (Acres)	1950	44,900,000	3.7%	2010	43,700,000	4.8%	-2.7%
Average Farm Size (Acres)	1950	669	314%	2010	1,374	329%	105%
Population Trends: Population Density (Pop. per Square Mile)	1930	9	26%	2010	11	12%	17.5%
Production Trends: Volume of Production (Million Bushels)	1940	152	3.2%	2011	920	5.2%	506%

Miles of Road by Owner for South Dakota



South Dakota Agriculture and Rural Infrastructure

Highlights

Roads	With 82,149 miles of road as of 2008, South Dakota accounts for 2.0% of U.S. road miles.
Railroad	South Dakota had 4,276 miles of railroad in 1920 (around the time of the peak rail mileage), but this mileage had fallen to 3,905 miles in 1965 and decreased even further to 1,741 freight railroad miles in 2009.
Waterways	South Dakota has approximately 80 miles of inland waterways.
Bridges	South Dakota has 5,877 bridges, and approximately 24.4 percent of those are considered structurally deficient or functionally obsolete.

Research, analysis and report funded by the soybean checkoff
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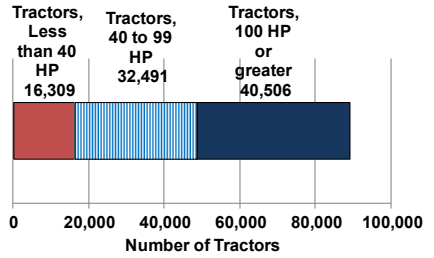
South Dakota Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

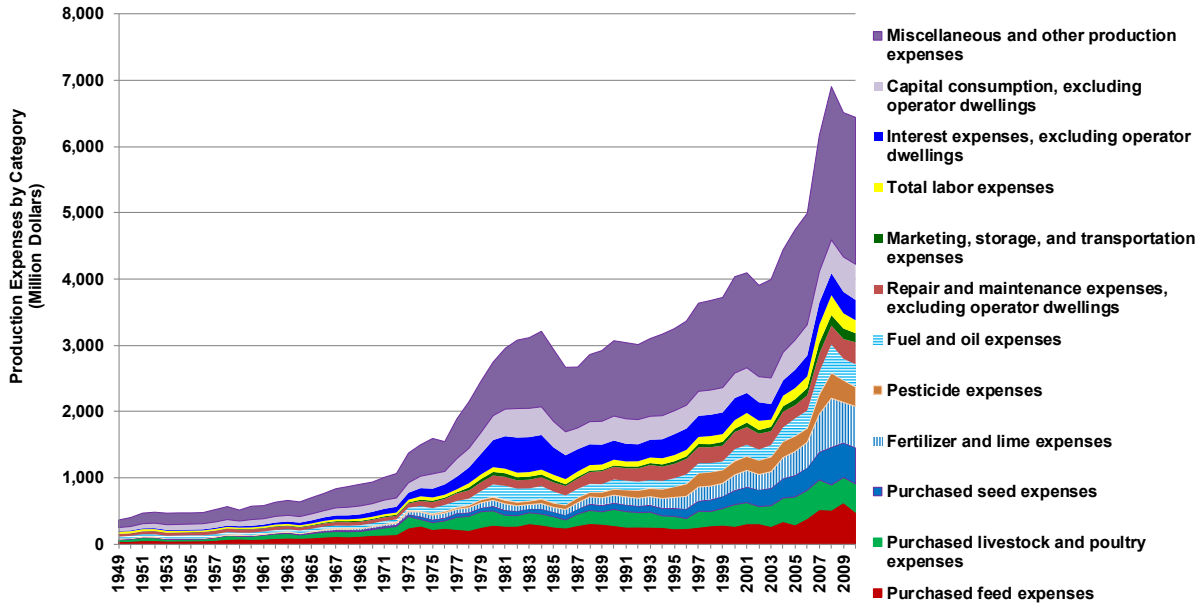
	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	45,116	74 acres	12,198	365 acres	-73%	396%
Soybeans	6,382	25 acres	9,862	327 acres	55%	1,201%
Wheat	25,847	99 acres	7,163	467 acres	-72%	370%
Cattle and Calves Inventory	55,606	62 head	15,667	235 head	-72%	278%
Hogs Sold	36,963	47 head	1,042	4,307 head	-97%	9,138%
Broilers Sold	32	4,495 head	85	3,212 head	166%	-29%
All Farms	62,520	783 acres	31,169	1,401 acres	-50%	79%

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007



Farm Input Trends: South Dakota Farm Inputs by Type, 1949-2010



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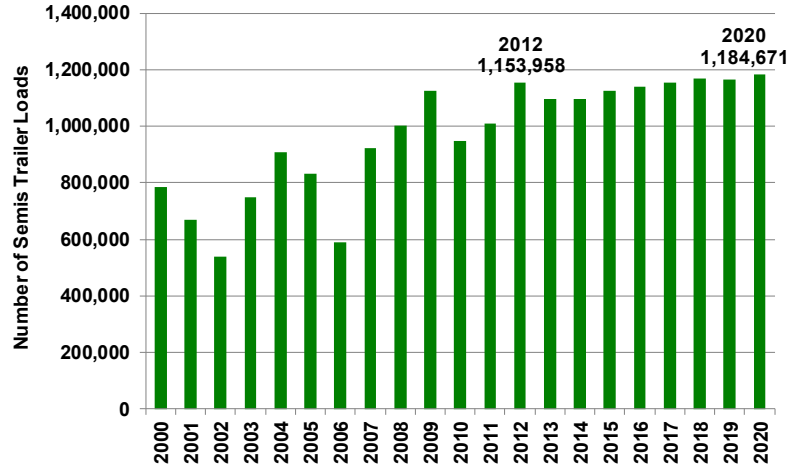
South Dakota Agricultural Production and Rural Infrastructure

Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	1986	118	1.3%	2011	290	2.9%	145%
On Farm Storage (million bushels)	1986	604	4.4%	2011	690	5.4%	14%
Estimated Average Tractor Weight (lbs.)	1950	6,042	112.1%	2011	12,260	123.0%	103%
Railroad Miles	1920	4,276	1.7%	2009 freight	1,741	1.2%	-59%
Road Miles	1940	6,096	1.1%	2008	82,149	2.0%	1,248%

Estimated Number of Semi Trailer Loads Required to Haul South Dakota's Grain and Oilseed Production
(Includes Corn, Soybeans, Wheat, Sorghum, Barley, and Oats)



Note: Assumes 26 tons of grain per semi trailer load. Estimated number of semi trailer loads if all production is initially hauled by semi trailer. Based on Informa crop production forecasts.

Research, analysis and report funded by the soybean checkoff
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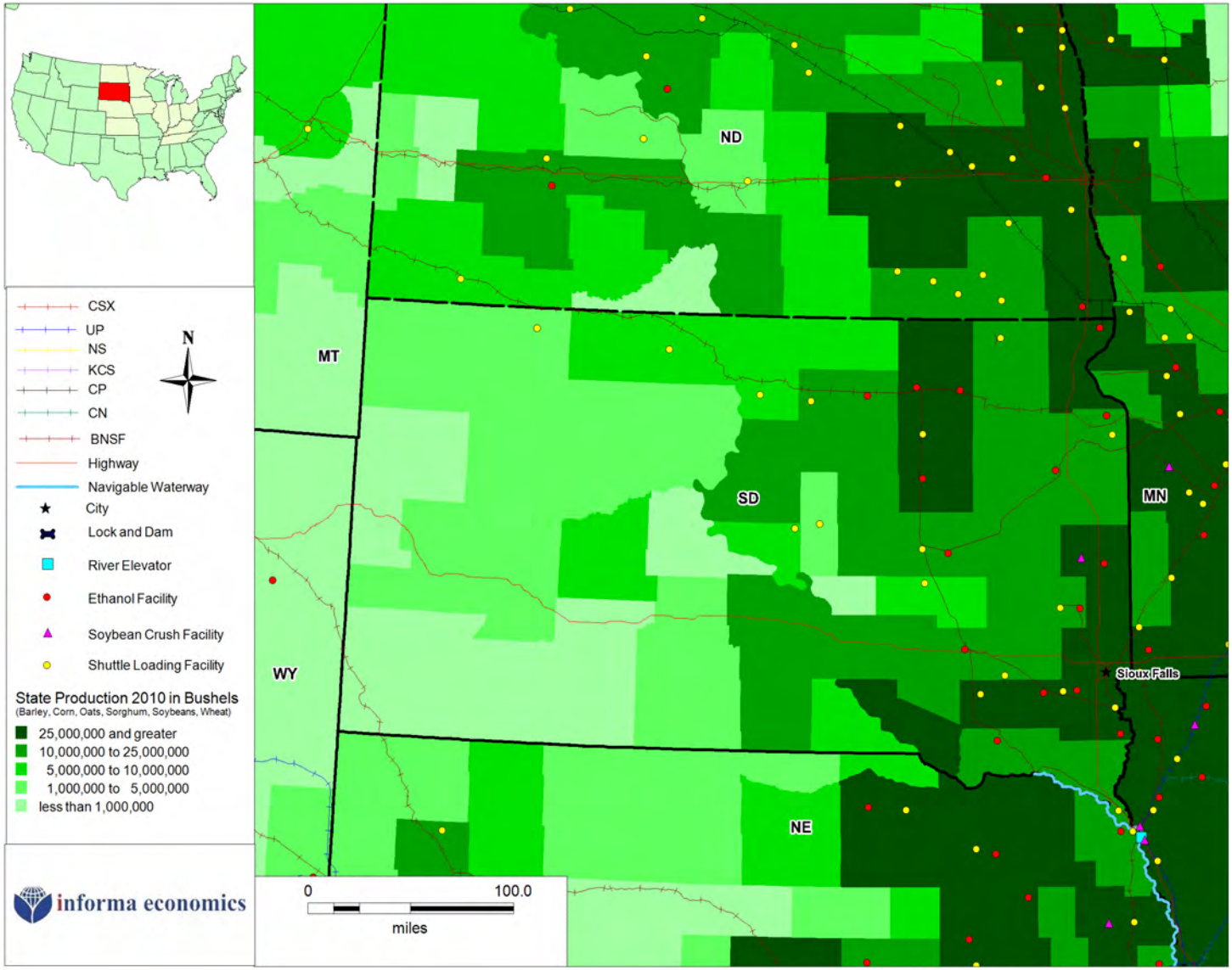
South Dakota: Agricultural Production and Infrastructure

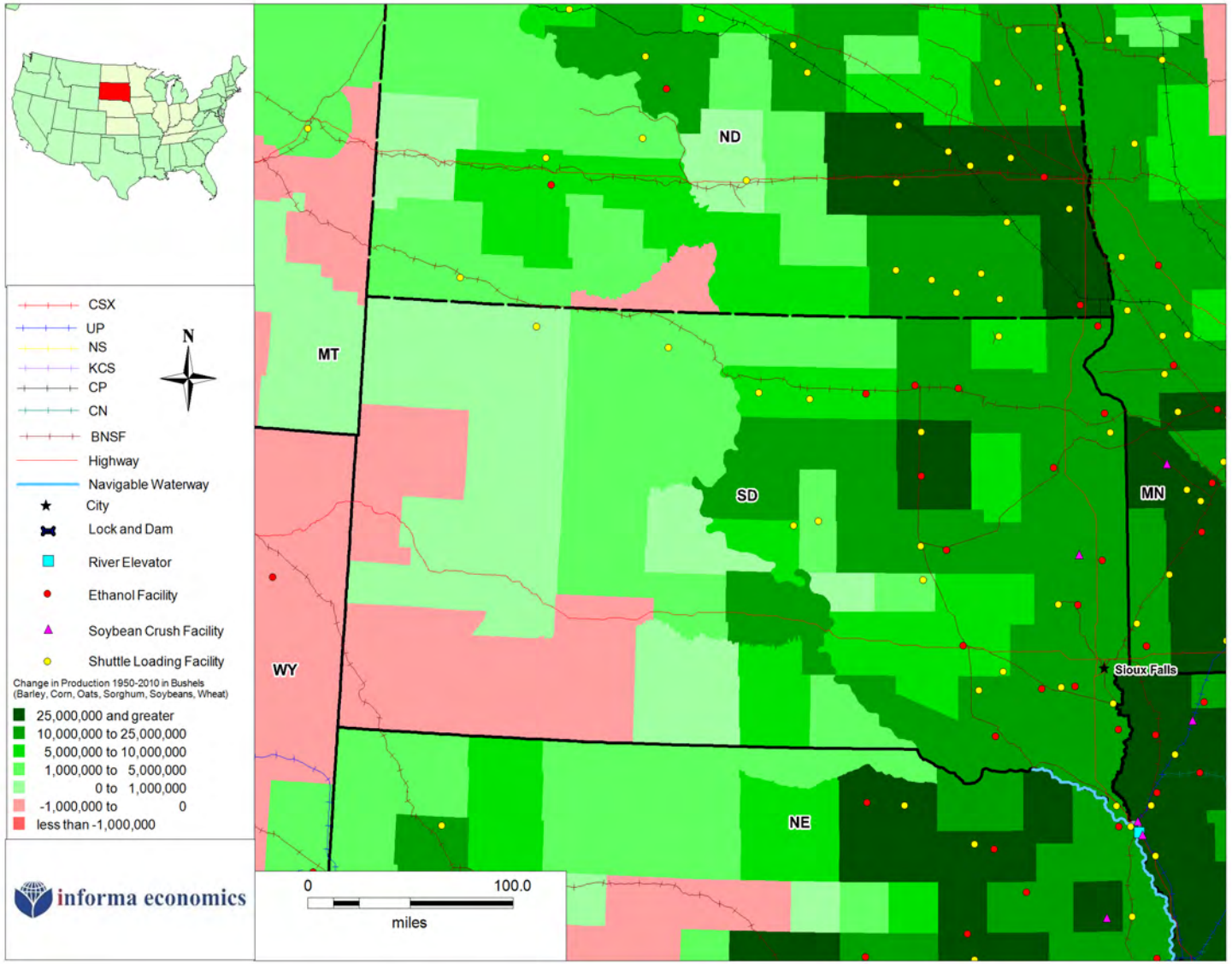


Infrastructure

- South Dakota crop production consists primarily of corn, soybeans and wheat.
- Crops are moved from production regions by truck, rail, and/or barge to elevators and processing facilities.
- South Dakota has 678 miles of interstate; 1,741 miles of rail lines; 80 miles of waterways; 5,877 bridges and 82,149 miles of roadways.
- South Dakota has one soybean crush facility; 22 shuttle facilities; 16 ethanol plants; and 210 grain elevators.

Research, analysis and report funded by the soybean checkoff
Informa Economics, Inc. for the Soy Transportation Coalition

South Dakota: Change in Production from 1950 to 2010



Production

- Crop production in the state has increased in the majority of the state, with exception to a few counties located in the west.
- Production of grains and soybeans has increased by nearly 595 million bushels from 1950 to 2010.
- In the past, crop production has been dominated by corn and oats. Production also included barley, soybeans & wheat.
- Corn remains the dominant crop. Soybeans have become the second largest crop. The crop mix is also compiled of oats, sorghum, & wheat.

