



Long Distance Trains: Multipurpose Mobility Machines

Long distance train routes form the foundation of the national passenger train network. Their unique capabilities allow them to connect congested urban areas and bring economically viable mobility to rural areas and small towns, many of which are becoming more isolated from major cities as regional airline and intercity bus service disappears.

They represent a strategic platform for scaling up passenger train service that will improve American mobility.

The time has come to transform the national passenger train network from a neglected, barebones operation to a robust and thriving mobility machine by:

1. **Filling gaps in the current network to create a grid and gateway system**
2. **Increasing frequencies to allow daytime service to all stations.**
3. **Procuring high-performance trainsets suitable for overnight and longer distance trips.**
4. **Making track improvements that increase reliability and decrease trip times.**



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Tim Sullivan, a resident of Syracuse, NY, has ridden the *Lake Shore Limited* to his job in suburban Chicago eight to ten times a year since 2005.

Mobility and a Healthy Economy

Mobility is the foundation of a healthy, vibrant, growing economy. Connecting people with a multi-layered, interconnected network of travel choices is a powerful catalyst for creativity, innovation and high performance economic development. Mobility is so important to American society that it is recognized as a legitimate and important function of government.

For more than seven decades, government has focused public resources on developing road and air transportation. It is increasingly apparent, however, that America cannot continue to rely so heavily on these two transportation modes.¹

High-performance passenger trains are the keystones of flourishing, modern economies worldwide because trains offer a cost-effective and scalable way to provide mobility for a wide variety of trips.

The United States has begun to recognize the contribution passenger trains can make to our mobility and quality of life. However, in debating the nature and scope of a national intercity passenger train system, pundits and policy makers have largely ignored one entire category of trains: those that travel long distances between route end points.

There is an urgent need to make trains more widely available.

Despite such limited service, these 15 routes account for 42% of passenger miles carried by all of the nation's intercity passenger trains.² Clearly, these routes perform a significant transportation function.

1 "In general, the economic gains from investing in highways appear to have been greatest during the initial construction of the Interstate Highway System but have fallen off since then." Congressional Budget Office, *Spending and Funding for Highways*, January 2011, page 4.

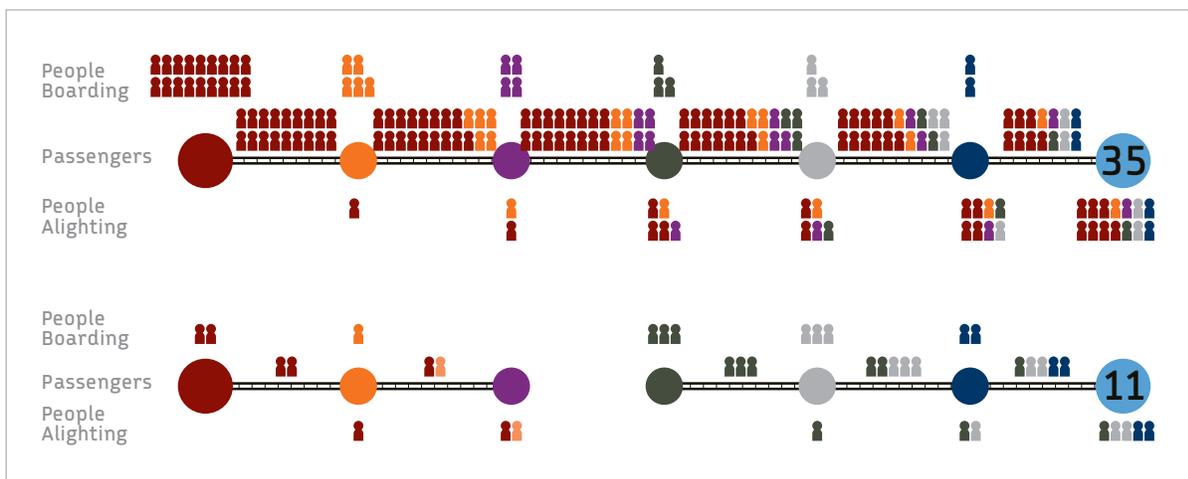
2 Amtrak, *Origin and Destination by City Pair*, FY 2011.

