

# Railroads and Grain

ASSOCIATION OF AMERICAN RAILROADS

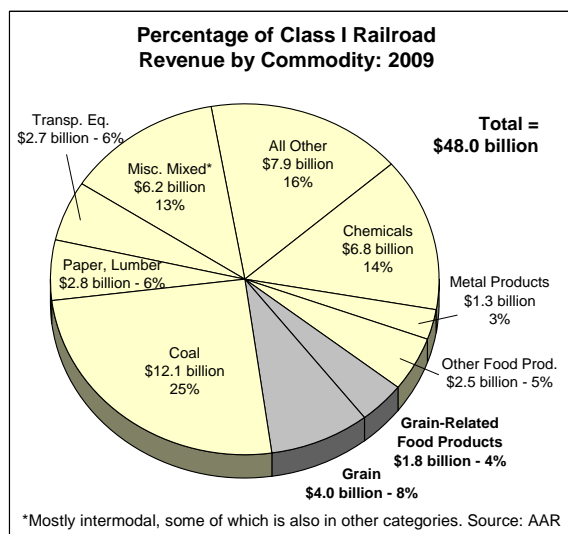
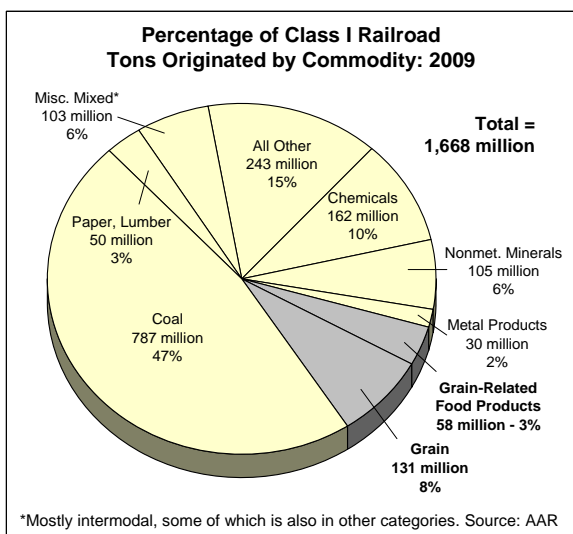
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## Summary

Freight railroads are a critical part of America’s grain logistical chain and one of American agriculture’s primary weapons in the highly competitive global grain marketplace. Despite the many uncertainties involved in grain transportation, railroads have developed a multi-faceted strategy to move grain efficiently and cost-effectively. The grain delivery system is constantly evolving as participants in the logistical chain work to move grain to market even more efficiently. Railroads are partners in this evolution, developing service offerings targeted to market needs.