Research, analysis and report funded by the soybean checkoff

South Dakota Grains and Soybeans Supply and Demand Balance, 2000-2011

		2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Beginning Stocks	Corn	71.0	86.1	69.0	51.4	40.8	83.9	92.6	52.5	66.0	85.9	97.0	65.2
	Sorghum	0.1	0.2	0.4	0.2	0.2	0.8	0.3	0.1	0.4	0.1	0.2	0.1
	Barley	6.9	4.4	1.2	1.5	2.3	1.8	0.8	1.1	1.4	1.0	0.7	0.4
	Oats	15.7	9.9	6.9	12.9	14.5	14.3	7.2	9.4	8.8	7.9	8.2	3.7
	Wheat	112.0	89.9	59.8	105.1	116.8	112.8	74.9	93.0	116.9	102.9	117.3	95.4
	Soybean	16.9	15.0	8.3	5.1	4.1	9.5	25.1	25.4	6.4	6.5	6.2	13.1
Beginning Stocks Total		**222.6**	**205.5**	**145.6**	**176.2**	**178.7**	**223.2**	**200.8**	**181.5**	**199.8**	**204.3**	**229.6**	**177.9**
Acres Planted	Corn	4.3	3.8	4.5	4.4	4.7	4.5	4.5	5.0	4.8	5.0	4.6	5.2
	Sorghum	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2
	Barley	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
	Oats	0.4	0.5	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.1	0.1
	Wheat	3.0	3.0	3.1	3.3	3.3	3.3	3.5	3.7	3.2	2.8	2.9	2.7
	Soybean	4.4	4.5	4.3	4.3	4.2	3.9	4.0	3.3	4.1	4.3	4.2	4.1
Acres Planted Total		**12.3**	**12.1**	**12.5**	**12.6**	**12.8**	**12.3**	**12.6**	**12.4**	**12.5**	**12.5**	**11.9**	**12.3**
Acres Harvested	Corn	3.8	3.4	3.3	3.9	4.2	4.0	3.2	4.5	4.4	4.7	4.2	5.0
	Sorghum	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Barley	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Wheat	2.0	1.7	2.8	2.8	3.2	2.6	3.3	3.4	3.0	2.7	2.8	2.6
	Soybean	4.4	4.5	4.1	4.2	4.1	3.9	3.9	3.2	4.1	4.2	4.1	4.1
Acres Harvested Total		**10.5**	**9.9**	**10.5**	**11.2**	**11.8**	**10.6**	**10.6**	**11.4**	**11.7**	**11.8**	**11.3**	**11.8**
Yield	Corn	112.0	109.0	95.0	111.0	130.0	119.0	97.0	121.0	133.0	151.0	135.0	132.0
	Sorghum	49.0	59.0	34.0	45.0	42.0	52.0	36.0	60.0	64.0	61.0	62.0	60.0
	Barley	52.0	35.0	53.0	63.0	49.0	40.0	40.0	41.0	54.0	40.0	33.0	48.0
	Oats	60.0	45.0	68.0	82.0	72.0	57.0	72.0	73.0	73.0	72.0	59.0	72.0
	Wheat	37.6	26.4	42.3	46.0	41.8	32.6	43.1	50.5	42.9	45.3	37.2	42.9
	Soybean	35.0	32.0	31.0	27.5	34.0	35.0	34.0	42.0	34.0	42.0	38.0	37.0
Production	Corn	425.6	370.6	308.8	427.4	539.5	470.1	312.3	542.1	585.2	706.7	569.7	653.4
	Sorghum	5.9	8.9	3.1	6.8	6.3	4.4	2.9	7.8	7.4	7.3	5.3	6.6
	Barley	4.1	1.6	2.9	3.2	2.3	0.6	1.2	1.8	1.2	0.4	0.5	0.7
	Oats	7.8	5.4	15.6	13.9	13.0	5.4	9.4	8.8	6.6	7.6	4.1	5.0
	Wheat	76.8	44.2	118.4	128.6	133.4	84.1	143.5	172.5	129.1	123.5	104.8	109.7
	Soybean	153.0	143.0	126.8	115.5	140.1	134.8	130.9	136.1	138.0	176.0	157.3	150.6
Production Total		**673.1**	**573.7**	**575.5**	**695.3**	**834.6**	**699.3**	**600.2**	**869.0**	**867.5**	**1,021.5**	**841.7**	**926.1**
Total Supply	Corn	496.6	456.7	377.8	478.7	580.3	554.0	404.9	594.6	651.2	792.6	666.7	718.6
	Sorghum	6.0	9.1	3.4	6.9	6.5	5.2	3.1	7.9	7.7	7.5	5.5	6.7
	Barley	5.1	2.2	3.3	3.5	3.1	0.9	1.4	2.1	1.5	0.8	0.8	0.9
	Oats	12.1	9.3	17.6	18.7	17.8	9.0	11.4	11.8	9.5	10.1	6.2	7.6
	Wheat	113.6	83.2	139.3	158.5	156.0	108.1	160.1	179.6	159.2	163.4	129.1	127.6
	Soybean	169.8	158.0	135.1	120.6	144.2	144.3	156.0	161.4	144.5	182.5	163.5	163.7
Total Supply Total		**803.3**	**718.4**	**676.6**	**787.0**	**907.9**	**821.5**	**736.9**	**957.5**	**973.6**	**1,156.8**	**971.9**	**1,025.1**
Exports	Corn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Processing	Corn	10.8	25.0	95.1	148.6	158.4	172.4	211.1	280.3	308.9	367.9	363.4	360.3
	Sorghum	0.4	0.4	0.2	0.7	0.8	0.6	0.5	0.6	1.5	1.7	1.3	2.8
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	3.9	4.1	5.0	5.2	5.2	5.2	5.2	5.3	5.3	5.4	5.3	5.3
	Wheat	2.1	2.2	2.2	2.3	2.4	2.4	2.5	2.5	2.4	2.4	2.4	2.2
	Soybean	21.3	22.1	20.9	19.5	21.3	21.1	21.6	20.9	17.4	17.8	16.6	17.4
Processing Total		**38.6**	**53.8**	**123.4**	**176.3**	**188.1**	**201.8**	**240.9**	**309.5**	**335.5**	**395.1**	**389.0**	**388.0**
Ending Stocks	Corn	86.1	69.0	51.4	40.8	83.9	92.6	52.5	66.0	85.9	97.0	65.2	46.7
	Sorghum	0.2	0.4	0.2	0.2	0.8	0.3	0.1	0.4	0.1	0.2	0.1	1.8
	Barley	4.4	1.2	1.5	2.3	1.8	0.8	1.1	1.4	1.0	0.7	0.4	1.3
	Oats	9.9	6.9	12.9	14.5	14.3	7.2	9.4	8.8	7.9	8.2	3.7	8.6
	Wheat	89.9	59.8	105.1	116.8	112.8	74.9	93.0	116.9	102.9	117.3	95.4	109.0
	Soybean	15.0	8.3	5.1	4.1	9.5	25.1	25.4	6.4	6.5	6.2	13.1	11.1
Ending Stocks Total		**205.5**	**145.6**	**176.2**	**178.7**	**223.2**	**200.8**	**181.5**	**199.8**	**204.3**	**229.6**	**177.9**	**178.5**

Tennessee Agricultural Production and Rural Infrastructure

Tennessee Trends in Agricultural Production and Infrastructure

Highlights

- In many states the percentage of the state population designated by the U.S. Census Bureau as living in rural areas has declined, but in Tennessee, the absolute number of residents in rural areas has actually increased in recent decades.

- The percentage drop in the area of land in farms in Tennessee has far exceeded the percentage drop in land in farms in the U.S.; between 1950 and 2010 Tennessee farm acreage declined by 43% compared to 23% for the U.S.

- While the value of agricultural production in Tennessee increased by 591% from 1950 to 2007, the number of farms decreased by 68%.

Production Consumed on Farm

- Home consumption of a farm's production has changed dramatically. In 1950, the value of farm production consumed at home in Tennessee was 17.34%.

- In contrast, in 2010 just 0.44% of the value of production in Tennessee was consumed at home. This shift amounts to an even greater reliance by agricultural producers on rural infrastructure to transport farm products.

Rural Population Trends

- In 1930 there were 1,720,018 people living in Tennessee, with 65.7% of that population in rural areas.

- By comparison, in 2010 there were 6,346,105 people living in Tennessee, with 33.6% of that population in rural areas.

Did you know?

- In Tennessee in 2007, there were an average of 329 soybean acres per soybean farm, while for the U.S. the average soybean area per soybean farm was 229 acres.

- Broilers are a major consumer of soybean meal. In 2007, there were 206.13 million broilers sold in Tennessee and 8,915 million broilers sold in the U.S.

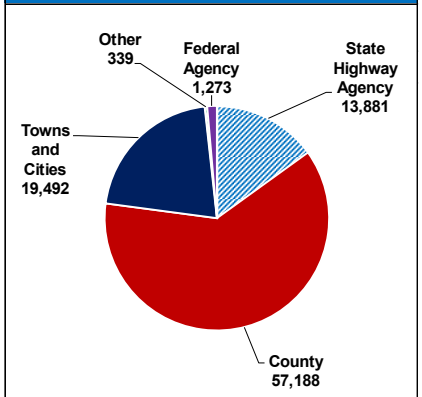
- Average farm size in the U.S. increased from 213 acres in 1950 to 418 acres in 2010, while average farm size in Tennessee increased from 79 acres to 139 acres over the same period.

- In Tennessee in 1945, there were 2,969 grain combines, while in 2007 there were 3,657 self-propelled grain and bean combines in the state.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1950	243,000	4.3%	2010	78,300	3.6%	-67.8%
Farmland Trends: Land in Farms (Acres)	1950	19,100,000	1.6%	2010	10,900,000	1.2%	-42.9%
Average Farm Size (Acres)	1950	79	37%	2010	139	33%	77%
Population Trends: Population Density (Pop. per Square Mile)	1930	63	182%	2010	154	176%	142.5%
Production Trends: Volume of Production (Million Bushels)	1940	75	1.6%	2011	158	0.9%	111%

Miles of Road by Owner for Tennessee



Tennessee Agriculture and Rural Infrastructure

Highlights

Roads	With 92,173 miles of road as of 2008, Tennessee accounts for 2.3% of U.S. road miles.
Railroad	Tennessee had 4,078 miles of railroad in 1920 (around the time of the peak rail mileage), but this mileage had fallen to 3,339 miles in 1965 and decreased even further to 2,635 freight railroad miles in 2009.
Waterways	Tennessee has approximately 950 miles of inland waterways.
Bridges	Tennessee has 19,937 bridges, and approximately 19.3 percent of those are considered structurally deficient or functionally obsolete.

Research, analysis and report funded by the soybean checkoff

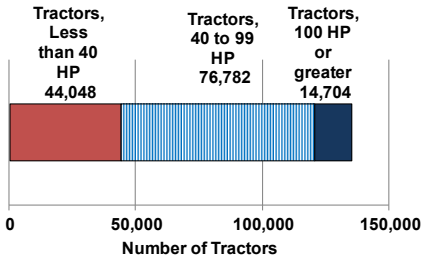
Tennessee Agricultural Production and Rural Infrastructure

Consolidation Trends: Fewer Farms and Larger Average Farm Size

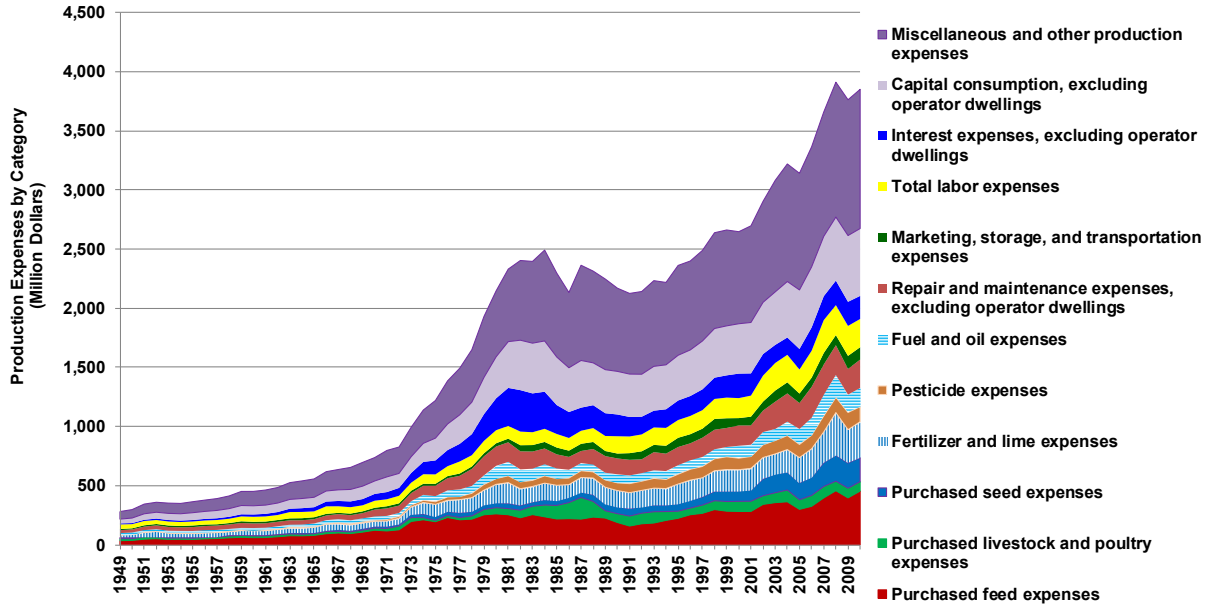
	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head per farm for farms with production	Number of Farms	Average acreage or number of head per farm for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	125,790	13 acres	4,653	168 acres	-96%	1,188%
Soybeans	5,289	37 acres	2,967	329 acres	-44%	781%
Wheat	19,088	10 acres	1,358	188 acres	-93%	1,737%
Cattle and Calves Inventory	158,881	11 head	46,719	45 head	-71%	309%
Hogs Sold	56,286	17 head	1,160	405 head	-98%	2,342%
Broilers Sold	497	12,541 head	670	307,661 head	35%	2,353%
All Farms	203,149	87 acres	79,280	138 acres	-61%	59%

Farm Equipment

Farm Equipment Used: Number of Tractors of Various Sizes, 2007



Farm Input Trends: Tennessee Farm Inputs by Type, 1949-2010



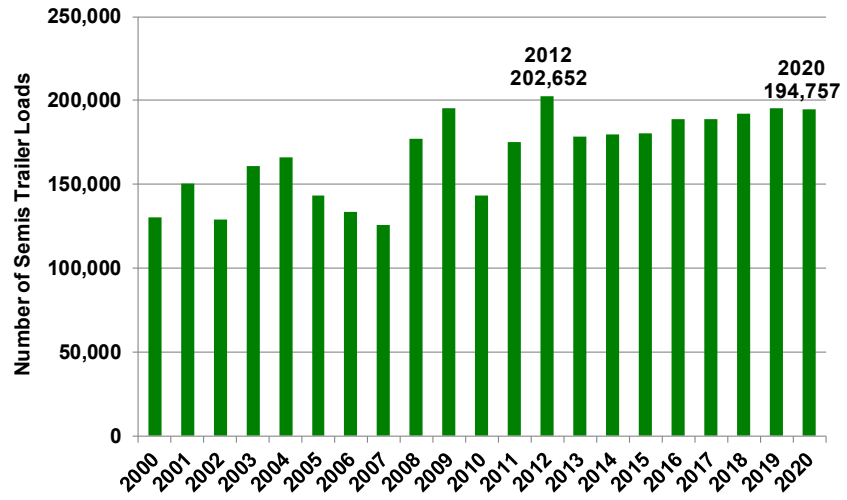
Research, analysis and report funded by the soybean checkoff