Indeed, long distance routes form the foundation of the national passenger train network today and must be an important part of the effort to bring a new, high quality mobility choice to a wide cross-section of Americans. The unique capabilities of long distance routes allow them to connect congested urban areas and to bring economically viable mobility to rural areas and small towns, many of which are becoming more isolated from major cities as regional airline and intercity bus service disappears.³

Long-distance routes represent a strategic platform for scaling up passenger train service that will improve American mobility, especially in markets where limited resources preclude the immediate implementation of high-speed rail.

As congestion and the price of oil make driving and flying more difficult and less affordable, the need to make trains a more widely available mobility choice grows increasingly urgent. Improvement and expansion of service on long distance routes represents a cost effective method of accomplishing this objective in a relatively short time for a large number of Americans.

Multipurpose Mobility Machines



This diagram is based upon very simplified and compressed ridership data from trains 48 and 49 operating on the New York–Chicago corridor. Taking out just one segment causes ridership to drop by two thirds. It demonstrates how trains combine a wide variety of trip lengths and types into a single highly productive vehicle.

The value of long-distance train routes is often overlooked because of the misconception that air travel has made such routes obsolete. Many believe that different modes only serve distinctly different markets: the car for trips less than 100 miles, the plane for trips more than 500 miles and, by default, the train only for trips between 100 and 500 miles. This construct is based on the assumption that route length, for reasons neither obvious nor stated, should coincide with trip length; on the misconception that all travelers have the same needs; and on the erroneous notion that trip time is the primary, if not only, consideration for everyone.

³ 46% of intercity trips are between major metro and rural areas compared to 36% between major metro areas that are most likely to have air service. Bureau of Transportation Statistics, *American Travel Survey*, 1995.

People, however, are much more complex and individual in their needs. They cannot be force-fit into such artificial, simplistic boxes. Dozens of additional factors influence travel decisions, including cost, schedules, convenience, comfort, safety, accessibility and connectivity. As a consequence, some people choose the train for trips shorter than 100 miles because driving, for example, isn't attractive or possible; others choose the train for trips longer than 500 miles because, for example, they do not live near an airport with affordable commercial air service. Intercity trains that travel long distances between end points can serve all of these markets and more, where other modes cannot.

That is the reason that routes traversing long distances between end points make transportation sense. The longer the route, the more city pair markets it serves. A long-distance corridor joins many cities and small towns in a linear network. Each stop is linked to every other stop.

Long-distance trains generate high volumes and load factors by:

- 1. Providing a single seat ride in many overlapping city pair markets;**
- 2. Combining many small markets to generate economic volumes.**

Long distance routes, in effect, represent connected and overlapping corridors. Moreover, the utility of individual routes grows exponentially when they become part of an integrated system that provides easy transfers to trains on other routes, feeder buses, local transit systems and airports. Such connectivity serves more people, generates greater revenue, drives economies of scale and improves public mobility.

Case Example: The Chicago-Los Angeles Corridor serves 528 city-pairs⁴



To illustrate the concept, consider the 2,265 mile corridor between Chicago and Los Angeles. Critics claim that air travel has made such routes obsolete; that it would be cheaper for government to buy each passenger an airline ticket than to run trains on this route. If trains ran non-stop between these two cities, the critics might be right. But the trains do not and the critics are wrong.

⁴ Amtrak, System Timetable, Effective May 7, 2012.