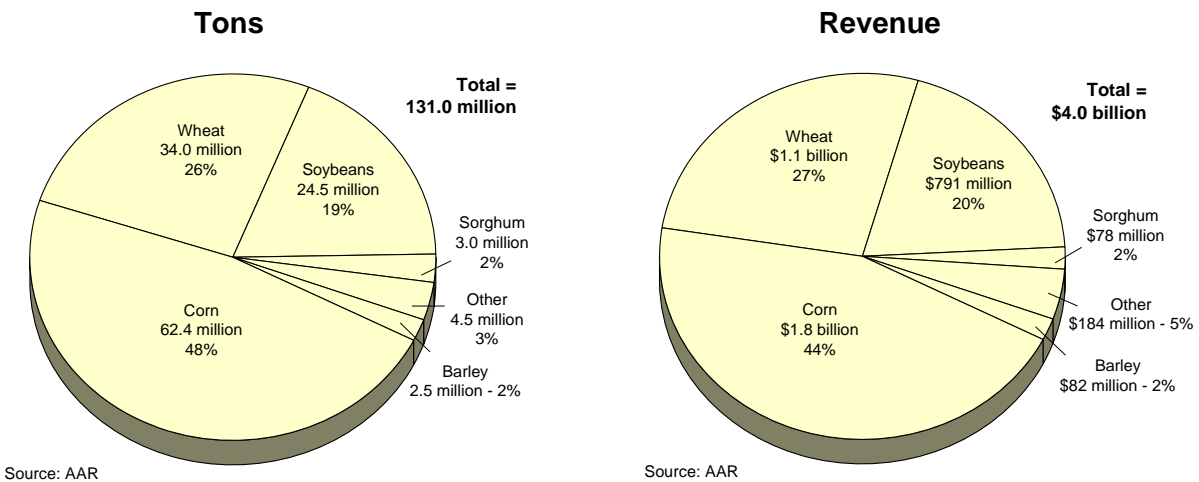
## Overview of Railroads and Grain

- The grain logistical chain in the United States is complex — production, movement to storage, storage availability, and movement out of storage to domestic and export markets depend on a variety of interdependent factors. **Railroads, along with barges and trucks, are a critical part of the chain.**
- **Grain** — including barley, corn, oats, rice, rye, sorghum, soybeans, and wheat — **is one of the most important commodities for U.S. freight railroads.** In 2009, Class I (the largest) railroads originated 1.4 million carloads of grain (5.4 percent of total carloads) carrying 131 million tons (7.9 percent of total tons) and earning gross revenue of \$4.0 billion (8.4 percent of total revenue). Grain is also a key commodity for scores of non-Class I U.S. freight railroads.

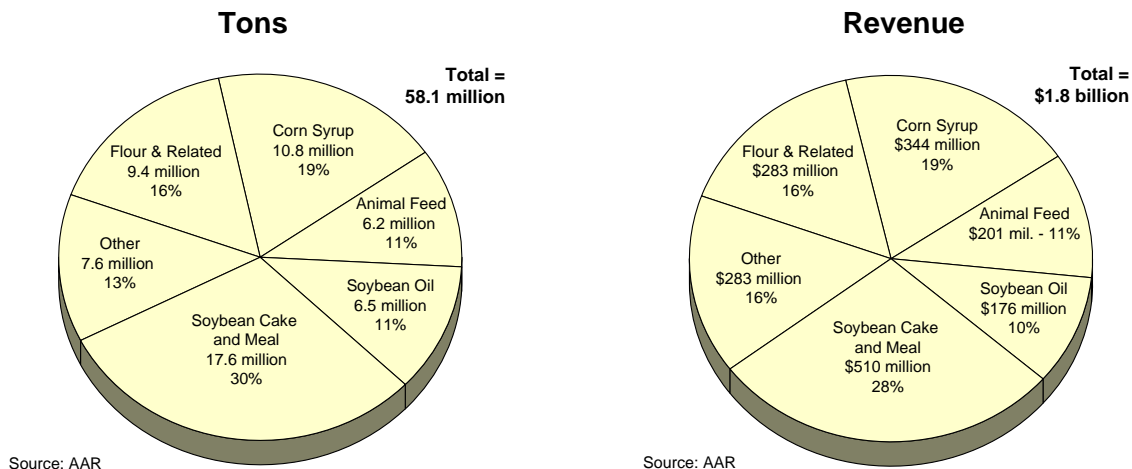


- Railroads also haul large amounts of grain-related food products**, including flour and other grain mill products; animal feed; corn syrup and corn starch; milled rice; soybean oil, cake, and meal; and pasta. In 2009, grain-related food products accounted for nearly 650,000 carloads (2.5 percent of the total), 58.1 million tons (3.5 percent of the total), and \$1.8 billion (3.7 percent of total revenue) for Class I railroads.
- U.S. freight railroads carry more corn than any other type of grain. From 2005-2009, **corn** accounted, on average, for **73 million tons** originated (52 percent of total rail grain) and \$2.0 billion in gross revenue (50 percent of total grain revenue) each year, well ahead of **wheat (38 million tons, \$1.1 billion)** and **soybeans (20 million tons, \$596 million)**. Over this period, Class I railroads also hauled an average of 19 million tons of soybean cake and meal, 11 million tons of corn syrup, 10 million tons of flour and related products, 7 million tons of soybean oil, and 7 million tons of animal feed.
- All told, in 2009, grain and grain-related food products accounted for 2.0 million carloads (7.9 percent of total carloads), 189 million tons (11.3 percent of the total), and \$5.8 billion in gross revenue (12.2 percent of the total) for U.S. Class I railroads.