Tennessee Agricultural Production and Rural Infrastructure

Rural Infrastructure Trends

	Then			Now			Change
	Year	Quantity	Percentage of U.S.	Year	Quantity	Percentage of U.S.	Percentage Change in Quantity
Off Farm Storage (million bushels)	1986	70	0.8%	2011	58	0.6%	-17%
On Farm Storage (million bushels)	1986	106	0.8%	2011	75	0.6%	-29%
Estimated Average Tractor Weight (lbs.)	1950	5,046	93.6%	2011	8,514	85.4%	69%
Railroad Miles	1920	4,078	1.6%	2009 freight	2,635	1.9%	-35%
Road Miles	1940	7,575	1.4%	2008	92,173	2.3%	1,117%

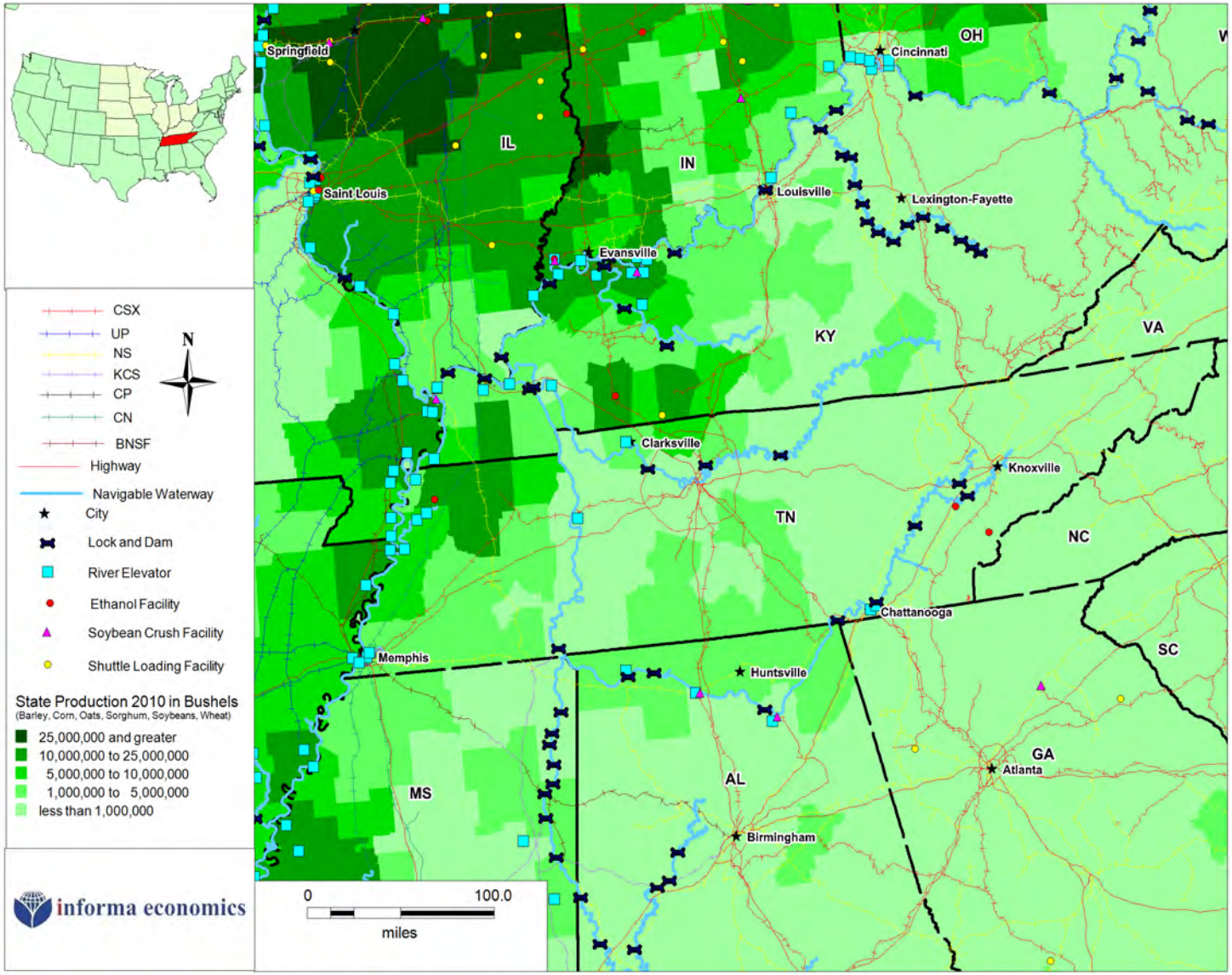
Estimated Number of Semi Trailer Loads Required to Haul Tennessee's Grain and Oilseed Production
(Includes Corn, Soybeans, Wheat, Sorghum, Barley, and Oats)



Note: Assumes 26 tons of grain per semi trailer load. Estimated number of semi trailer loads if all production is initially hauled by semi trailer. Based on Informa crop production forecasts.

Research, analysis and report funded by the soybean checkoff
Informa Economics, Inc. for the Soy Transportation Coalition © 2012

Tennessee: Agricultural Production and Infrastructure

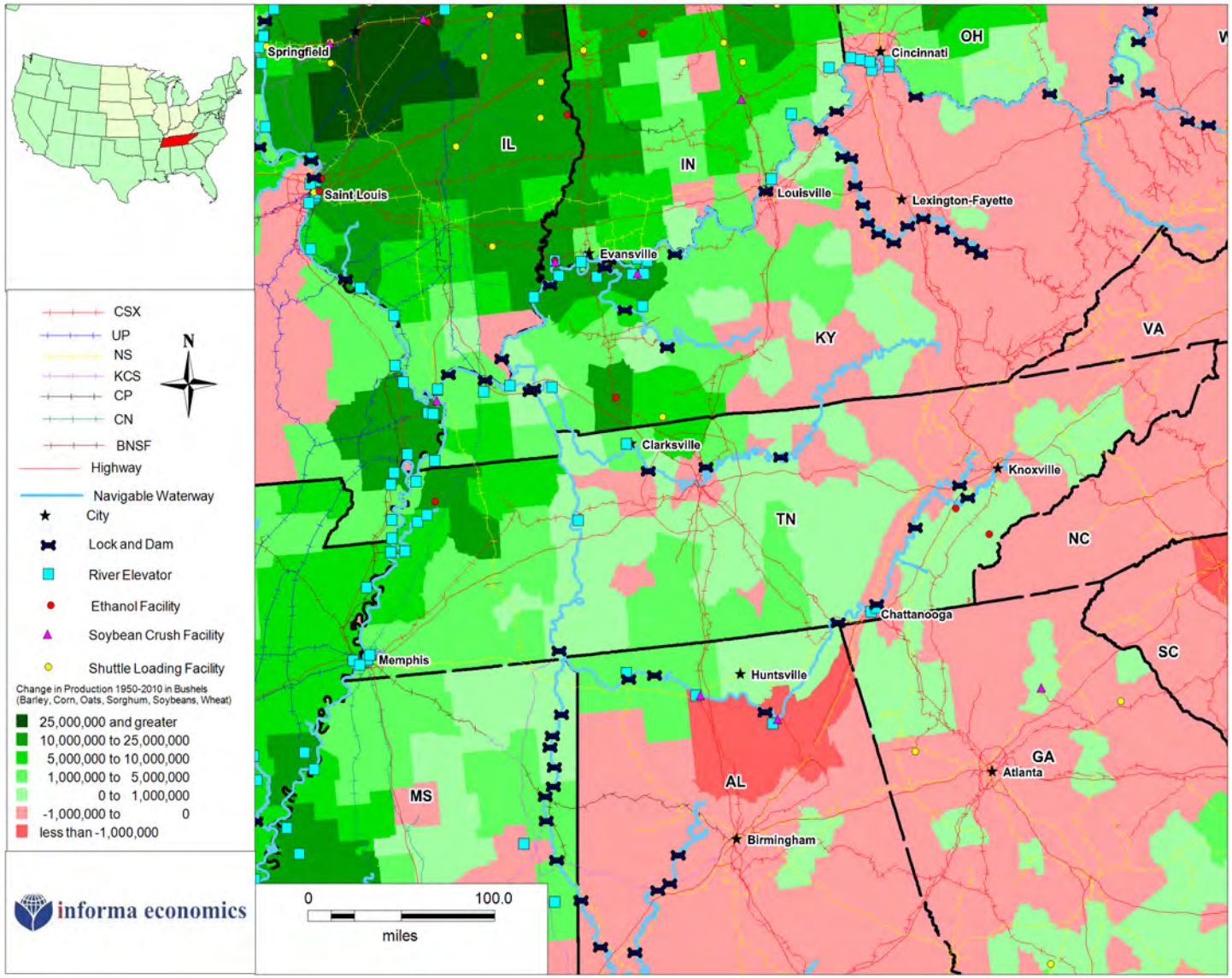


Infrastructure

- Tennessee crop production consists primarily of corn, soybeans and wheat.
- Crops are moved from production regions by truck, rail, and/or barge to elevators and processing facilities.
- Tennessee has 1,097 miles of interstate; 2,635 miles of rail lines; 19,937 bridges; 950 miles of waterways and 92,173 miles of roadways.
- Tennessee has three ethanol plants; 12 river elevators and 44 grain elevators.

Research, analysis and report funded by the soybean checkoff

Tennessee: Change in Production from 1950 to 2010



Production

- Crop production has been increasing throughout the majority of the state, specifically the western and central portion. Production decreased in the northeastern portion of the state.
- Production of grains and soybeans in Tennessee has increased by nearly 120 million bushels from 1950 to 2010.
- In the past, agricultural production has centered on soybeans and wheat.
- Currently, production is focused on corn, soybeans and wheat.

Research, analysis and report funded by the soybean checkoff

Tennessee Grains and Soybeans Supply and Demand Balance, 2000-2011

		2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Beginning Stocks	Corn	3.3	4.0	5.3	3.6	3.7	4.5	6.1	3.9	4.0	6.5	4.5	3.5
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0
	Wheat	15.6	11.3	8.4	11.4	12.6	11.0	12.9	10.8	17.6	17.2	13.4	20.5
	Soybean	0.9	0.8	0.6	0.6	0.3	1.0	1.4	0.9	0.3	0.8	0.7	0.4
Beginning Stocks Total		**19.9**	**16.3**	**14.4**	**15.6**	**16.8**	**16.6**	**20.4**	**15.7**	**21.9**	**24.6**	**18.7**	**24.3**
Acres Planted	Corn	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.9	0.7	0.7	0.7	0.8
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.5	0.5	0.4	0.4	0.2	0.3	0.4	0.6	0.4	0.3	0.4	0.4
	Soybean	1.2	1.1	1.2	1.2	1.2	1.1	1.2	1.1	1.5	1.6	1.5	1.3
Acres Planted Total		**2.4**	**2.2**	**2.3**	**2.3**	**2.2**	**2.1**	**2.1**	**2.6**	**2.6**	**2.5**	**2.6**	**2.5**
Acres Harvested	Corn	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.8	0.6	0.6	0.6	0.7
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.5	0.3	0.2	0.3	0.4
	Soybean	1.2	1.0	1.1	1.1	1.2	1.1	1.1	1.0	1.5	1.5	1.4	1.3
Acres Harvested Total		**2.1**	**2.0**	**2.0**	**2.1**	**2.0**	**1.9**	**1.9**	**2.3**	**2.5**	**2.3**	**2.4**	**2.4**
Yield	Corn	114.0	132.0	107.0	131.0	140.0	130.0	125.0	106.0	118.0	148.0	117.0	131.0
	Sorghum	75.0	80.0	80.0	82.0	90.0	92.0	95.0	82.0	91.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	54.0	47.0	50.0	49.0	56.0	64.0	41.0	63.0	51.0	53.0	69.0	56.0
	Soybean	25.0	34.0	31.0	42.0	41.0	38.0	39.0	19.0	34.0	45.0	31.0	32.0
Production	Corn	66.1	80.5	65.3	81.2	86.1	77.4	62.5	83.7	74.3	87.3	74.9	96.3
	Sorghum	1.7	1.8	2.1	3.3	1.5	1.8	1.0	1.2	2.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	18.4	14.1	13.5	13.7	8.4	12.2	10.7	32.8	17.3	9.5	21.4	21.8
	Soybean	28.8	35.4	34.7	47.0	48.4	41.8	44.1	19.2	49.6	68.9	43.7	40.0
Production Total		**114.9**	**131.7**	**115.6**	**145.3**	**144.4**	**133.2**	**118.3**	**136.9**	**143.3**	**165.7**	**140.0**	**158.1**
Total Supply	Corn	69.4	84.5	70.6	84.8	89.8	81.9	68.6	87.7	78.3	93.9	79.4	99.8
	Sorghum	1.7	1.8	2.1	3.3	1.6	1.9	1.1	1.2	2.0	0.1	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.1	0.2	0.1	0.2	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0
	Wheat	21.5	16.5	15.6	16.1	12.4	15.4	14.0	32.9	27.3	17.7	26.2	29.8
	Soybean	29.7	36.1	35.3	47.6	48.7	42.8	45.4	20.1	49.9	69.6	44.4	40.4
Total Supply Total		**122.3**	**139.1**	**123.7**	**152.0**	**152.5**	**142.1**	**129.2**	**141.9**	**157.6**	**181.3**	**150.0**	**170.0**
Exports	Corn	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exports Total		**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Processing	Corn	128.7	129.9	135.7	141.1	134.2	141.2	142.3	139.2	159.9	174.1	176.0	170.0
	Sorghum	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.1	0.4	0.5	0.4	0.5
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Wheat	32.2	28.2	28.1	31.9	31.1	31.6	32.6	32.7	31.7	31.5	31.4	29.4
	Soybean	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ending Stocks	Corn	4.0	5.3	3.6	3.7	4.5	6.1	3.9	4.0	6.5	4.5	3.5	2.6
	Sorghum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Barley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Oats	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
	Wheat	11.3	8.4	11.4	12.6	11.0	12.9	10.8	17.6	17.2	13.4	20.5	24.4
	Soybean	0.8	0.6	0.6	0.3	1.0	1.4	0.9	0.3	0.8	0.7	0.4	0.4
Ending Stocks Total		**16.3**	**14.4**	**15.6**	**16.8**	**16.6**	**20.4**	**15.7**	**21.9**	**24.6**	**18.7**	**24.3**	**27.4**

B. Representative County Profiles

Research, analysis and report funded by the soybean checkoff

Wright County Agricultural Production and Rural Infrastructure (Iowa)

Wright County Trends in Agricultural Production and Infrastructure

Highlights

- From 1940 to 2011, grain* and soybean production increased 539.0%, from 6,517,000 bushels to 41,643,000 bushels.

