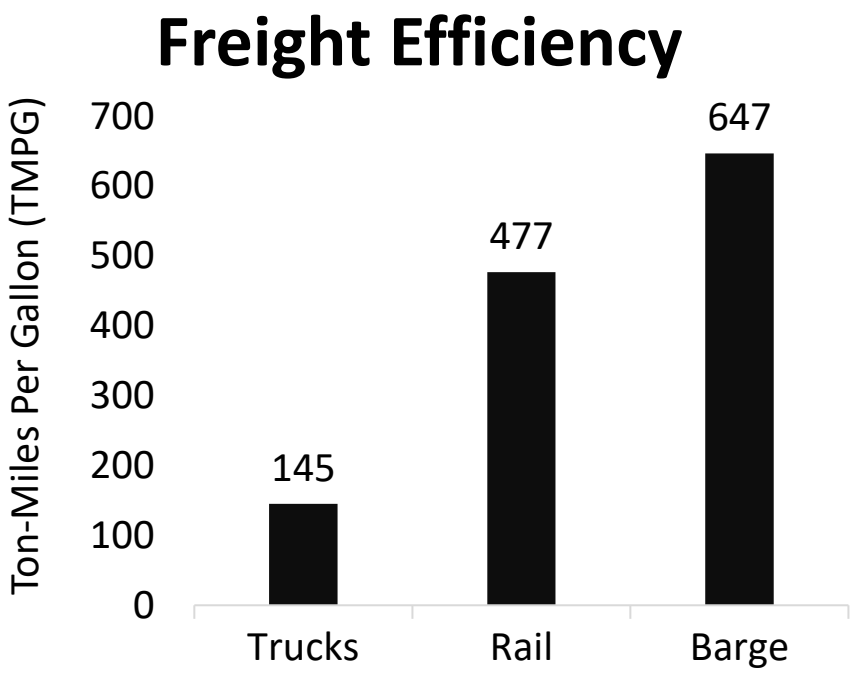

These figures report how transportation modes have actually performed throughout the U.S. and may not necessarily reflect how well different modes of transportation perform under ideal or theoretical conditions. Ton-Miles Per Gallon (TMPG) should be interpreted as a measure of energy efficiency for freight activities and is best understood as the relationship between tonnage transported, distance traveled, and fuel consumed.

As reported, Barges yield the highest TMPG of the three modes reported, which indicates that it is the most energy efficient freight transport mode of the three. However, this mode is heavily constrained, as it can only service routes in which barges can travel. Barges carry shipments that are approximately 70 times larger (per barge) than Truck shipments which contributes to their efficiency but does require considerable space and so may not be the best option in all circumstances.

Similarly, while Rail yields a higher TMPG figure than Trucking, it is also constrained by available Rail lines. Rails ship cargo loads that are about 4 times larger (per car) than truck shipments. Both Barge and Rail shipping tend to transport large volumes of a single low-value good. In fact, 39% of all rail tonnage is devoted to coal transport alone.

Trucking freight transportation yields the lowest TMPG figure of all three modes listed and is generally the least energy efficient mode of freight transportation. However, Trucking is far more versatile than Rail or Barge, and in many cases may be the only viable transportation option for certain freight shipments. Also since Trucking can carry smaller loads, and travel along regular public road infrastructure, it lends itself to more versatile logistical planning than large-bulk freight transportation.

Even though these modes of transportation may compete for energy efficiency, they can also compliment one another. For example, diverting Barge shipments to Trucking would add 49 million Trucking trips annually, which would drastically increase trucking traffic throughout the U.S.

Note: Barge estimates are based on reports from the Mississippi River (Minneapolis to Mouth of Passes), Ohio River, Gulf Intercoastal Waterway, Tennessee River, Cumberland River, Columbia River system, and Snake Rivers.

Source: A Modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001-2004. Published January 2017 by the Center for Ports and Waterways: Texas A&M Transportation Institute – A report prepared for National Waterways Foundation.
http://www.portsofindiana.com/wp-content/uploads/2017/06/Final-TTI-Report-2001-2014-Approved.pdf

URBAN CRUISE SHIP ANALYSIS SOLUTIONS

urbancruiseship.org info@urbancruiseship.org
Exhibit originally constructed by Andrew Evans
Exhibit updated by Lee Nelson 9-24-2018