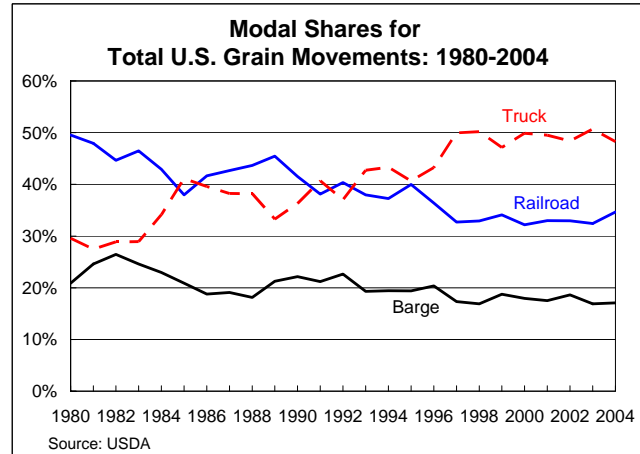
**U.S. Class I Railroad Grain Traffic: 2009**



**U.S. Class I Railroad Grain-Related Food Traffic: 2009**

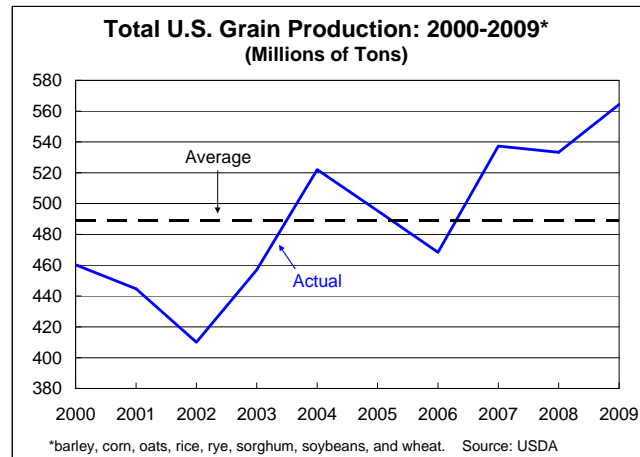


- **Grain shippers benefit from strong competition among railroads, trucks, and barges to carry grain.** According to the most recent USDA data available, the truck share of grain transport rose from 30 percent in 1980 to 48 percent in 2004, while the rail share fell from 50 percent in 1980 to 35 percent in 2004. The barge share fell from 21 percent in 1980 to 17 percent.



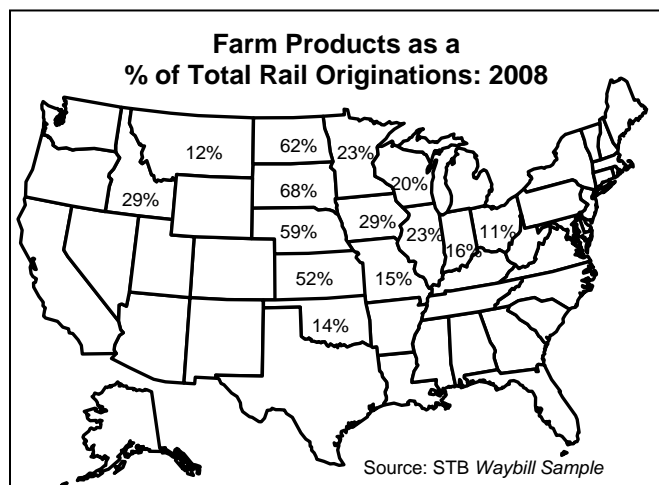
### U.S. Grain Production

- **The United States is the world's top grain producer,** but from year to year U.S. grain production can fluctuate widely in response to weather, government policies, fertilizer use and prices, crop prices, the financial condition of the farm sector, trends in markets overseas, and many other factors. From 2000 to 2009, average annual U.S. grain production was 489 million tons, but actual production ranged from 410 million tons to 564 million tons.



- In a typical year, **corn** accounts for around **63 percent** of U.S. grain production (measured in tons), followed by **soybeans (18 percent)** and **wheat (13 percent)**.