This route currently has just one train a day in each direction, the Southwest Chief, yet it attracts 355,000 passengers per year—466 per departure.⁵ Because it makes 31 intermediate stops, it provides a mobility choice for twenty five million Americans who live within just 25 miles of a station (31 million who live within 50 miles) for short, medium and long distance trips between 528 different city pairs with each and every trip.⁶

Data demonstrate that trip lengths vary from very short (as few as 10 to 40 miles) to very long (more than 2,000 miles) and everything in between. Please note that many passengers connect to other trains at Chicago, Kansas City and Los Angeles, so many trips are actually longer.



The large metropolitan areas at each end point generate nearly *three fourths* of all traffic, but:

- Only 8% travel the entire distance between Chicago and Los Angeles;
- 64% travel between the one end point city and intermediate points;
- 28% travel between intermediate cities;
- 19% travel between city pairs where the passenger volume is less than one trip per day: markets so small that only trains with the multiple intermediate stops could economically serve.

Long distance routes not only make transportation sense because they serve so many more markets every single trip than air ever could, they also make financial sense. The economic benefits of attracting people who travel long distances is substantial. Consider that the people who travel the entire distance between Chicago and Los Angeles account for just 8% of passengers but 20% of the route's total revenue. Consider further that:

- People who choose budget priced coach seats for trips shorter than 750 miles (the definition of a corridor route under federal law) account for 54% of passengers using this route but less than 37% of its revenue. By contrast, people making trips longer than 750 miles, even though a minority of travelers, account for 63% of revenue needed to defray operating costs.

⁵ Amtrak, *Train Earnings Report*, September 2011, 12 months ended in 9/30/11.

⁶ Fels, Matt, National Association of Railroad Passengers, Route Fact Sheets, (based on US Census Bureau, 2010 Census data).

- Put another way, by providing comfort suitable for overnight travel and the convenience of a single seat ride, the route attracts 87% more people and generates 172% more coach revenue than short distance passengers alone.
- The addition of sleeping car service further bolsters revenue. The people who choose this premium priced service account for just 17% of passengers but 44% of total revenue, adding 78% more revenue than coach service alone.
- Sleeping car service generates such a disproportionate share of revenue because the average fare per mile is double that in coach and the average trip is 82% longer.
- The average trip in sleeper is longer because few people make short distance trips in sleepers, not because people do not make long trips in coach. They do. In fact, even for trips longer than 2,000 miles, 27% more people choose coach than sleeper. (97% of passengers making trips under 500 miles choose coach)

All of the other long distance routes in America's train network exhibit similar usage patterns (except Auto Train, which makes no intermediate station stops).

Long distance trains are cost efficient—a finding that may surprise many. Despite years of neglect and underinvestment, Amtrak's national network is able to move one passenger one mile (the accepted industry measure of efficiency) at an average public cost roughly equal to shorter corridors outside the Northeast Corridor. This parity is hidden in Amtrak's financial reports because they include state—but not federal—payments for service as revenue.

Since a substantial portion of the costs assigned to the various routes are fixed, there is an opportunity to lower units costs by adding more service. Congress could further improve efficiency and reduce cost by funding the replacement of Amtrak's relatively old long distance fleet with modern, high performance trains.

In summary, increasing and expanding service on long distance routes represent an effective and economically efficient method for providing the American people with attractive and affordable mobility choices for many different types of trips to a wide variety of destinations.

Amtrak is very competitive in their markets in several categories:

Travel Time

Flying is fast once people are in the air, but becomes significantly slower the farther origins and destinations are from airports. The further travelers must use ground transportation to and from airports, the more trip time grows, average speed falls and air's competitive edge erodes. Also, travelers not using a busy airline route face longer waits between flights and significantly higher fares. As a result, most long-distance trips are usually made by car. Even for trips up to 1,000 miles, more people drive than fly.⁷

When properly configured, trains can be time competitive with driving, especially as trip length increases. On trips over 500 miles, most drivers will take breaks for meals and rest that add significantly to trip time. To save time and money, some drivers deliberately skip such breaks. Fatigue, stress, monotony and other factors, however, begin to compromise their

⁷ Bureau of Transportation Statistics, *American Travel Survey*, 1995.