- Rural population in 1930: 13,567 people
- Percent of population in rural areas in 1930: 67.1%
- Rural population in 2010: 7,514 people
- Percent of population in rural areas in 2010: 43.2%

*Includes corn, wheat, sorghum, oats, and barley.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of Iowa	Year	Quantity	Percentage of Iowa	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1954	1,855	0.9%	2007	771	0.8%	-58.4%
Farmland Trends: Land in Farms (Acres)	1954	353,492	1,015.8%	2007	327,728	1.1%	-7.3%
Average Farm Size (Acres)	1954	191	112.8%	2007	425	127.5%	123.1%
Population Trends: Population Density (Pop. per Sq. Mi)	1930	35	78.7%	2010	23	41.7%	-34.6%
Production Trends: Volume of Production (Thousand Bushels)	1940	6,517	0.9%	2011	41,643	1.5%	539.0%

Research, analysis and report funded by the soybean checkoff

Wright County Agricultural Production and Rural Infrastructure (continued)

Consolidation Trends

	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head for farms with production	Number of Farms	Average acreage or number of head for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	1,738	73 acres	492	355 acres	-71.7%	386.2%
Soybeans	1,313	35 acres	409	281 acres	-68.8%	703.7%
Wheat	NA	NA acres	NA	NA acres	NA	NA
Cattle and Calves Inventory	1,579	30 head	93	103 head	-94.1%	246.2%
Hogs Sold	1,536	100 head	44	21,030 head	-97.1%	21,009.5%
Broilers Sold	1	3,700 head	1	(D) head	0.0%	NA
All Farms	1,855	191 acres	771	425 acres	-58.4%	123.1%

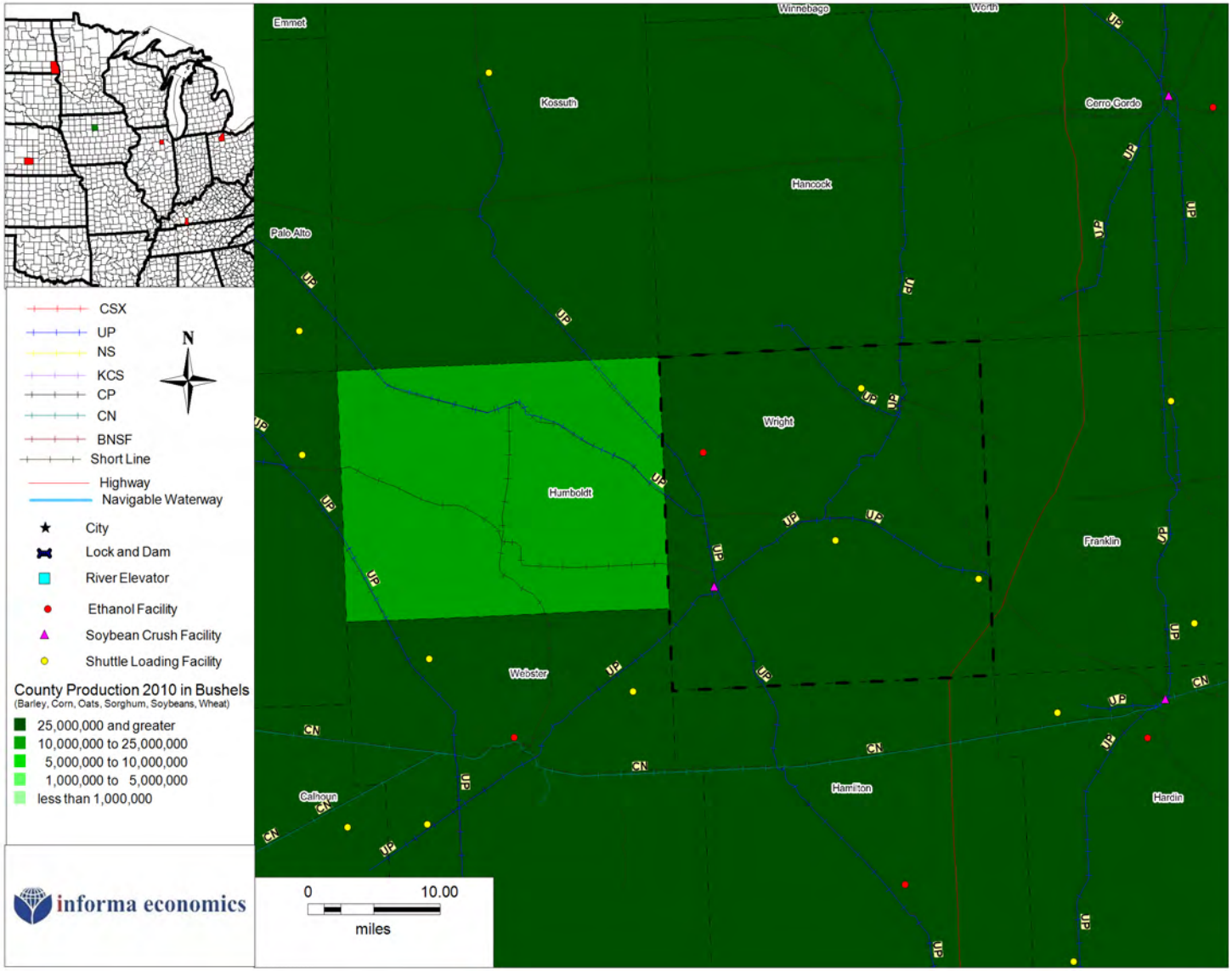
Note: "NA"=data not available or no crop/animal productioni in county, "(D)"=data cannot be disclosed due to confidentiality restrictions.

Rural Infrastructure

Highlights			
Grain Storage Capacity (Bushels)	22,065,383	Total Number of Bridges	197
Capacity as % of Iowa Capacity	1.3%	Deficient Bridges (% of Total)	26.4%
Total Road Miles	970	Rail Miles	118
Paved	800	Number of River Elevators in Wright County and Adjacent Counties	0
Non-Paved	170		

Research, analysis and report funded by the soybean checkoff
Informa Economics, Inc. for the Soy Transportation Coalition

Wright County, IA: Agricultural Production and Infrastructure

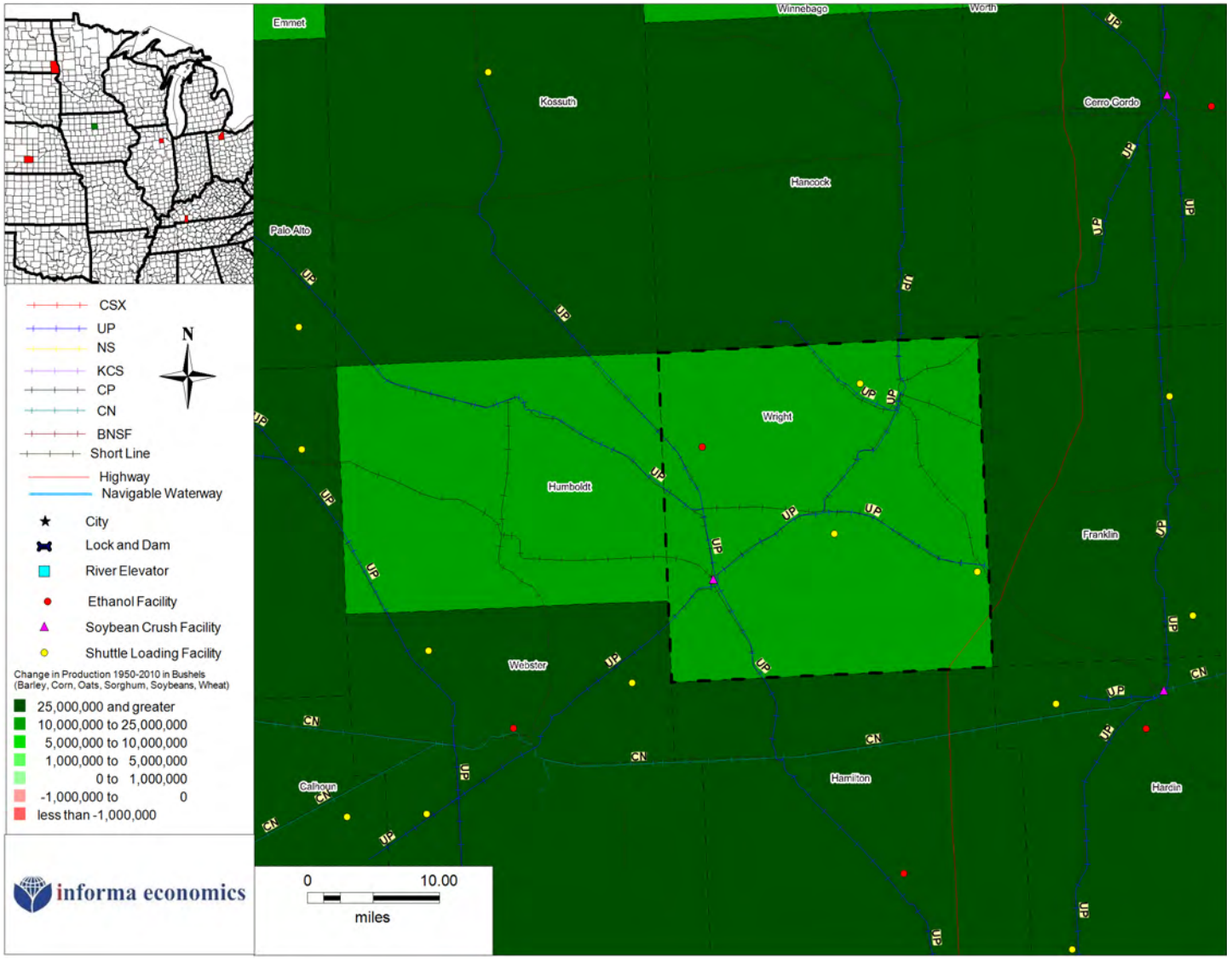


Infrastructure

- Wright County crop production consists primarily of corn and soybeans.
- Crops are moved from production regions by truck or rail to elevators and processing facilities.
- Wright County has 118 miles of rail lines; 197 bridges and 970 miles of roadways.
- Wright County has one ethanol plant; 3 shuttle facilities; 12 river elevators and 44 grain elevators.

Research, analysis and report funded by the soybean checkoff

Wright County, IA: Change in Production from 1950 to 2010



Production

- Crop production in the county has been increasing over the past six decades.
- Production of grains and soybeans has increased by approximately 24 million bushels from 1950 to 2010.
- Historically, Wright County agricultural production has been comprised of corn and soybeans.
- Presently, Wright County production continues to be made up of corn and soybeans.

Research, analysis and report funded by the soybean checkoff

Wright County, Iowa Grains and Soybeans Acreage, Yield, and Production, 2000-2011, (acres, bushels)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Harvested Area												
Corn	171,900	166,500	167,000	174,500	173,000	177,000	174,700	196,300	181,500	180,000	173,000	183,600
Oats	600		500	300	300	300	290					
Soybeans	158,300	162,800	154,600	158,200	146,400	144,300	147,500	126,300	137,600	136,600	138,000	129,200
Harvested Area Total	**330,800**	**329,300**	**322,100**	**333,000**	**319,700**	**321,600**	**322,490**	**322,600**	**319,100**	**316,600**	**311,000**	**312,800**
Yield												
Corn	155.2	145.8	172.5	165.6	186.5	183.0	181.5	182.4	164.0	180.0	150.0	189.9
Oats	66.7		78.0	100.0	106.7	83.3	79.3					
Soybeans	42.8	39.7	47.1	34.0	49.2	51.1	52.3	51.4	46.5	52.0	41.7	52.5
Production												
Corn	26,675,000	24,275,000	28,800,000	28,900,000	32,260,000	32,390,000	31,711,000	35,809,000	29,800,000	32,407,000	25,950,000	34,860,000
Oats	40,000		39,000	30,000	32,000	25,000	23,000					
Soybeans	6,777,000	6,457,000	7,276,000	5,380,000	7,202,000	7,378,400	7,711,300	6,492,000	6,421,000	7,095,000	5,754,000	6,783,000
Production Total	**33,492,000**	**30,732,000**	**36,115,000**	**34,310,000**	**39,494,000**	**39,793,400**	**39,445,300**	**42,301,000**	**36,221,000**	**39,502,000**	**31,704,000**	**41,643,000**

Research, analysis and report funded by the soybean checkoff

Kendall County Agricultural Production and Rural Infrastructure (Illinois)

Kendall County Trends in Agricultural Production and Infrastructure

Highlights
- From 1940 to 2011, grain* and soybean production increased 216.5%, from 5,565,000 bushels to 17,617,000 bushels.
- Rural population in 1930: 10,555 people - Percent of population in rural areas in 1930: 100.0% - Rural population in 2010: 11,955 people - Percent of population in rural areas in 2010: 89.6%

*Includes corn, wheat, sorghum, oats, and barley.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of Illinois	Year	Quantity	Percentage of Illinois	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1954	1,029	0.5%	2007	424	0.6%	-58.8%
Farmland Trends: Land in Farms (Acres)	1954	191,636	604.5%	2007	166,872	0.6%	-12.9%
Average Farm Size (Acres)	1954	186	119.3%	2007	394	112.0%	111.3%
Population Trends: Population Density (Pop. per Sq. Mi)	1930	33	24.0%	2010	358	154.8%	987.0%
Production Trends: Volume of Production (Thousand Bushels)	1940	5,565	1.0%	2011	17,617	0.7%	216.5%

Research, analysis and report funded by the soybean checkoff

Kendall County Agricultural Production and Rural Infrastructure (continued)

Consolidation Trends

	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head for farms with production	Number of Farms	Average acreage or number of head for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	941	76 acres	246	416 acres	-73.9%	443.5%
Soybeans	388	30 acres	200	228 acres	-48.5%	671.1%
Wheat	0	14 acres	20	135 acres	NA	855.4%
Cattle and Calves Inventory	755	43 head	42	44 head	-94.4%	2.7%
Hogs Sold	585	113 head	22	2,117 head	-96.2%	1,781.2%
Broilers Sold	4	3,875 head	1	(D) head	-75.0%	NA
All Farms	1,029	186 acres	424	394 acres	-58.8%	111.3%