- **Large fluctuations in grain production can occur from one year to the next,** between states or regions within the same year, and by type of grain. For example, Colorado wheat production fell from 1.6 million tons in 2005 to 1.2 million tons in 2006 (a 23 percent decrease), only to rise to 2.9 million tons in 2007 (a 130 percent increase), fall to 1.8 million tons (a 36 percent decrease) in 2008, then jump to 3.0 million tons (a 69 percent increase) in 2009.



- Moreover, forecasts of crop size, even when made close to the time of harvest, are sometimes inaccurate, making proper planning by those involved in grain logistics that much more difficult.

- **In major grain-producing states, grain accounts for a major share of rail traffic.** For example, the category “farm products” (nearly all of which is grain) accounted for 68 percent of South Dakota’s rail tons originated in 2008, 59 percent of Nebraska’s, and 29 percent of Iowa’s.

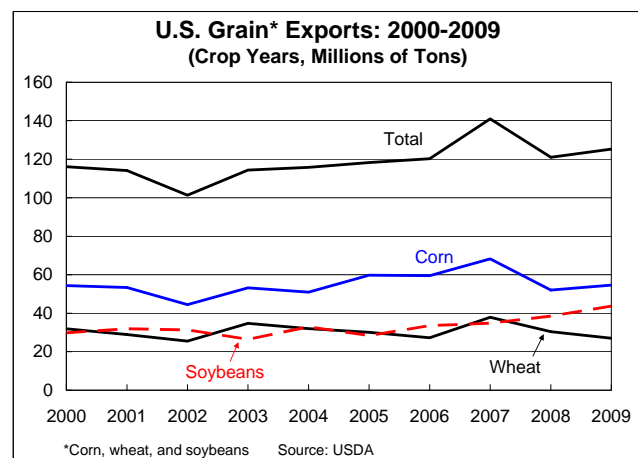
### U.S. Grain Consumption

- Grain is consumed for a variety of purposes. For example, in the 2008/2009 market year, feed accounted for approximately 44 percent of U.S. corn utilization; ethanol for 31 percent; high fructose corn syrup for 4 percent; other industrial uses for 7 percent; and exports for 14 percent. From one year to the next, however, these percentages, and the absolute amounts associated with each, change. Ethanol, for example, rose from around 6 percent of corn utilization in 2000 to 35 percent in 2009.
- Although many components of the U.S. grain production and logistics system affect all areas of the country similarly, regional variances add considerable complexity. For example, hot dry spells or floods may suppress yields in one sector of the nation, while other regions enjoy average or exceptional growing conditions.
- There are also regional differences. For example, most grain transported by rail in the East is used as feed for poultry and hogs. Exports are relatively low, hauls from production areas are often relatively short, and demand is generally more consistent over the course of the year. In the West, exports are more important, hauls are generally longer, and demand for transportation is less stable throughout the year and from one year to the next.

### U.S. Grain Exports

- **The United States is the world’s top grain producer and exporter,** but it competes with many other countries for global grain markets. Advances in the agricultural practices and transportation infrastructure in countries that compete with U.S. grain put ever-increasing pressure on U.S. grain to remain competitive.

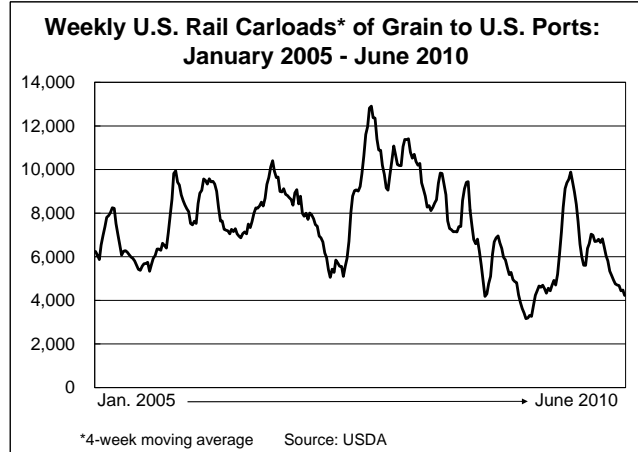
- Like grain production, **grain exports fluctuate** because they are a function of many factors including global grain production; economic conditions in importer and exporter countries like China, Argentina and Australia; exchange rates; grain prices; government policies; and ocean freight rates. All of these can change significantly from one year to the next, or even from month to month.



