BTS Issue Brief

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Many Intercity Travelers Face Longer Travel Schedules

- **Since 1995, scheduled travel times for direct intercity air, bus, and rail service without an en route transfer have measurably lengthened in most major-market city-pairs.**
- **Long-haul rail city-pairs affected by service changes and short-haul air city-pairs have experienced the highest incidence of lengthened scheduled travel times.**
- **Two categories of trips have become quicker: intercity bus markets with an en route transfer to a different bus, and rail city-pairs served by Amtrak's Acela Express in the Northeast Corridor.**

For travelers in many major intercity markets, travel schedules are tending to grow longer. The Bureau of Transportation Statistics (BTS) has examined scheduled travel time trends for all three commercial intercity modes—air, bus, and rail—expanding the work done in a 2001 study of changes in airline scheduled travel times. The new study looks at changes in the average travel time of scheduled service in each of the three modes in most of the same major city-pair markets covered by the earlier airline schedule study.[1]

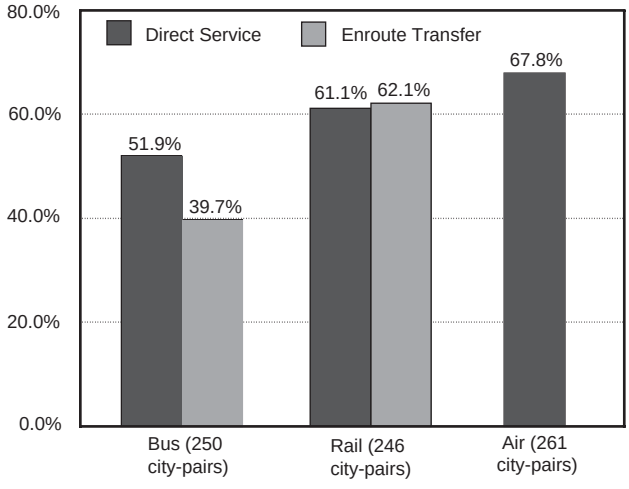
Between February 1995 and February 2002, advertised travel times in the selected city-pairs experienced varying degrees of schedule lengthening in most categories of markets. Because accurate scheduling is key to both customer satisfaction and the operating efficiency of passenger carriers, changes in scheduled travel time (both increases and decreases) are a strong indication of the change in actual travel time experienced by travelers during a given time period.

In at least half of the direct-service city-pairs (no en route connection necessary) studied for each mode, scheduled travel times were longer in February 2002 than those advertised seven years earlier. Figure 1 shows scheduled travel time for city-pairs with direct service increased in:

- 67 of 129 intercity bus markets with direct-service (51.9%),
- 44 of 72 direct rail service city-pairs (61.1%), and
- 177 of 261 nonstop airline city-pairs (67.8%).

Scheduled travel times involving en route transfers increased in 108 of 174 rail city-pairs (62.1%), but decreased for corresponding bus city-pairs, with only 48 of 121 (39.7%) routes experiencing longer travel times. Overall, 115 of 250 bus city-pairs (both direct and en route transfer service) had longer schedules compared to 1995. In each mode, some city-pairs moved in the opposite direction of the general trend. Table 1 shows, by mode, the city-pairs with the greatest scheduled travel time percentage increases and decreases.

Figure 1. Percentage of City-Pairs with Lengthened Schedules by Intercity Passenger Mode and Service Type, February 1995 to February 2002



NOTE: Only air city-pairs with direct service were considered in this analysis. See methodology notes on page 4 for more details.

SOURCE: Amtrak, *National, Northeast and Schedule Change Timetables*, various issues (Washington, DC); Russell's Guides, *Official National Motor Coach Guide*, January 1985 and January 2002 (Cedar Rapids, Iowa); Greyhound Lines, *Systems Timetable*, January 1985 (Dallas, Texas); Official Airline Guide, February 1995 and 2002.