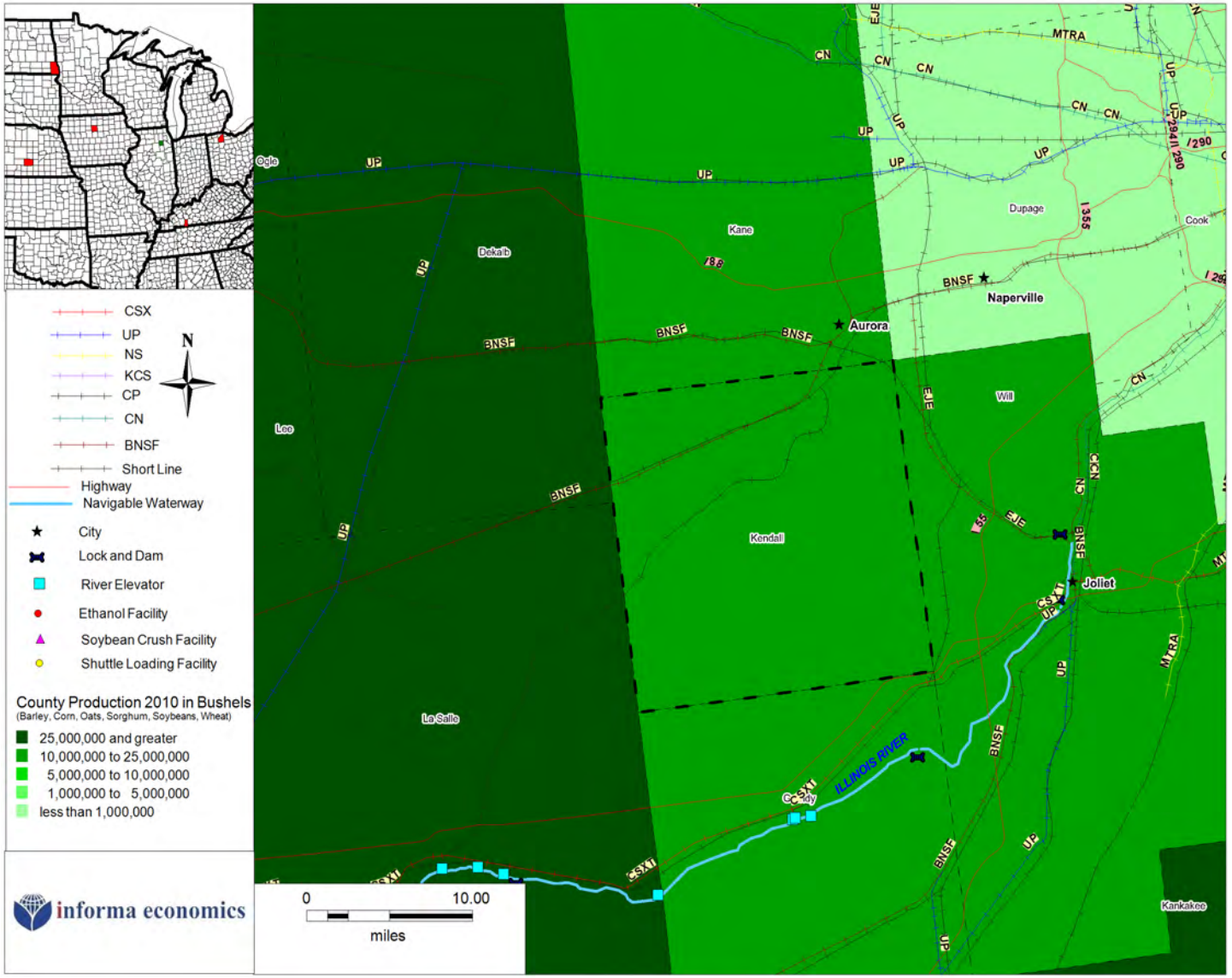
Note: "NA"=data not available or no crop/animal productioni in county, "(D)"=data cannot be disclosed due to confidentiality restrictions.

Rural Infrastructure

Highlights			
Grain Storage Capacity (Bushels)	12,724,500	Total Number of Bridges	122
Capacity as % of Illinois Capacity	0.9%	Deficient Bridges (% of Total)	10.7%
Total Road Miles	1,032	Rail Miles	34
Paved	635	Number of River Elevators in Kendall County and Adjacent Counties	11
Non-Paved	397		

Research, analysis and report funded by the soybean checkoff

Kendall County, IL: Agricultural Production and Infrastructure

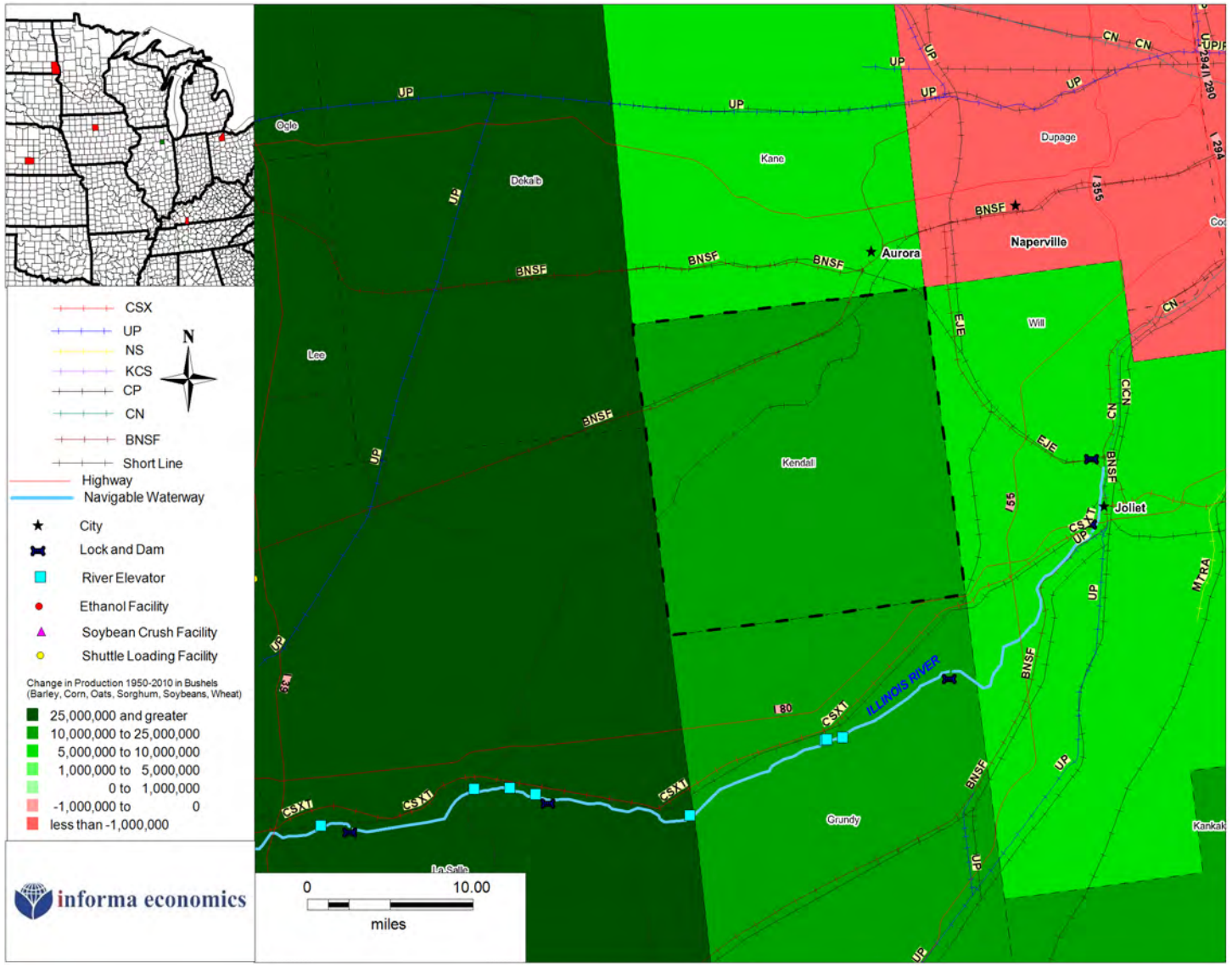


Infrastructure

- Kendall County crop production consists primarily of corn and soybeans.
- Crops are moved from production regions by truck or rail to elevators and processing facilities.
- Kendall County has 34 miles of rail lines; 122 bridges and 1,032 miles of roadways.
- While Kendall County has no facilities within the county, there are river elevators in counties to the south.

Research, analysis and report funded by the soybean checkoff

Kendall County, IL: Change in Production from 1950 to 2010



Production

- Crop production in the county has been increasing since 1950.
- Production of grains and soybeans has increased by nearly 11 million bushels from 1950 to 2010.
- Historically, Kendall County has produced primarily corn and oats, with small amounts of soybeans and wheat.
- Currently, agricultural production in the county consists primarily of corn and soybeans.

Research, analysis and report funded by the soybean checkoff

Kendall County, Illinois Grains and Soybeans Acreage, Yield, and Production, 2000-2011, (acres, bushels)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Harvested Area												
Corn	81,200	78,500	79,100	74,600	83,400	79,800	73,400	89,500	89,500	86,800	85,000	92,000
Oats				1,400								
Soybeans	71,800	72,500	68,400	68,100	61,800	60,700	63,600	48,800	49,800	51,900	50,700	44,800
Wheat	1,700	1,800	1,800	3,400	5,200	1,900	3,100	2,200				
Total Harvested Area	**154,700**	**152,800**	**149,300**	**147,500**	**150,400**	**142,400**	**140,100**	**140,500**	**139,300**	**138,700**	**135,700**	**136,800**
Yield												
Corn	150.0	133.0	114.0	171.0	182.0	110.0	184.0	183.0	176.0	179.0	168.6	165.3
Oats				97.0								
Soybeans	41.0	42.0	38.0	35.0	52.0	41.0	53.0	50.0	47.0	47.0	51.7	53.8
Wheat	77.0	78.0	70.0	87.0	78.0	87.0	86.0	58.0				
Production												
Corn	12,180,000	10,440,500	9,017,400	12,756,600	15,178,800	8,778,000	13,505,600	16,378,500	15,752,000	15,537,200	14,332,000	15,205,000
Oats				135,800								
Soybeans	2,943,800	3,045,000	2,599,200	2,383,500	3,213,600	2,488,700	3,370,800	2,440,000	2,340,600	2,439,300	2,622,000	2,412,000
Wheat	130,900	140,400	126,000	295,800	405,600	165,300	266,600	127,600				
Total Production	**15,254,700**	**13,625,900**	**11,742,600**	**15,571,700**	**18,798,000**	**11,432,000**	**17,143,000**	**18,946,100**	**18,092,600**	**17,976,500**	**16,954,000**	**17,617,000**

Research, analysis and report funded by the soybean checkoff

Todd County Agricultural Production and Rural Infrastructure (Kentucky)

Todd County Trends in Agricultural Production and Infrastructure

Highlights
- From 1940 to 2011, grain* and soybean production increased 670.0%, from 998,000 bushels to 7,685,000 bushels.
- Rural population in 1930: 13,520 people - Percent of population in rural areas in 1930: 100.0% - Rural population in 2010: 12,460 people - Percent of population in rural areas in 2010: 0.0%

*Includes corn, wheat, sorghum, oats, and barley.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of Kentucky	Year	Quantity	Percentage of Kentucky	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1954	1,484	0.6%	2007	759	0.9%	-48.9%
Farmland Trends: Land in Farms (Acres)	1954	203,028	1,025.4%	2007	197,976	1.4%	-2.5%
Average Farm Size (Acres)	1954	137	158.9%	2007	261	159.7%	90.7%
Population Trends: Population Density (Pop. per Sq. Mi)	1930	36	54.5%	2010	33	30.2%	-7.8%
Production Trends: Volume of Production (Thousand Bushels)	1940	998	1.4%	2011	7,685	2.9%	670.0%

Research, analysis and report funded by the soybean checkoff

Todd County Agricultural Production and Rural Infrastructure (continued)

Consolidation Trends

	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head for farms with production	Number of Farms	Average acreage or number of head for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	1,251	28 acres	171	283 acres	-86.3%	904.4%
Soybeans	5	4 acres	132	324 acres	2,540.0%	7,619.2%
Wheat	0	22 acres	90	167 acres	NA	662.0%
Cattle and Calves Inventory	1,120	17 head	319	66 head	-71.5%	288.2%
Hogs Sold	485	22 head	28	2,945 head	-94.2%	13,055.7%
Broilers Sold	NA	NA head	13	140,115 head	NA	NA
All Farms	1,484	137 acres	759	261 acres	-48.9%	90.7%

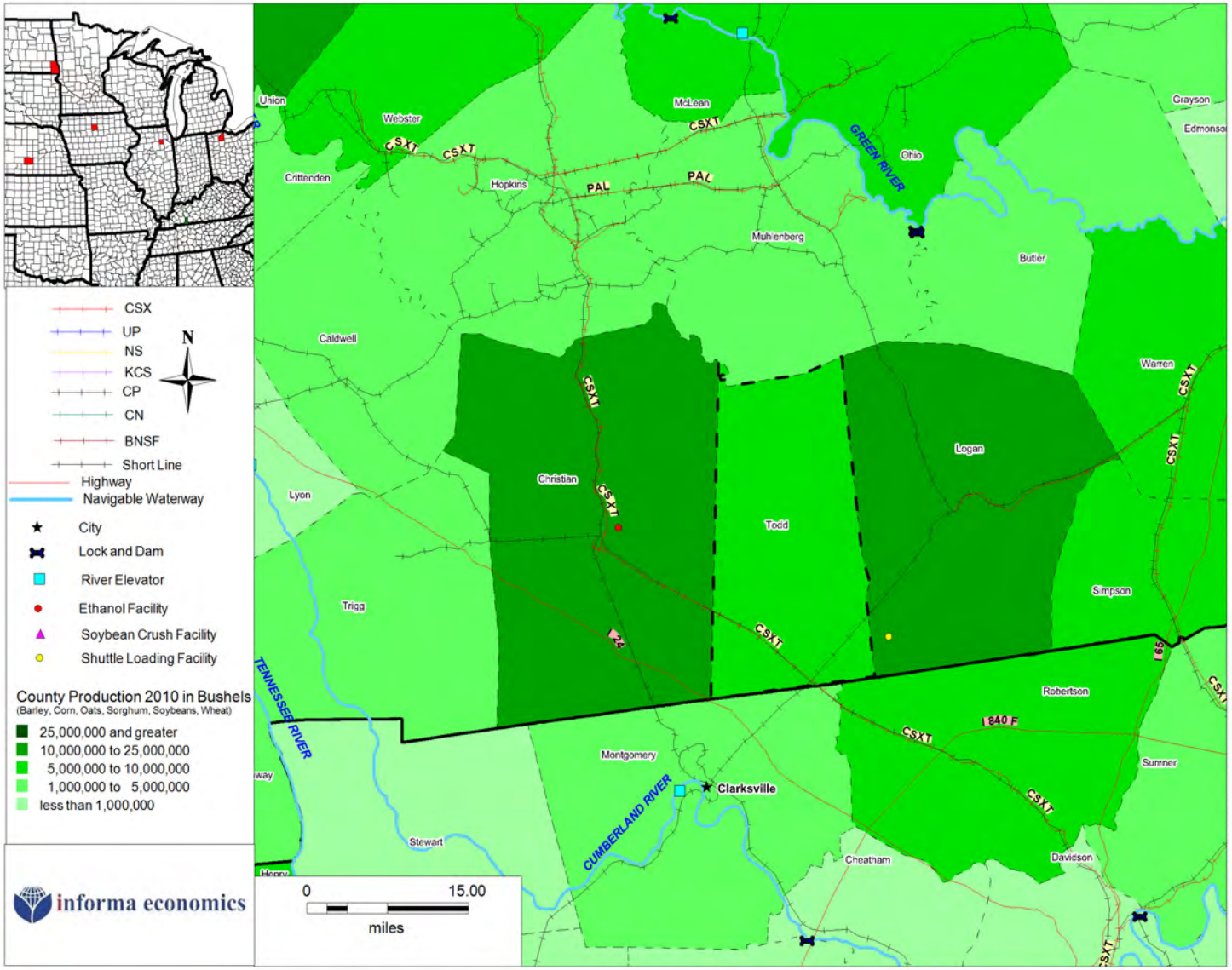
Note: "NA"=data not available or no crop/animal productioni in county, "(D)"=data cannot be disclosed due to confidentiality restrictions.