- Total U.S. grain exports (the aggregate of corn, soybean, and wheat exports) averaged 125 million tons per year from 2005 through 2009, equivalent to **23 percent of U.S. grain production.** Over

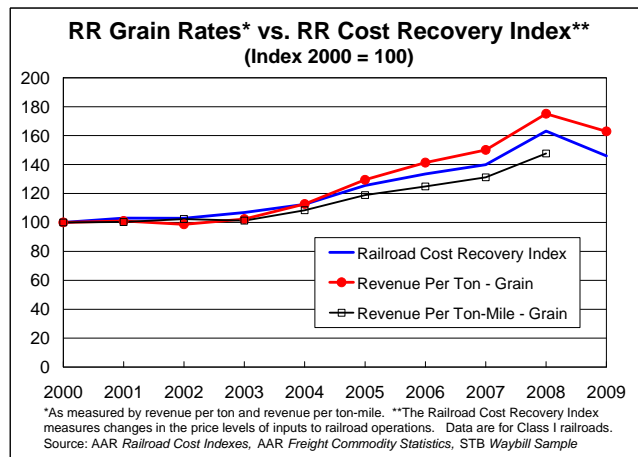
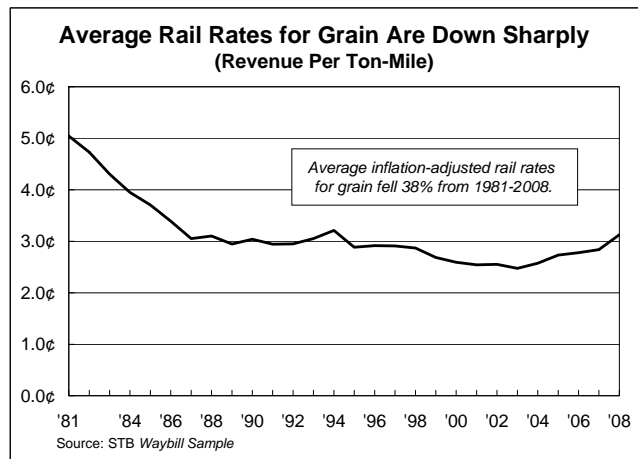
the 5-year period, an average of 18 percent of U.S. corn production, 39 percent of U.S. soybean production, and 48 percent of U.S. wheat production was exported.

- Export sales can bring additional strain and unpredictability to the transportation system because they may be unexpected large “rush” orders. Moreover, grain exports often must travel long distances from the Midwest and Great Plains to ports in the Pacific Northwest, requiring large amounts of rail assets to accomplish the move.