[1] The original 2001 study, which can be found at http://www.bts.gov/oai/airports/entiretable.html, looked at scheduled travel times for February 1995 and February 2001 between 10 major airline hub cities and up to 30 other major destinations around the country.

Table 1. Largest City-Pair Schedule Time Percentage Changes, February 1995–February 2002

AIRLINE trip time in hours and minutes

City-Pair	Scheduled service type	1995 average trip time	2002 average scheduled trip time	Percent change
Increases				
Pittsburgh-Washington Dulles	(D)	0.52	1:06	27.3%
Los Angeles-San Diego	(D)	0:45	0:55	22.0%
Pittsburgh-Cincinnati	(D)	1:05	1:19	21.8%
New York LaGuardia-Philadelphia	(D)	0:58	1:09	19.5%
Pittsburgh-Philadelphia	(D)	1:02	1:13	17.3%
Decreases				
Atlanta-Washington Dulles	(D)	1:49	1:36	-12.0%
Atlanta-New York JFK	(D)	2:15	2:05	-7.2%
Atlanta-New York LaGuardia	(D)	2:15	2:07	-5.9%
Pittsburgh-Miami	(D)	2:47	2:37	-5.7%
San Francisco-Baltimore	(D)	5:09	4:54	-4.9%

RAIL trip time in hours and minutes

City-Pair	Scheduled service type	1995 average trip time	2002 average scheduled trip time	Percent change
Increases				
Los Angeles-Salt Lake City	(D/C)	15:35	35:40	128.9%
Minneapolis-St. Louis	(C)	15:10	31:05	104.9%
Minneapolis-Dallas	(C)	30:29	53:30	75.5%
Dallas-Miami	(C)	41:25	70:15	69.6%
Dallas-Minneapolis	(C)	31:18	52:15	66.9%
Decreases				
Newark-Boston	(D)	6:02	4:38	-23.4%
New York-Boston	(D)	5:00	4:02	-19.4%
Pittsburgh-Dallas	(C)	16:02	13:16	-17.3%
Pittsburgh-Boston	(C)	16:53	15:07	-10.5%
New York-Philadelphia	(D)	1:29	1:20	-10.4%

BUS trip time in hours and minutes

City-Pair	Scheduled service type	1995 average trip time	2002 average scheduled trip time	Percent change
Increases				
Pittsburgh-Atlanta	(C)	14:15	16:50	18.1%
New York-Charlotte	(D)	12:40	14:30	14.5%
Los Angeles-Las Vegas	(D)	5:37	6:23	13.6%
Atlanta-Baltimore	(D)	14:55	16:55	13.4%
Pittsburgh-Boston	(C)	13:05	14:45	12.7%
Decreases				
Pittsburgh-Baltimore	(C)	6:50	4:50	-29.3%
Detroit-Denver	(C)	42:40	33:05	-22.5%
Atlanta-Tampa	(D)	15:15	11:55	-21.9%
Dallas-Minneapolis	(C)	27:00	21:30	-20.4%
Los Angeles-Orlando	(D)	66:55	56:10	-16.1%

NOTE: Average scheduled trip time is rounded to nearest minute. Percent change is based on unrounded numbers. Service Type: C = Connecting (enroute transfer); D = Direct; D/C = Direct in February 1995, connecting in February 2002.

SOURCES: Amtrak, National, *Northeast and Schedule Change Timetables*, various issues, (Washington, DC); Russell's Guides, *Official National Motor Coach Guide,* January 1995 and January 2002 (Cedar Rapids, Iowa); Greyhound Lines, *System Timetable*, January 1995 (Dallas, Texas); *Official Airline Guide,* February 1995 and 2002.