Train travelers gain 500 miles per day by eating and sleeping while the train continues to move.

ability to operate their vehicle safely, endangering not only themselves and any passengers in their vehicles but also others on the road. The longer the trip, the greater the danger of driving straight through becomes. People on a train, however, move safely while they eat and sleep. They can cover an additional 500 miles or more per day without stress, discomfort or danger to others.

Better Locations, More Markets

Trains have an inherent advantage over air because trains can make many intermediate stops quickly and without using large amounts of fuel.

Stations, because they are less expensive to build and operate than airports, can be located in more places. Moreover, they are, or can be, located in the middle of cities and small towns whereas commercial airports, because of their large land foot-print and noise, are usually located far outside city centers and away from densely populated areas.

Smaller markets do not generate enough traffic to attract low-fare airlines and, with the rising price of fuel and the inefficiencies of short flights and smaller aircraft, are less sustainable for more and more trips, with air service becoming prohibitively expensive or nonexistent.

These markets are also losing intercity bus service. For those that still have it, intercity buses frequently opt for stations inconveniently located at truck stops near major highways to avoid spending the time required to wind through neighborhoods to access town centers.

Trains represent a cost effective way to restore mobility choices to cities and towns of all sizes along a railroad corridor in a way that neither air nor bus service can accomplish. Because trains provide more convenience and accessibility for the nation's smaller cities and towns, they offer urban renewal opportunities for communities that have lost population or businesses to larger metropolitan areas over the last few decades.⁸ Significant redevelopment has been sparked by creation of multimodal transportation centers even in places where the catalyst was just one daily Amtrak round-trip.

⁸ Capon, Ross, *Where Trains are Few, Their Benefits Can Still Be Many*, National Association of Railroad Passengers, NARP News, August 2012, p. 1.
<http://www.narprail.org/cm/images/uploads/1208.pdf>

The Chicago-New Orleans corridor serves many markets that don't have access to mainline air service.



Scalability

Long-distance routes offer a way to provide new, high quality mobility choice in many travel markets without implementing more expensive, higher speed intercity corridor services between multiple short distance endpoints. Their ability to aggregate many low-volume city pair markets into economically viable volumes makes long-distance routes an especially effective method to scale up service for large numbers of Americans quickly, cost effectively and at relatively low risk.

Consider the route between Chicago and Cleveland. This route currently has just two trains a day in each direction—both with unattractive late night or early morning arrival and departure times at Cleveland. More than 11 million Americans live within 25 miles of one of the 9 stations on this 341 mile corridor.⁹ Clearly, this market is large enough to support frequent daytime service. Capturing sufficient market share to generate economic volumes, however, would require a transit time of less than 3.5 hours and a frequency of 8 or 9 trains a day. This level of service would require long stretches of track dedicated to passenger trains.

A lower cost, lower risk option to begin serving this market is to extend the route east of Cleveland to New York City. In this way, a daytime service with longer trip times and fewer frequencies would, even with lower market share, still generate economically viable volumes because it would serve 171 city pair markets instead of just 36.¹⁰