### Rail Rates For Grain

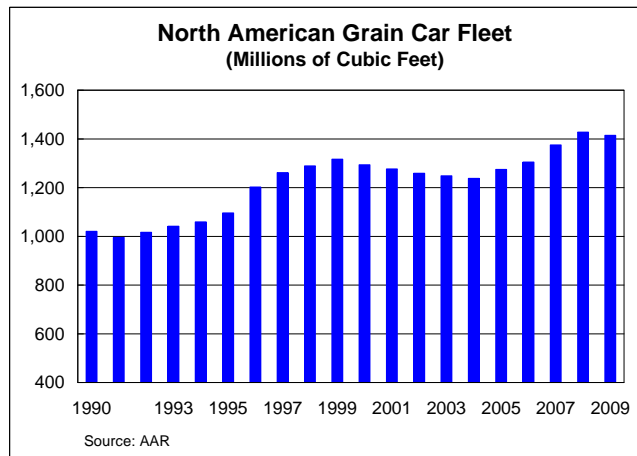
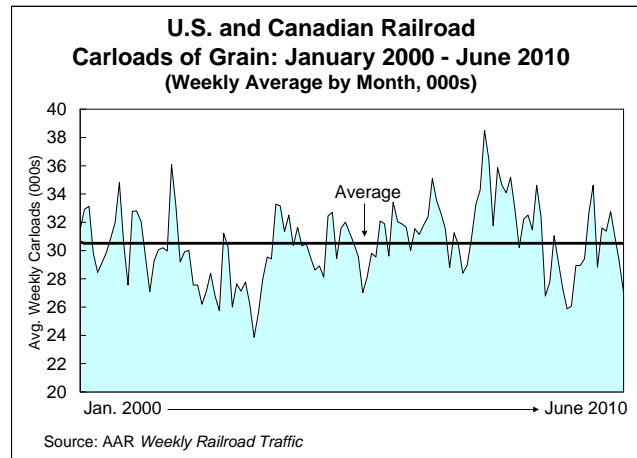
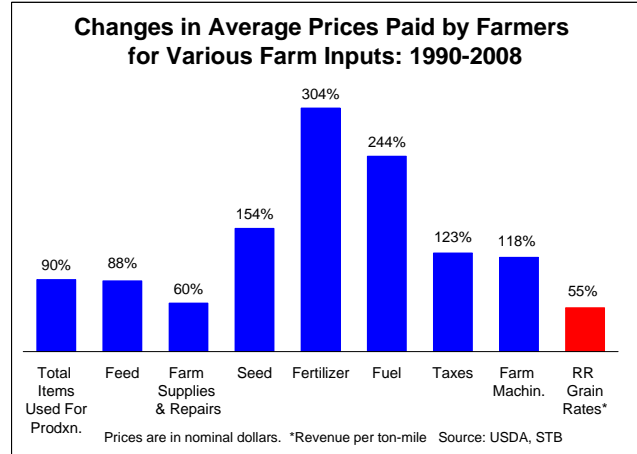
- As measured by rail revenue per ton-mile (RPTM — a useful surrogate for rail rates), **average rail grain rates fell 38 percent in inflation-adjusted terms from 1981 to 2008** (the most recent year for which data are available).
- In recent years, average rail rates for shipping grain (measured by revenue per ton-mile, per ton and per carload) have increased. These increases are largely the result of increased railroad costs for things like fuel, materials and suppliers, and labor. In fact, there is a **very close correlation between the Railroad Cost Recovery Index** (which measures changes in the price levels of inputs to railroad operations, just like the CPI measures consumer inflation in the broad economy) **and rail grain rates** as measured by revenue per ton-mile, per ton, and per carload.
- The behavior of rail grain rates compares very favorably to the prices of other farm inputs. According to USDA data, from 1990 to 2008 **the average prices that farmers paid for most of their supplies rose much faster than the rail rates to move their grain**. For example, not adjusted for inflation the cost of seed rose 154 percent; fertilizer, 304 percent; and