BTS weighted the city-pair results by the number of scheduled frequencies to quantify the degree of schedule change in these markets.[2] Even though scheduled travel times increased in the majority of direct-service city-pairs, there were some categories of markets within the rail and bus modes with shorter scheduled times. Although schedules for rail city-pairs outside the Boston-New York-Washington Northeast Corridor (NEC) increased by 3.7% on a frequency-weighted basis, scheduled time in the high-frequency NEC city-pairs decreased by 7.8% resulting in an overall 0.4% decrease in the weighted average Amtrak city-pair among the rail markets in this study. For intercity bus, scheduled time in connecting service city-pairs decreased by 1.2 percent compared to a nearly 1% increase in direct service city-pairs. Overall, intercity bus schedule times increased by about 0.5% for all markets combined. Frequency weighted airline schedule times increased by 3.2 percent.

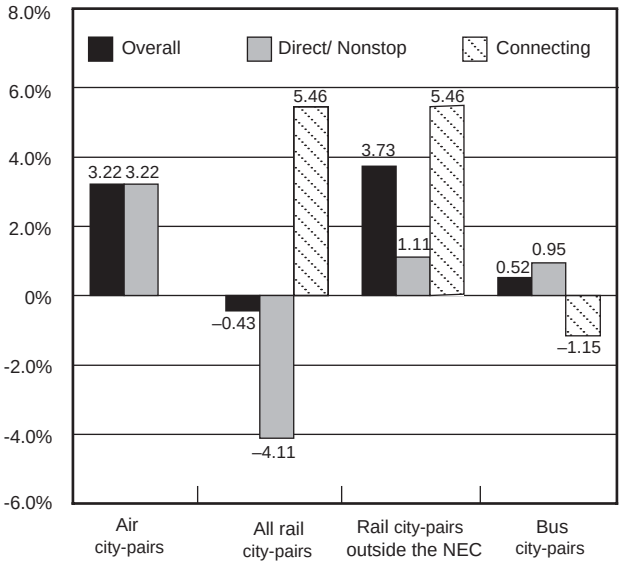
While the city-pairs in the study encompass many of the nation's major intercity travel markets, the lack of publicly available data on specific city-pair traffic volumes for each of the three modes prevented BTS from constructing reliable market samples for each mode in its entirety. Therefore, the results of this study cannot be generalized for the industry as a whole, and are applicable only to the markets considered.

Reasons for Changes in Scheduled Travel Times

Figure 2 shows the weighted percentage increase in scheduled travel time for various categories of service for each mode. A variety of factors contribute to these changes, and more than one factor may come into play for the same mode depending on the city-pair. For example, in the markets covered in this study, schedules for direct-service intercity bus increased overall. However, in markets with an en route transfer, scheduled trip times decreased as greater intercity bus network frequencies, compared to 1995, resulted in shortened en route transfer times. For rail, the most significant schedule lengthening occurred where service was changed to a more time-consuming route or where direct transfers between trains were broken, resulting in some cases in a nearly 24-hour transfer time that previously required only a short wait. Other factors resulting in longer schedule times were introduction of mail and express package handling at intermediate stations and congestion or changes in track conditions on routes shared with freight trains.

On the other hand, technology and infrastructure improvements in conjunction with the introduction of the Acela Express helped decrease intercity rail scheduled

Figure 2. Weighted Percentage Change in Scheduled Travel Time, 1995–2002



NOTE: NEC = Northeast Corridor (i.e., from Washington, DC to Boston, MA)

SOURCE: Amtrak, *National, Northeast and Schedule Change Timetables*, various issues (Washington, DC); Russell's Guides, *Official National Motor Coach Guide*, January 1985 and January 2002 (Cedar Rapids, Iowa); Greyhound Lines, *Systems Timetable*, January 1985 (Dallas, Texas); Official Airline Guide, February 1995 and 2002.

time in NEC city-pairs. The largest percentage increases in airline trip times came in the shorter distance city-pairs that were studied (Table 1). This is likely due to airport congestion, which affects all flights, but which has a greater proportional impact on shorter flights. For example, 10 minutes added to a 20-minute flight causes a much greater percentage increase in travel time than 10 minutes added to a 2-hour flight.