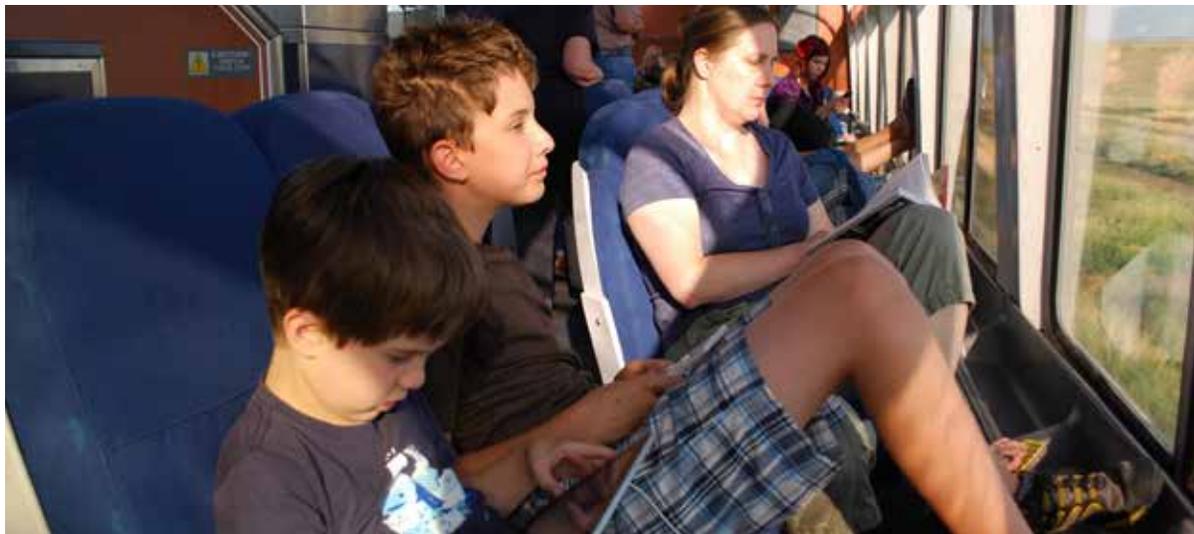
Similarly, with additional cars and locomotives on hand, long distance routes make it possible to launch new services and routes economically. Given the frequency of fuel price spikes, the instability of oil supplies and the negative impact such predictable events have on American pocketbooks and quality of life, the need to provide choices that ease or eliminate such economic stresses is critical. Driving and flying are very vulnerable to such

9 Fels, Matt, National Association of Railroad Passengers, *City Fact Sheets*. (Based on US Census Bureau, 2010 Census data.)

10 Amtrak, *System Timetable*, Effective May 7, 2012.

fluctuations and, in the long term, will become too expensive for more and more middle class Americans to afford to the extent that they enjoy today.

Fuel Efficiency



Trains can offer more varied and comfortable accommodations because they are so fuel efficient.

A steel wheel running on a steel rail generates very little friction compared to rubber-tired vehicles like cars and trucks. A diesel-powered passenger train can move three times as many people per gallon than the typical automobile. A freight train can move one ton 484 miles on a gallon of fuel. Airplanes burn almost half their fuel for take offs and landings, making short and medium distance trips less economic as the price of fuel rises. Because trains use fuel efficiently and do not have a significant fuel penalty for stops, train fares are not as heavily influenced by fuel prices. As a bonus, passenger spaces can offer more room to sit, stand and move around. That means that economy passengers can relax in fully reclining seats as wide as the first-class seats on airplanes; and first-class passengers can have private rooms with a bed.

Better Choices, Greater Mobility

Congestion, fuel prices, technology and other long term forces are causing more and more Americans to choose the train in all its forms over other mobility options - when they have that choice. Unfortunately, most Americans do not have the choice.

The need for this choice is urgent. Our world is changing rapidly. People without choices are less able to adapt to, and more likely to suffer from, changing circumstances and new realities. People with fewer choices have less freedom. People without choices are trapped.

Intercity passenger train service must be part of the solution. Long distance routes must be an integral part of such a program. These routes provide the only access that one out of every three Americans in 23 states has to the nation's intercity passenger train network.¹¹

¹¹ US Census Bureau, 2010 Census.

They represent the most cost efficient way to serve the multiplicity of markets and different needs of a multiplicity of travelers.

The time has come to transform the national passenger train network from a neglected, bare-bones operation to a robust and thriving mobility machine.



These Chinese sleeper trains operate at speeds up to 155 mph. They offer just one example of modern, high-performance long-distance trains operating around the world.