Rural Infrastructure

Highlights			
Grain Storage Capacity (Bushels)	7,489,370	Total Number of Bridges	78
Capacity as % of Kentucky Capacity	4.5%	Deficient Bridges (% of Total)	19.2%
Total Road Miles	608	Rail Miles	18
Paved	515	Number of River Elevators in Todd County and Adjacent Counties	1
Non-Paved	93		

Research, analysis and report funded by the soybean checkoff

Todd County, KY: Agricultural Production and Infrastructure

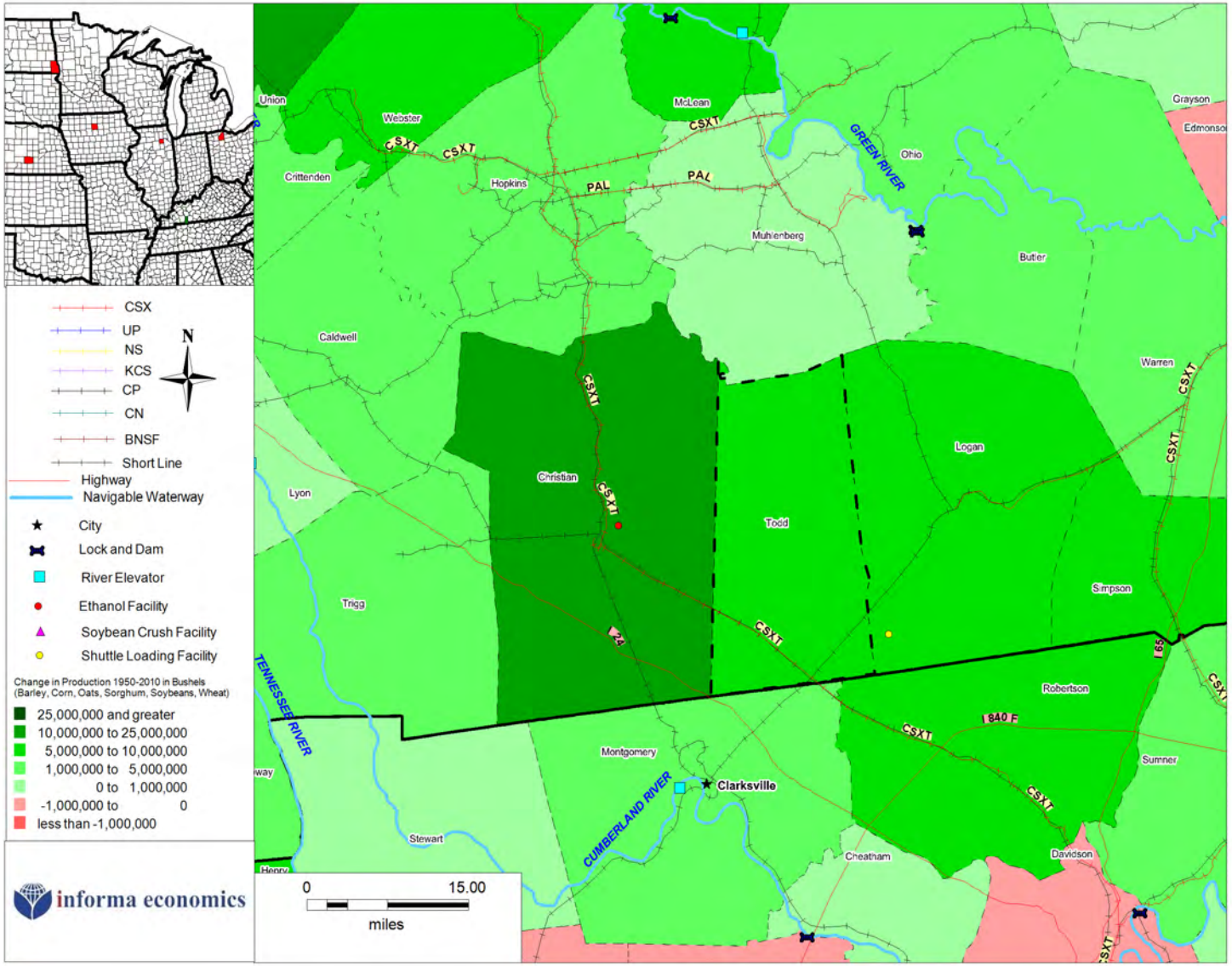


Infrastructure

- Todd County crop production consists primarily of corn, soybeans and wheat.
- Crops are moved from production regions by truck or rail to elevators and processing facilities.
- Todd County has 18 miles of rail lines; 78 bridges and 608 miles of roadways.
- While Todd County has no facilities located within the county, there is one ethanol facility in neighboring Christian county and one shuttle facility in Logan county, both accessible by rail.

Research, analysis and report funded by the soybean checkoff

Todd County, KY: Change in Production from 1950 to 2010



Production

- Crop production in Todd County has been increasing over the past six decades.
- Production of both grains and soybeans has increased by nearly 7.2 million bushels from 1950 to 2010.
- Historically, agricultural production in Todd County consisted primarily of corn.
- Presently, agricultural production in the county consists of corn, soybeans, and wheat.

Research, analysis and report funded by the soybean checkoff
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Todd County, Kentucky Grains and Soybeans Acreage, Yield, and Production, 2000-2011, (acres, bushels)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Harvested Area												
Barley	750	1,350	1,000	1,500	1,300	1,700	2,100		860			
Corn	45,100	42,300	43,800	43,200	45,500	46,200	44,800	48,200	42,500	45,200	44,000	45,000
Soybeans	42,100	42,700	42,000	43,100	42,700	43,500	45,000	41,000	47,800	45,900	46,300	47,400
Wheat	30,500	29,500	27,400	30,000	30,000	28,500	25,700	14,500	32,000			
Harvested Area Total	**295,600**	**286,200**	**293,200**	**289,800**	**280,200**	**264,200**	**260,500**	**265,300**	**264,500**	**262,400**	**268,300**	**264,700**
Yield												
Barley	62.0	81.0	71.0	82.0	89.0	90.0	99.0		99.0			
Corn	121.0	153.0	114.0	151.0	170.0	137.0	157.0	109.0	150.0	177.0	130.1	130.2
Soybeans	34.0	37.0	40.0	49.0	45.0	42.0	43.0	16.0	35.0	46.5	27.6	38.5
Wheat	59.0	69.0	59.0	65.0	55.0	71.0	77.0	47.0	80.0			
Production												
Barley	46,500	109,350	71,000	123,000	115,700	153,000	207,900		85,100			
Corn	5,457,100	6,471,900	4,993,200	6,523,200	7,735,000	6,329,400	7,033,600	5,255,000	6,375,000	7,997,000	5,725,000	5,861,000
Soybeans	1,431,400	1,579,900	1,680,000	2,111,900	1,921,500	1,827,000	1,935,000	656,000	1,673,000	2,135,000	1,280,000	1,824,000
Wheat	1,799,500	2,035,500	1,616,600	1,950,000	1,650,000	2,023,500	1,978,900	681,500	2,560,000			
Production Total	**22,167,600**	**20,996,200**	**24,281,300**	**20,653,500**	**23,017,000**	**23,326,100**	**22,734,100**	**22,808,200**	**20,612,500**	**24,418,000**	**26,192,000**	**19,271,000**

Research, analysis and report funded by the soybean checkoff

Richland County Agricultural Production and Rural Infrastructure (North Dakota)

Richland County Trends in Agricultural Production and Infrastructure

Highlights
- From 1940 to 2011, grain* and soybean production increased 223.9%, from 10,210,000 bushels to 33,070,000 bushels.
- Rural population in 1930: 17,832 people - Percent of population in rural areas in 1930: 84.9% - Rural population in 2010: 8,487 people - Percent of population in rural areas in 2010: 48.0%

*Includes corn, wheat, sorghum, oats, and barley.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of North Dakota	Year	Quantity	Percentage of North Dakota	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1954	2,325	3.5%	2007	943	2.9%	-59.4%
Farmland Trends: Land in Farms (Acres)	1954	865,227	2,026.3%	2007	905,922	2.3%	4.7%
Average Farm Size (Acres)	1954	372	57.5%	2007	961	77.4%	158.1%
Population Trends: Population Density (Pop. per Sq. Mi)	1930	15	148.3%	2010	11	116.3%	-22.3%
Production Trends: Volume of Production (Thousand Bushels)	1940	10,210	6.1%	2011	33,070	6.0%	223.9%

Research, analysis and report funded by the soybean checkoff

Richland County Agricultural Production and Rural Infrastructure (continued)

Consolidation Trends

	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head for farms with production	Number of Farms	Average acreage or number of head for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	1,807	48 acres	525	581 acres	-70.9%	1,114.0%
Soybeans	815	37 acres	541	525 acres	-33.6%	1,315.4%
Wheat	2	50 acres	308	319 acres	NA	532.4%
Cattle and Calves Inventory	1,793	31 head	225	147 head	-87.5%	371.5%
Hogs Sold	1,218	31 head	17	328 head	-98.6%	964.3%
Broilers Sold	5	7,600 head	6	229 head	20.0%	-97.0%
All Farms	2,325	372 acres	943	961 acres	-59.4%	158.1%

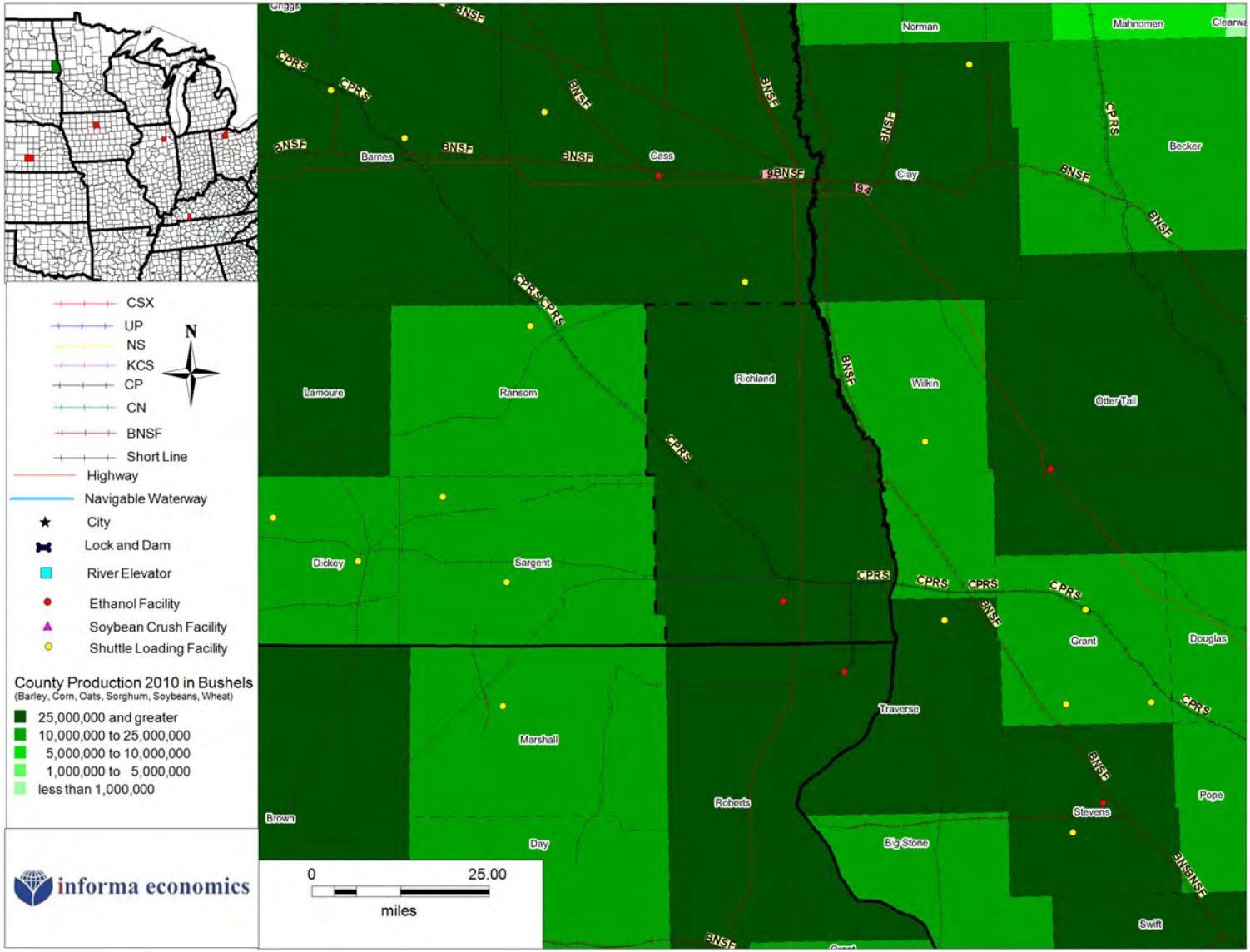
Note: "NA"=data not available or no crop/animal productioni in county, "(D)"=data cannot be disclosed due to confidentiality restrictions.

Rural Infrastructure

Highlights			
Grain Storage Capacity (Bushels)	49,309,845	Total Number of Bridges	208
Capacity as % of North Dakota Capacity	6.5%	Deficient Bridges (% of Total)	32.7%
Total Road Miles	525	Rail Miles	165
Paved	255	Number of River Elevators in Richland County and Adjacent Counties	0
Non-Paved	270		

Research, analysis and report funded by the soybean checkoff

Richland County, ND: Agricultural Production and Infrastructure



Infrastructure

- Richland County crop production consists primarily of corn, soybeans and wheat.
- Crops are moved from production regions by truck or rail to elevators and processing facilities.
- Richland County has 165 miles of rail lines; 208 bridges and 525 miles of roadways.
- Richland County has one ethanol plant.