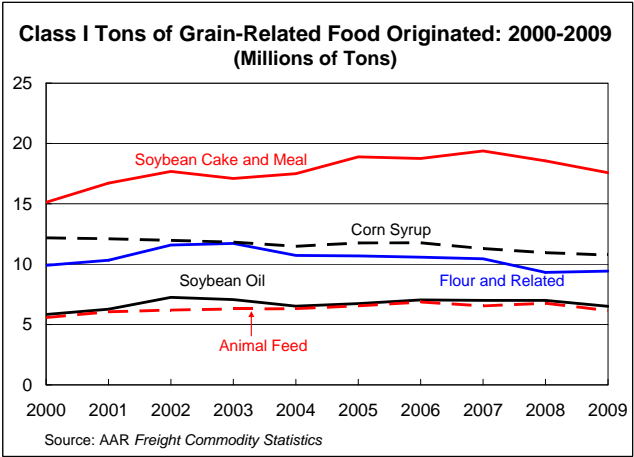
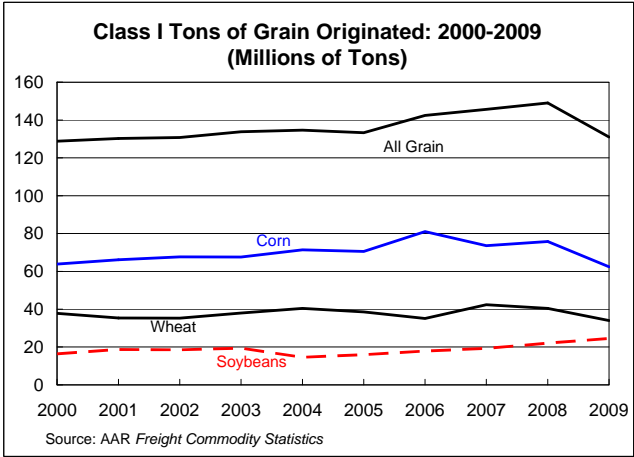
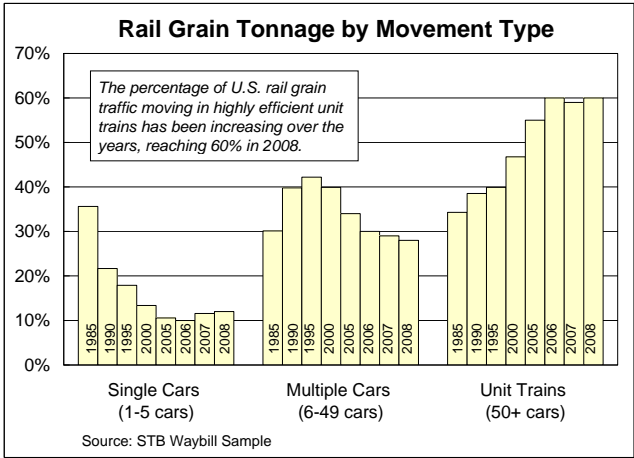
fuel, 244 percent. During this period, average rail rates to ship grain (as measured by revenue per ton-mile) rose just 55 percent.

### The Railroad Grain Car Fleet and Grain Car “Shortages”

- The amount of grain transported varies considerably from year to year. Moreover, within any given year, the amount of grain transported within a region or by an individual railroad can be highly cyclical and volatile from week to week. For example, from January 2000 through June 2010, U.S. and Canadian railroads combined originated an average of 30,551 carloads of grain per week, but the peak week was 142 percent higher than the lowest week.
- When demand is particularly high (generally during or immediately following harvests), so-called “shortages” of rail grain cars might occur. During these periods, not all grain shippers who want rail cars are able to obtain them easily. Conversely, during periods of relatively low demand, it is common for thousands of grain cars to sit idle on rail sidings, sometimes for long periods.
- Railroads know that adequate grain car capacity is critical to efficient grain marketing and transportation, which is why they and other freight car providers work hard to supply a fleet that is as large as can be justified economically. Moreover, when car “shortages” do occur, railroads and others work diligently to move as much traffic as possible as quickly as possible.
- **The North American railroad grain car fleet** is huge: as of year-end 2009, it consisted of more than **284,000 cars** (owned by both railroads and non-railroads) with a total capacity of **1.4 billion cubic feet** — a **39 percent increase over 1990**.