An effective strategy for making long distance intercity routes a more relevant and attractive mobility choice will contain at least four elements:

1. **Fill gaps in the current network to create a true, web like grid and gateway system that provides direct service in major city pair markets.** The linear nature of the current national network makes it difficult, if not impossible, to make many trips by train. Increasing frequencies on existing routes is necessary but not sufficient to make trains a mobility choice that is a widely available and relevant mobility option. Major metropolitan areas need routes that extend in multiple directions. A quick look at a map of the current network shows how few cities have such service today. Long distance routes represent the fastest and most economically efficient way to make trains a widely available and attractive mobility choice for large numbers of Americans.
2. **Increase frequencies. One train a day (much less only three trains a week) is not sufficient to accommodate the needs of most travelers.** Low frequencies also are not economically efficient. Additional frequencies will:
 - Make the train more time competitive with driving, especially for the majority of travelers who use these routes to make shorter trips;
 - Allow daytime service in every community served;

- Increase labor productivity both in stations and on board the train;
- Improve asset utilization.

Frequently sold-out trains indicate that the demand exists to justify the relatively modest investment. Experience demonstrates that higher frequencies attract more passengers and generate greater revenue.



3. **Initiate a large scale, long term program to procure high-performance trainsets** that are fast, fuel efficient and suitable for overnight and longer distance trips. Modern equipment will provide the capacity needed to accommodate current demand, attract new passengers, increase revenue, reduce fuel and maintenance costs, and increase farebox recovery. New equipment is the prerequisite foundation for all initiatives to improve and expand service on the national passenger train network.
4. **Make track improvements that increase reliability and decrease trip times.** Speed and punctuality are important to virtually all passengers, including those making long trips. Many decision makers have incorrectly assumed that speed is not important to anyone choosing a train operating on a long distance route. They do not understand how people use these trains today, much less their potential to serve new markets tomorrow. Take, for example, business travelers, a market segment likely to choose the premium priced sleeping car service that generates a disproportionate amount of revenue. The 780 mile corridor between Chicago and Washington DC currently has only one train a day. It leaves Chicago at 6:10 PM and arrives in Washington at 12:40 PM the next day, too late for the business traveler to conduct a full day of business in Washington.¹² Boosting the average speed just 20 miles an hour would cut trip time to 12 hours, making pos-

¹² Amtrak, System Timetable, Effective May 7, 2012.

sible a 7:00 PM departure with an 8:00 AM arrival. Such a schedule in this and many other markets would be attractive to business travelers who want to avoid the airline experience and the cost of a hotel room. Reliability and speed will also drive increased labor productivity, lower operating costs, greater asset utilization and higher revenue by tapping new markets.

Mobility, Freedom and Prosperity



Mobility lies at the core of economic growth and human progress. By bringing people together, it is the catalyst for the kind of creativity, invention and innovation that has made America the envy of the world.

Fuel prices, congestion and ever bigger trucks make driving less appropriate and attractive for many trips. Regional feeder flights, the only option in many smaller markets, have been in decline for over a decade as airlines consolidate service into the top three dozen markets. Lack of choice is un-American. In a land that justifiably worships individual freedom and liberty, government should not mandate that people have and use motor vehicles. But it does. With few exceptions, it makes those without motor vehicles less mobile and provides a lower quality of life. To be true to its values, America must offer its citizens better mobility choices. The brand and color of a motor vehicle is not meaningful choice.

Long distance routes with modern trains, adequate track, signals and stations can outperform road and air in many markets. With routes offering multiple frequencies radiating in different directions, they can revitalize metropolitan cores by making them easily accessible from many points. A web of railroad routes converging in urban cores creates gateways to other routes and other modes; and generates vibrant centers of economic activity and homes offering high quality of life. People with such choices have the freedom Americans deserve.

Learn more at MidwestHSR.org and NARPRAIL.org.