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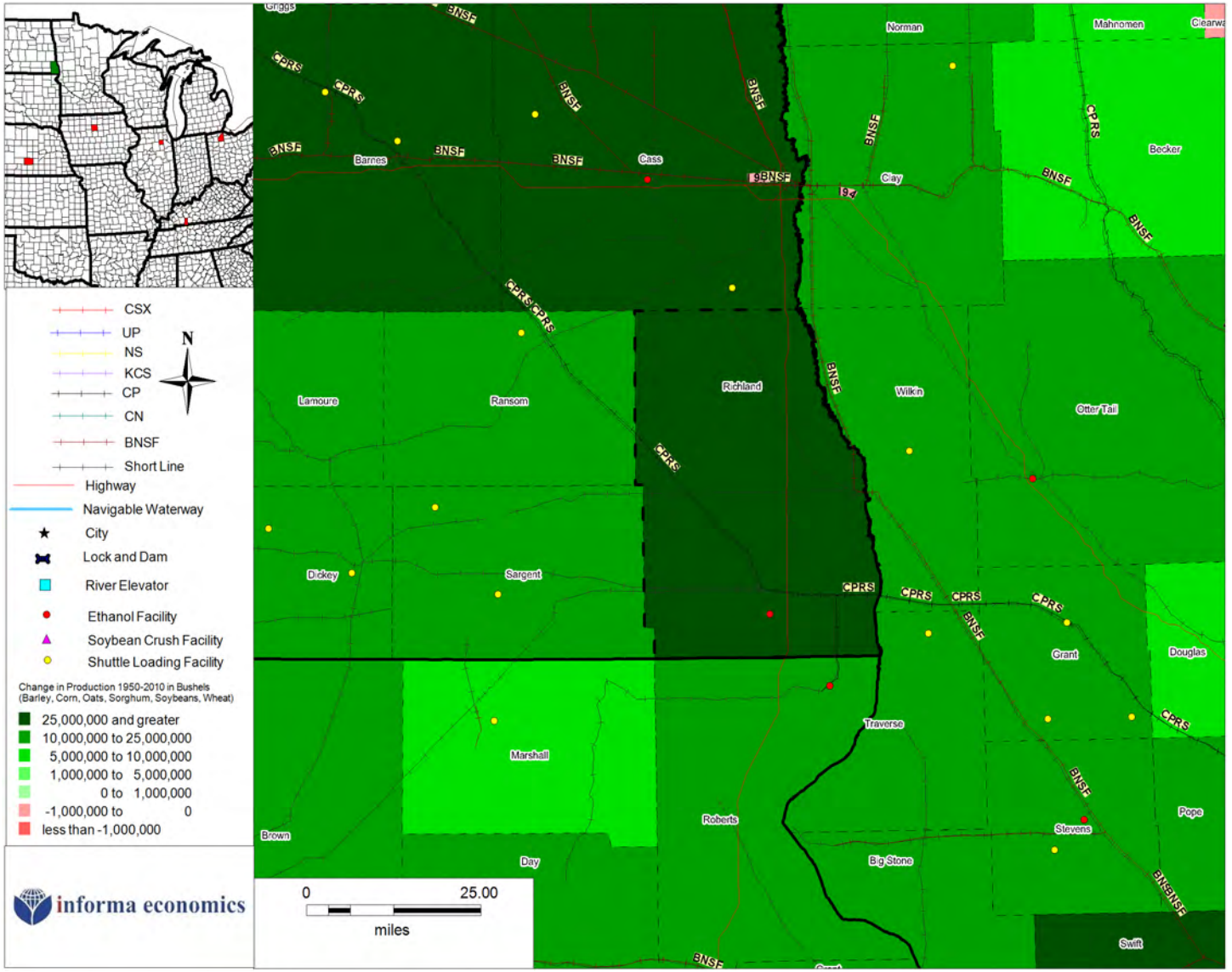
Richland County, ND: Change in Production from 1950 to 2010



Production

- Crop production in Richland County has been increasing since 1950.
- Total production of grains and soybeans has increased by approximately 38 million bushels from 1950 to 2010.
- Historically, agricultural production has consisted of corn, oats, barley, and wheat.
- In 2010, agricultural production consists primarily of corn and soybeans, with smaller amounts of wheat produced.

Research, analysis and report funded by the soybean checkoff
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Richland County, North Dakota Grains and Soybeans Acreage, Yield, and Production, 2000-2011, (acres, bushels)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Harvested Area												
Barley	6,400	5,200	5,600	7,800	4,200			800				
Corn	207,300	180,000	206,000	224,000	238,000	212,000	214,000	280,000	272,000	231,000	226,000	261,000
Oats	2,300	1,300	1,900	1,500								
Soybeans	298,000	291,500	310,500	306,500	309,000	293,500	324,500	263,000	298,500	311,500	312,000	276,000
Wheat	150,500	149,000	144,000					90,400				
Harvested Area Total	**328,200**	**299,800**	**319,400**	**312,900**	**329,900**	**303,100**	**239,500**	**251,300**	**315,900**	**291,100**	**290,800**	**289,700**
Yield												
Barley	67.2	50.0	50.0	77.6	67.9			37.5				
Corn	121.2	116.0	137.0	130.1	127.9	134.3	138.5	120.7	146.0	117.0	143.9	96.4
Oats	62.2	73.8	55.3	91.3								
Soybeans	32.3	32.7	36.3	30.3	29.1	36.1	36.7	32.8	33.0	30.0	35.2	28.7
Wheat	46.9	47.7	37.9					34.1				
Production												
Barley	430,000	260,000	280,000	605,000	285,000			30,000				
Corn	25,122,000	20,876,400	28,220,000	29,150,000	30,429,000	28,475,000	29,630,000	33,803,000	39,659,000	26,950,000	32,515,000	25,160,000
Oats	143,000	96,000	105,000	137,000								
Soybeans	9,620,000	9,520,000	11,275,000	9,300,000	9,005,000	10,595,000	11,910,000	8,624,000	9,778,000	9,270,000	10,980,000	7,910,000
Wheat	7,059,000	7,110,000	5,460,000					3,085,000				
Production Total	**20,744,000**	**18,559,000**	**20,007,000**	**18,975,000**	**23,478,000**	**22,296,000**	**15,014,000**	**20,344,000**	**24,916,800**	**24,151,000**	**23,668,000**	**22,225,000**

Research, analysis and report funded by the soybean checkoff

Buffalo County Agricultural Production and Rural Infrastructure (Nebraska)

Buffalo County Trends in Agricultural Production and Infrastructure

Highlights
- From 1940 to 2011, grain* and soybean production increased 6258.4%, from 633,000 bushels to 40,225,000 bushels.
- Rural population in 1930: 15,763 people - Percent of population in rural areas in 1930: 64.8% - Rural population in 2010: 14,873 people - Percent of population in rural areas in 2010: 67.7%

*Includes corn, wheat, sorghum, oats, and barley.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of Nebraska	Year	Quantity	Percentage of Nebraska	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1954	2,000	1.8%	2007	949	2.0%	-52.6%
Farmland Trends: Land in Farms (Acres)	1954	602,280	1,244.4%	2007	612,171	1.3%	1.6%
Average Farm Size (Acres)	1954	301	67.8%	2007	645	66.8%	114.2%
Population Trends: Population Density (Pop. per Sq. Mi)	1930	25	140.2%	2010	48	199.9%	89.4%
Production Trends: Volume of Production (Thousand Bushels)	1940	633	0.3%	2011	40,225	2.2%	6,258.4%

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Buffalo County Agricultural Production and Rural Infrastructure (continued)

Consolidation Trends

	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head for farms with production	Number of Farms	Average acreage or number of head for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	1,718	84 acres	485	478 acres	-71.8%	467.7%
Soybeans	381	33 acres	306	190 acres	-19.7%	475.1%
Wheat	1	43 acres	117	82 acres	NA	90.9%
Cattle and Calves Inventory	1,664	43 head	507	201 head	-69.5%	372.0%
Hogs Sold	1,049	35 head	32	304 head	-96.9%	779.3%
Broilers Sold	1	11,000 head	8	58 head	700.0%	-99.5%
All Farms	2,000	301 acres	949	645 acres	-52.6%	114.2%

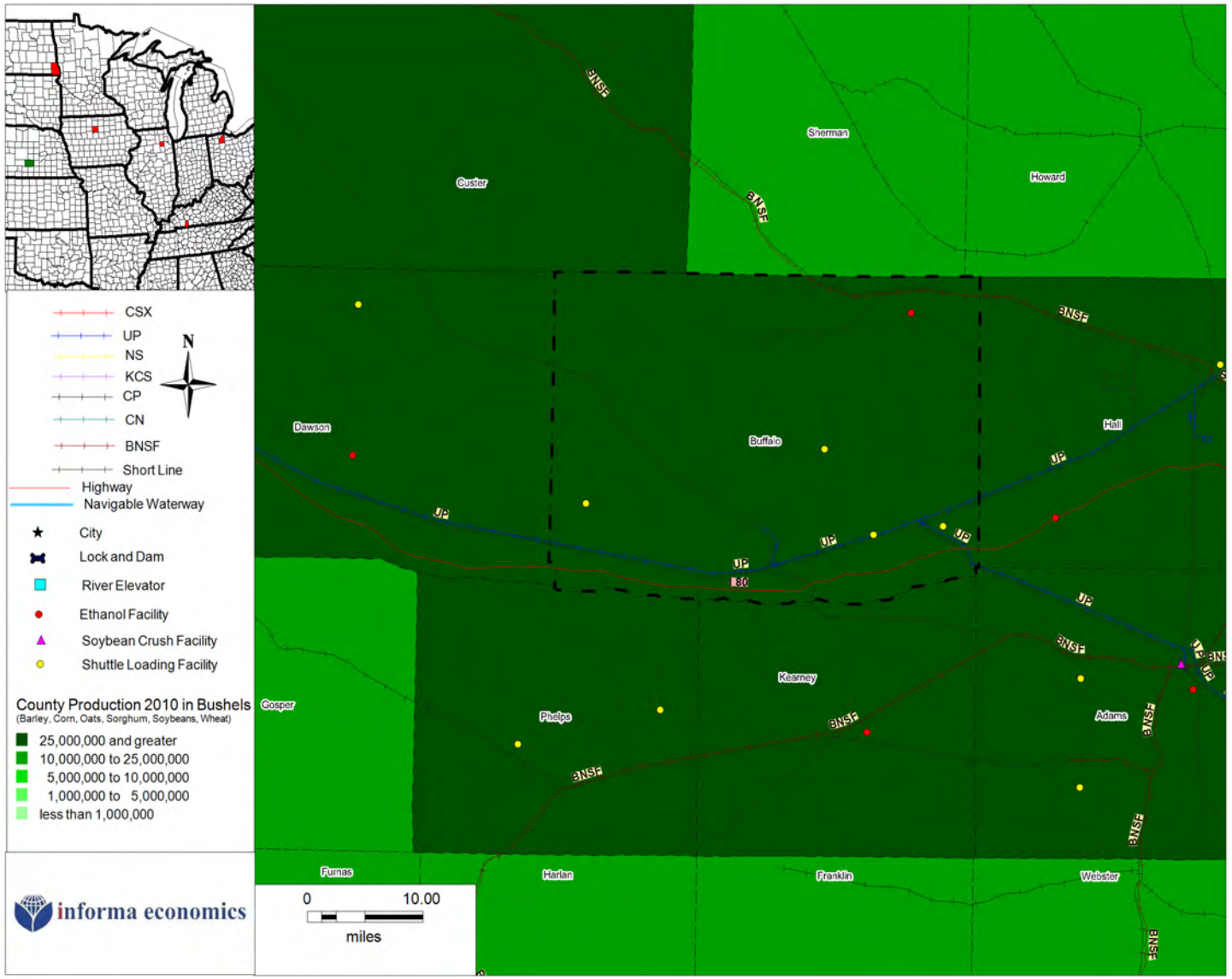
Note: "NA"=data not available or no crop/animal productioni in county, "(D)"=data cannot be disclosed due to confidentiality restrictions.

Rural Infrastructure

Highlights			
Grain Storage Capacity (Bushels)	23,441,639	Total Number of Bridges	470
Capacity as % of Nebraska Capacity	2.3%	Deficient Bridges (% of Total)	11.1%
Total Road Miles	1,500	Rail Miles	107
Paved	102	Number of River Elevators in Buffalo County and Adjacent Counties	0
Non-Paved	1,398		

Research, analysis and report funded by the soybean checkoff
Informa Economics, Inc. for the Soy Transportation Coalition

Buffalo County, NE: Agricultural Production and Infrastructure

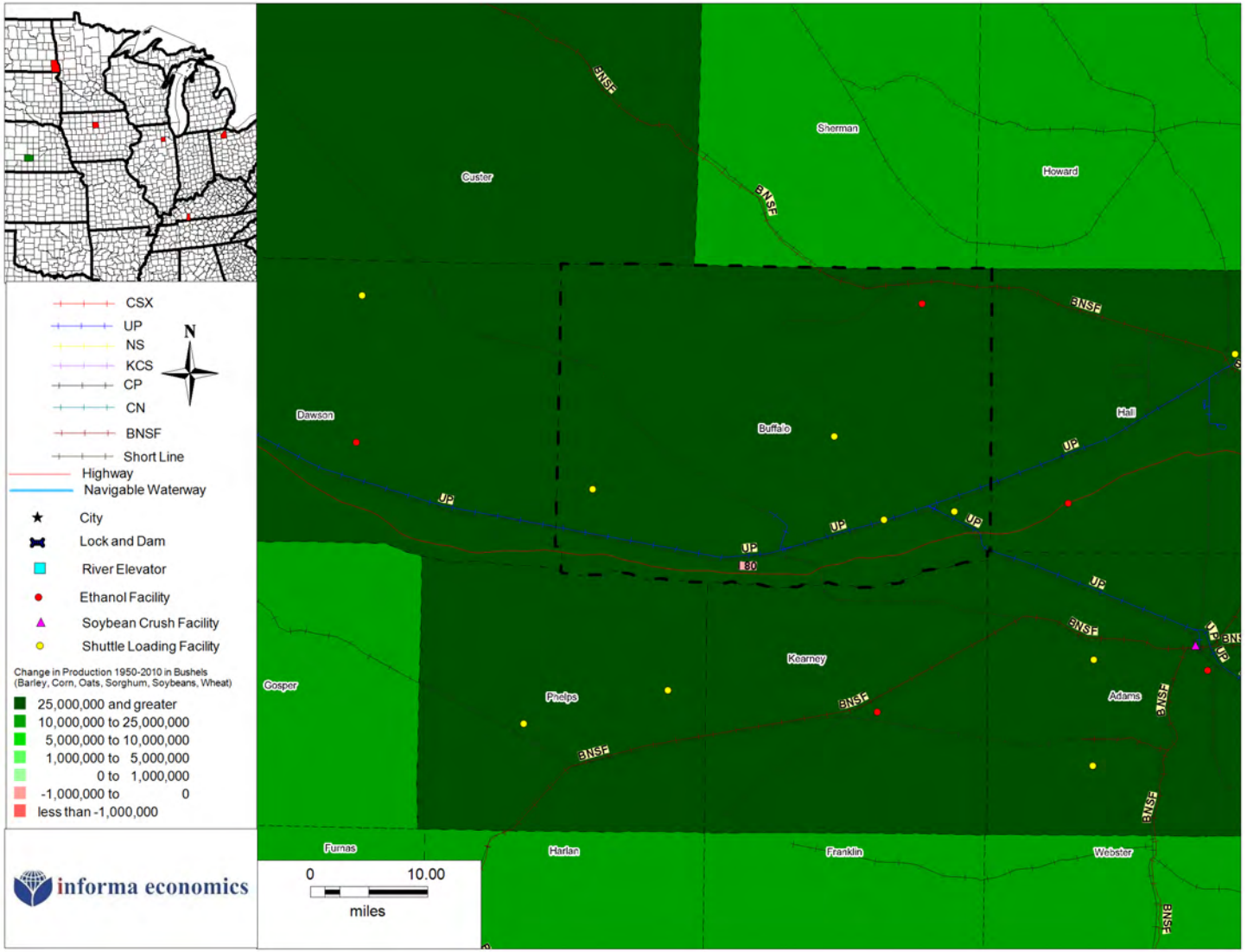


Infrastructure

- Buffalo County crop production consists primarily of corn, soybeans and wheat.
- Crops are moved from production regions by truck or rail to elevators and processing facilities.
- Buffalo County has 107 miles of rail lines; 470 bridges and 1,500 miles of roadways.
- Buffalo County has one ethanol facility and 4 shuttle facilities.

Research, analysis and report funded by the soybean checkoff

Buffalo County, NE: Change in Production from 1950 to 2010



Production

- Crop production has been increasing in Buffalo County over the past six decades.
- Production of grains and soybeans has increased by nearly 36 million bushels from 1950 to 2010.
- Historically, agricultural production has been dominantly corn and small amounts of sorghum.
- Currently, agricultural production in the county is primarily corn, in addition to soybeans & wheat.