Scheduled Travel Time Trends

Several intercity passenger industry trends may affect scheduled travel time trends in the coming year. Amtrak has eliminated much of its express package handling, which could reduce trip time schedules on some long-distance routes. Some airlines have spread out flight arrival and departure times at their hubs to improve efficiency. This could reduce congestion levels and the resulting time aircraft spend taxiing and waiting to land. The emergence of several new niche intercity bus carriers that offer express services on certain routes may create competitive pressure among all carriers to provide faster schedules.

BTS plans to monitor scheduled travel time on a regular basis to note and report on changes in this important area. Previous BTS research has shown that overall air travel time (including both scheduled travel time and unscheduled delays) varies significantly from month to month. Scheduled travel time is likely to vary less than overall travel time because short-term variations are most likely to affect

[2] A weighting by the number of passengers would provide a better measure of the average change in scheduled travel time experienced by the intercity traveler. However, city-pair traffic volumes are not available for intercity bus and rail, so frequency was used as the weighting factor.

delays without being incorporated into scheduled times. BTS plans to examine seasonal and annual variability of scheduled trip times, as well as attempt to quantify travel time changes on an individual traveler basis.

Methodology Notes

In expanding the original BTS study noted above, we used the same city-pairs and the same February 1995 base period.[3] Scheduled travel times were compared with those in February 2002, the latest comparable month for which data were available at the time the new study began.[4] By using the same month for each year, seasonal consistency is achieved. Source data for this study were the February 1995 and February 2002 scheduled travel times published in the *Official Airline Guide, Russell's Official National Motorcoach Guide*, and timetables from Amtrak and Greyhound.

BTS recognizes that there is variability in scheduled travel times, especially for airline schedules, on both a month-to-month and year-to-year basis. The lack of bus and rail data for prior years in an electronic format precluded us from considering additional time periods in this analysis. BTS will further analyze the variability of scheduled travel times for all three modes in future work on this subject.

For the airline city-pairs, only nonstop schedules were considered. Because bus and rail operate linear routes serving intermediate cities, most major city-pairs do not have nonstop service. Therefore, for rail and bus, the analysis considered scheduled trip times of all direct service (no transfers required en route) whether or not intermediate stops were scheduled. In rail and bus markets where direct service was not available, the single fastest connecting schedule was used.[5] For connections, the analysis uses the elapsed time from origin to destination, including wait time at the transfer station.[6]

In certain markets, Amtrak uses "Amtrak Thruway" bus connections to reach destinations not directly served by the train.[7] Because Amtrak provides these services as part of its regular rail service offerings, they have been included where they are an integral part of the Amtrak schedule in a city-pair market.[8]

Please note that this analysis is based on city-pair schedules, but is not tied to service or traffic volumes. On-time performance is also not considered in this analysis.

Additional detail and a table showing the average scheduled intercity trip times in each city-pair covered by the study can be found at www.bts.gov/publications/issue_brief/7.

[3] In some cases, the airline city-pairs are not major city-pairs for rail or bus, and a few heavily traveled rail or bus city-pairs were not on the airline city-pair list. However, by using the same city-pairs as in the initial BTS analysis, many of the nation's largest intercity travel markets are covered.

[4] The original BTS analysis used February 2001 airline data. In view of the events of September 11, 2001, and the subsequent reductions in airline service, a February 2002 analysis gives a more representative picture of the travel environment today.

[5] The decision to use the single fastest rather than all connecting schedules is due to the large number of connecting possibilities in the intercity bus system, and in some city-pair markets in the Amtrak system. To consider all possible connecting schedules, many involving multiple changes of vehicles, would ignore the way most people travel. When faced with the need to make connections, travelers generally prefer the fastest, most direct connection.

[6] Slow trips that are overtaken and passed by later departures, circuitous routings between two points, and connecting trips requiring multiple transfers were generally excluded because those services would normally not be used by through passengers.

[7] Oakland to San Francisco, Toledo to Detroit, and Longview to Houston, to name a few.

[8] We did not consider Amtrak's service in the San Francisco-Las Vegas city-pair because over half the travel distance is represented by Amtrak Thruway bus service, making this route predominantly bus service rather than rail service.

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