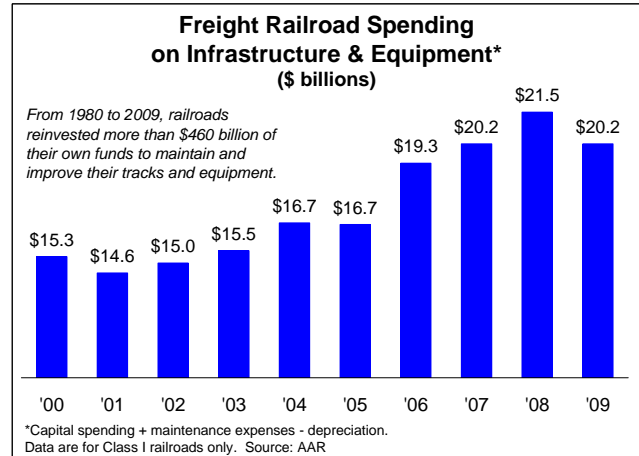


- New grain cars are constantly being added to the fleet. Almost all new cars have much larger capacity than the cars they replace, making a focus solely on the number of cars in the fleet misleading. Moreover, because of substantial improvements in utilization through efficiency improvements like unit trains (and especially “shuttle trains”), a given grain car today typically moves more grain than even just a few years ago.
- Simply buying more grain cars is not the answer to the occasional car supply problem. The cost of owning a grain car — the purchase price alone of a jumbo grain hopper is many tens of thousands of dollars — is a significant sunk cost that must be recovered over the life of the car, including peak and non-peak periods. For the same reason “you don’t build a church for Easter Sunday,” it is not economical to incur the costs of providing high levels of stand-by equipment to meet unpredictable and temporary surges in traffic, only to have that same equipment sit idle for much of the time.
- This point is known not only to railroads, but also to the various non-railroad entities that now own close to half the grain car fleet. Like railroads, they will invest in more cars only when the expected returns justify the investment, and they find it uneconomic to maintain an inventory of railcars sufficient to accommodate all the potentially temporary peak demand periods.
- Rail traffic data show a pronounced trend toward more efficient movement types. Single car movements (typically defined as 1–5 cars) accounted for 36 percent of total U.S. grain carloads in 1985. In 2008, that figure was 12 percent. Multiple car shipments (defined as 6–49 cars) went from 30 percent in 1985 to 28 percent in 2008. Unit trains (50+ cars) rose from 34 percent in 1985 to 60 percent in 2008. **The trend toward unit trains and efficient long-hauls is a response to market forces that call for grain transportation to be as efficient as possible.**



## Continued Rail Reinvestments

- When strong economic growth returns, America's demand for safe, effective, and affordable freight transportation that promotes economic growth and enhances America's competitiveness in the global economy will resume the upward trend it's been on for decades. **Freight railroads are the best way to meet this demand.**



- That's why **railroads have kept investing heavily in their networks.** The recession officially began in December 2007. Nevertheless, railroads spent more on their systems in 2008 than ever before. Rail reinvestments were down only slightly in 2009 from 2008's record pace and are expected to remain about equal to 2009 levels in 2010. Since 1980, America's freight railroads have spent more than **\$460 billion** on renewal, maintenance, and expansion of their infrastructure and equipment — more than 40 cents out of every revenue dollar.

- In 2010 and beyond, railroads will be asked to do more and more. How well railroads can do this will depend in part on actions by policymakers in Washington. For example, for years debate has ensued regarding the proper type and scope of railroad regulation. The balanced approach ushered in by the Staggers Act of 1980 — under which regulators protect shippers against unreasonable railroad pricing, but otherwise permits railroads to largely decide for themselves how to run their operations — should be retained.

Capital Expenditures as a % of Revenue for Various U.S. Industries: Avg. 1999-2008	
<b>Average all manufacturing</b>	<b>3.1%</b>
Food manufacturing	2.5%
Petroleum & coal products mfg.	2.6%
Machinery manufacturing	2.6%
Motor vehicles & parts mfg.	2.6%
Wood product mfg.	2.9%
Fabricated metal product mfg.	3.1%
Chemicals manufacturing	3.6%
Plastics & rubber products mfg.	3.9%
Paper manufacturing	4.0%
Computer & electr. product mfg.	4.6%
Nonmetallic mineral product mfg.	5.3%
Electric utilities	14.5%
<b>Class I Railroads</b>	<b>16.4%</b>

Source: U.S. Bureau of the Census, AAR, EEI

- Railroads themselves pay nearly all of the costs to build and maintain their networks. Adequate investments in the rail network can only be made if rail earnings are high enough to attract the capital needed to pay for these investments. That won't happen if unbalanced and unnecessary regulation interferes with the ability of railroads to earn adequate revenues.

- Policymakers should also implement **tax incentives for expanding rail capacity.** Tax incentives to build new tracks, bridges, tunnels, and other rail infrastructure make good economic sense. Based on U.S. Department of Commerce economic models, **every \$1 invested would result in more than \$3 in total economic output**, and each \$1 billion of new rail investment induced by tax incentives would create **20,000 jobs**. Finally, policymakers should engage in more **public-private partnerships** with railroads.