Research, analysis and report funded by the soybean checkoff
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Buffalo County, Nebraska Grains and Soybeans Acreage, Yield, and Production, 2000-2011, (acres, bushels)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Harvested Area												
Corn	192,900	176,700	154,300	170,400	173,800	184,700	178,800	212,600	197,200	202,900	203,000	205,800
Oats	300	600	500	1,500	500	600	600	200				
Sorghum	1,900	1,700	1,400	1,800	1,200	1,000	1,700	1,300				
Soybeans	58,500	73,000	63,200	62,600	73,200	74,300	77,700	49,800	70,000	75,900	79,400	82,300
Wheat	5,600	3,900	4,300	11,700	12,400	8,400	9,300	9,500	7,400			
Harvested Area Total	**259,200**	**255,900**	**223,700**	**248,000**	**261,100**	**269,000**	**268,100**	**273,400**	**274,600**	**278,800**	**282,400**	**288,100**
Yield												
Corn	149.6	167.2	161.0	186.5	175.4	173.0	179.8	182.4	173.0	190.0	180.8	170.7
Oats	33.0	58.0	38.0	75.0	35.0	56.0	40.0	50.0				
Sorghum	59.2	78.9	44.9	68.0	70.3	55.5	99.3	114.5				
Soybeans	42.4	51.5	47.0	51.1	48.6	54.5	58.1	55.8	51.5	59.0	61.8	61.9
Wheat	39.2	46.2	41.5	50.5	39.8	41.1	46.1	42.5	51.0			
Production												
Corn	28,849,400	29,544,800	24,846,300	31,782,200	30,479,800	31,948,900	32,144,200	38,774,300	34,101,200	38,643,700	36,712,000	35,127,000
Oats	9,900	34,800	19,000	112,500	17,500	33,600	24,000	10,000				
Sorghum	112,400	134,100	62,800	122,400	84,400	55,500	168,800	148,900				
Soybeans	2,477,500	3,756,000	2,972,000	3,196,400	3,559,600	4,046,500	4,515,200	2,779,400	3,588,200	4,477,800	4,904,000	5,098,000
Wheat	219,400	180,300	178,500	590,700	493,600	345,200	428,500	403,800	379,200			
Production Total	**31,668,600**	**33,650,000**	**28,078,600**	**35,804,200**	**34,634,900**	**36,429,700**	**37,280,700**	**42,116,400**	**38,068,600**	**43,121,500**	**41,616,000**	**40,225,000**

Research, analysis and report funded by the soybean checkoff

Wood County Agricultural Production and Rural Infrastructure (Ohio)

Wood County Trends in Agricultural Production and Infrastructure

Highlights
- From 1940 to 2011, grain* and soybean production increased 191.0%, from 7,877,000 bushels to 22,921,000 bushels.
- Rural population in 1930: 40,450 people - Percent of population in rural areas in 1930: 80.4% - Rural population in 2010: 37,077 people - Percent of population in rural areas in 2010: 70.5%

*Includes corn, wheat, sorghum, oats, and barley.

Agricultural Production

	Then			Now			Change
	Year	Quantity	Percentage of Ohio	Year	Quantity	Percentage of Ohio	Percentage Change in Quantity
Consolidation Trends: Number of Farms	1954	2,766	1.3%	2007	1,169	1.5%	-57.7%
Farmland Trends: Land in Farms (Acres)	1954	343,410	1,575.3%	2007	275,552	2.0%	-19.8%
Average Farm Size (Acres)	1954	124	118.5%	2007	236	128.5%	89.9%
Population Trends: Population Density (Pop. per Sq. Mi)	1930	82	50.1%	2010	203	72.0%	149.4%
Production Trends: Volume of Production (Thousand Bushels)	1940	7,877	3.7%	2011	22,921	3.0%	191.0%

Research, analysis and report funded by the soybean checkoff

Wood County Agricultural Production and Rural Infrastructure (continued)

Consolidation Trends

	Then (1954)		Now (2007)		Change	
	Number of Farms	Average acreage or number of head for farms with production	Number of Farms	Average acreage or number of head for farms with production	Percentage Change in No. of Farms	Percentage Change in Avg. Farm Size
Corn for Grain	2,379	36 acres	600	156 acres	-74.8%	331.1%
Soybeans	2,025	31 acres	655	164 acres	-67.7%	424.2%
Wheat	2	24 acres	423	88 acres	NA	273.7%
Cattle and Calves Inventory	1,719	17 head	144	44 head	-91.6%	150.1%
Hogs Sold	882	39 head	39	302 head	-95.6%	672.4%
Broilers Sold	3	1,100 head	2	(D) head	-33.3%	NA
All Farms	2,766	124 acres	1,169	236 acres	-57.7%	89.9%

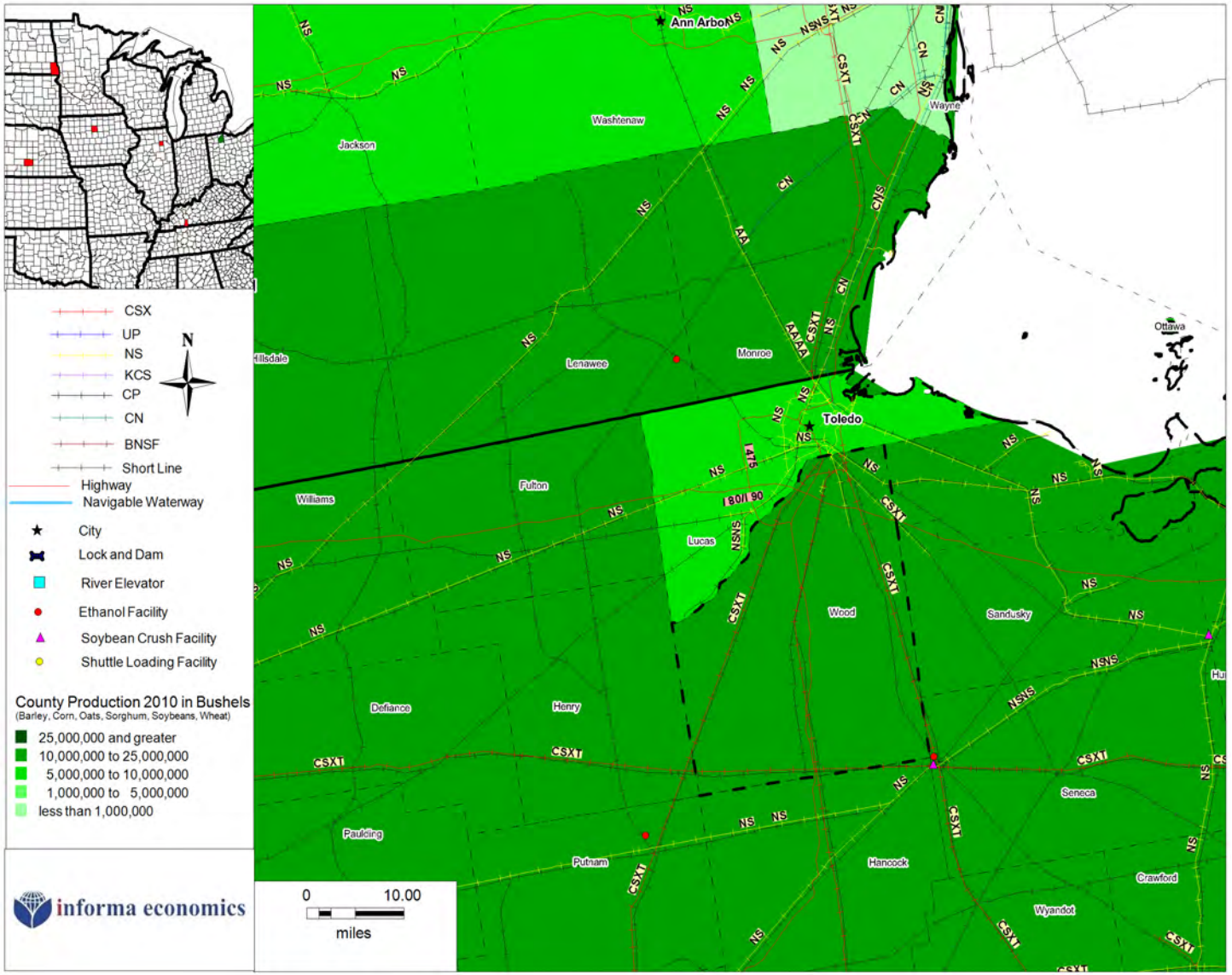
Note: "NA"=data not available or no crop/animal productioni in county, "(D)"=data cannot be disclosed due to confidentiality restrictions.

Rural Infrastructure

Highlights			
Grain Storage Capacity (Bushels)	4,853,995	Total Number of Bridges	529
Capacity as % of Ohio Capacity	1.1%	Deficient Bridges (% of Total)	24.2%
Total Road Miles	2,161	Rail Miles	158
Paved	2,101	Number of River Elevators in Wood County and Adjacent Counties	Near Port of Toledo
Non-Paved	61		

Research, analysis and report funded by the soybean checkoff

Wood County, OH: Agricultural Production and Infrastructure

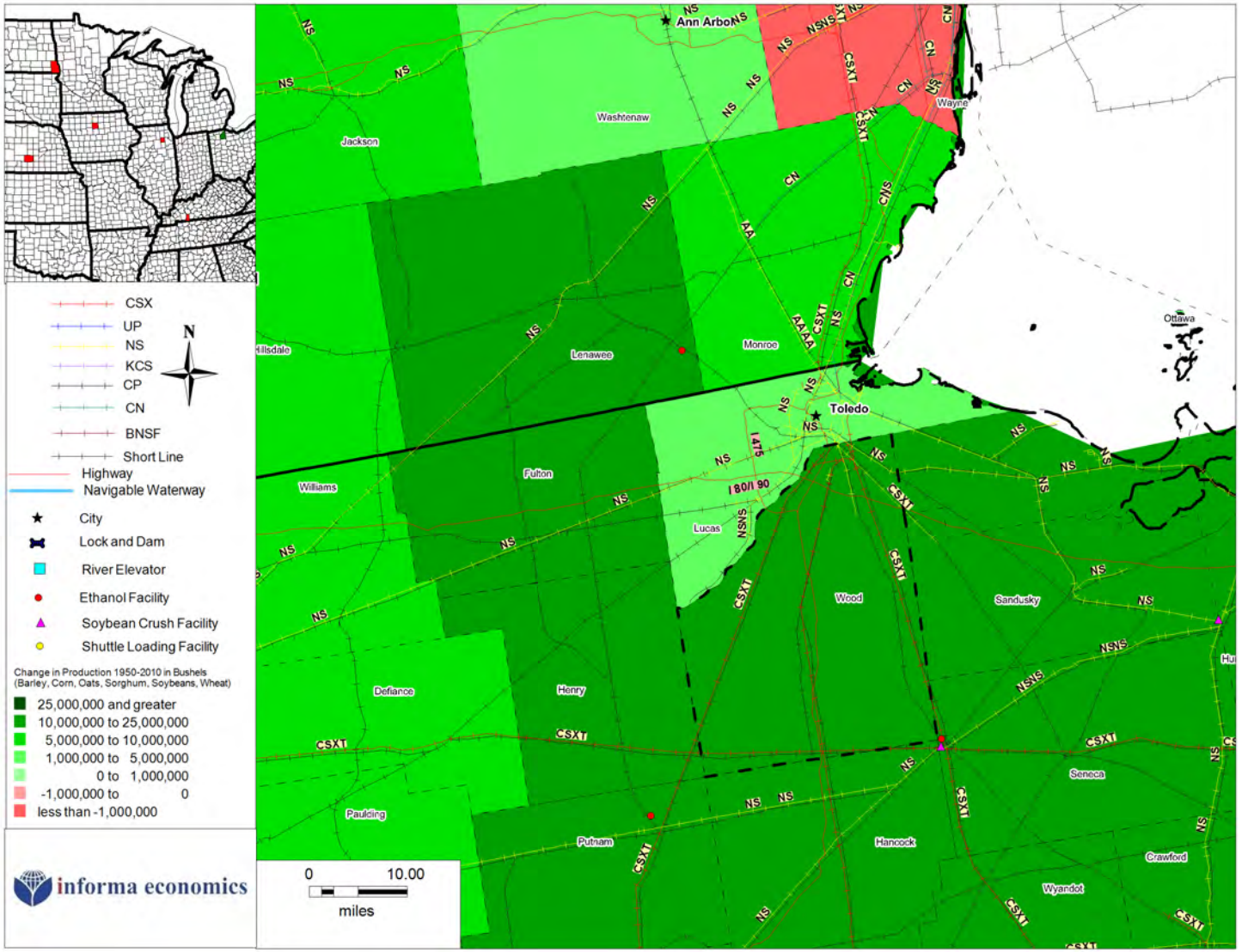


Infrastructure

- Wood County crop production consists primarily of corn, soybeans and wheat.
- Crops are moved from production regions by truck or rail to elevators and processing facilities.
- Wood County has 158 miles of rail lines; 529 bridges and 1,032 miles of roadways.

Research, analysis and report funded by the soybean checkoff

Wood County, OH: Change in Production from 1950 to 2010



Production

- Crop production in Wood County has been increasing over time.
- Total production of grains and soybeans in Wood County has increased by approximately 14 million bushels from 1950 to 2010.
- Historically, agricultural production in Wood County consisted of corn, oats, soybeans, and wheat.
- Presently, agricultural production in the county is primarily corn, in addition to soybeans and wheat.

Research, analysis and report funded by the soybean checkoff

Wood County, Ohio Grains and Soybeans Acreage, Yield, and Production, 2000-2011, (acres, bushels)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Harvested Area												
Corn	99,100	95,700	91,000	92,000	93,600	94,700	85,000	106,900	90,900	92,800	87,500	89,200
Soybeans	137,100	136,800	141,000	128,900	128,600	134,300	136,700	125,400	134,600	138,200	142,800	136,300
Wheat	55,700	45,400	42,600	56,000	51,700	46,300	57,300	40,500	57,500			
Harvested Area Total	**291,900**	**277,900**	**274,600**	**276,900**	**273,900**	**275,300**	**279,000**	**272,800**	**283,000**	**231,000**	**230,300**	**225,500**
Yield												
Corn	141.0	120.0	93.4	180.5	164.1	171.8	157.4	154.5	141.0	169.0	155.0	177.4
Soybeans	39.7	30.0	33.1	40.6	46.4	46.1	45.0	52.3	33.5	51.0	43.3	52.1
Wheat	79.1	73.3	68.8	76.1	72.4	78.1	72.3	65.9	70.0			
Production												
Corn	13,975,300	11,484,000	8,498,100	16,604,300	15,357,400	16,267,700	13,382,100	16,516,200	12,856,100	15,683,200	13,564,000	15,822,000
Soybeans	5,440,700	4,104,000	4,662,800	5,232,400	5,963,500	6,185,700	6,157,100	6,555,400	4,514,000	7,034,900	6,186,000	7,099,000
Wheat	4,404,300	3,330,000	2,933,000	4,261,600	3,740,600	3,614,200	4,141,000	2,669,300	4,029,600			
Production Total	**23,820,300**	**18,918,000**	**16,093,900**	**26,098,300**	**25,061,500**	**26,067,600**	**23,680,200**	**25,740,900**	**21,399,700**	**22,718,100**	**19,750,000**	**22,921,000**

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