

The Traveler's Tradeoff:

Comparing Intercity Bus, Plane, & Train Fares across the United States

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Executive Summary

This study evaluates the prices of travel on various modes of transportation—air, bus, and rail—in 52 city pairs in the United States with travel distances between 100 and 500 miles. Drawing on a data set of 3,120 fares, it illustrates the difference in prices under various advance purchase (A/P) scenarios (1-day, 7-day, and 28-day). The results show that the differences in fares between modes are significant and larger than is commonly believed:

- Intercity bus fares are 50-55% lower than on Amtrak, depending on the A/P scenario. Amtrak fares are priced 55-73% below airline fares. (Both ranges are based on averages).
- Single-occupant driving is substantially more expensive than bus travel, even for motorists who consider only the cost of fuel and tolls. Amtrak fares are roughly equivalent to driving costs for travelers booking in advance, but somewhat more expensive for those waiting until the last minute to book, with the greatest premium paid by rail travelers in the Northeast.
- The savings from traveling by bus and trains in comparison to air diminish sharply when trip distances are longer than 250 miles. However, even for those booking 28 days in advance to obtain discount airfares, the savings from bus/train travel on these longer trips still average \$41-\$69/ one-way.
- New discount city-to-city bus service cumulatively saves consumers \$1.2 billion annually compared to other models of travel that travelers indicate they would use if these bus services were not available.

Introduction

To develop an understanding of the prices of different forms of travel, the Chaddick Institute for Metropolitan Development launched the *Multimodal Fare Analysis Project* in July 2013. The data team recorded the lowest fares available online in 52 city pairs under three advance purchase (A/P) scenarios (1-day, 7-day, and 28-day) for five different types of transportation services: discount city-to-city bus, conventional bus, conventional intercity rail, high-speed rail (Amtrak Acela), and air travel. The goal of this analysis is to foster an understanding of the monetary tradeoffs that travelers face when selecting a mode.

Several trends that are underway suggest the need to take an intensive look at the evolving incentives facing consumers on trips 100-500 miles in distance:

- Passenger volumes on many short- and medium-distance airlines routes have sharply declined since the late 1990s (Transtats, 2014).
- The mileage driven by Americans has plateaued, and is perhaps even declining, when measured on a per-capita basis (U.S. PRIG, 2013).
- Discount city-to-city bus companies, including BoltBus and Megabus, have dramatically expanded in recent years and have added service at a rate far faster than any other transportation mode (Chaddick Institute, 2014).
- The number of passenger boardings on Amtrak reached record levels in recent quarters (Amtrak, 2013).

A variety of changes in the pricing behavior of bus, plane, and train operators also point to the need for additional analysis of the relative prices of the various modes:

- Steeply discounted “teaser” fares—sometimes as low as \$1—for those booking weeks in advance have become standard on discount city-to-city operators (Austin, 2011).
- Large legacy airlines are increasingly shying away from steeply priced fares targeted at last-minute buyers. These carriers have also lifted restrictions, such as at the Saturday night minimum stay, on certain discount fares (Delta, 2009).
- Amtrak is also becoming more aggressive in adjusting fares according to supply and demand conditions through more sophisticated yield management (Amtrak, 2013b).

Such phenomena contribute to the importance of gaining a deeper understanding of the extent to which the prices differ on various modes. To offer perspective on this, the study looks exclusively at short and mid-distance corridors between October 2013 and January 2014 in which bus and train travel is often highly competitive to automobile and air travel.

Categories of Services Evaluated

Fare observations were made for the five different types of transportation services outlined in the previous section. Fares for Amtrak’s high-speed Acela trains and Chinatown bus service between Boston and Washington, D.C. were also recorded. Nevertheless, these modes will be evaluated separately at a later date.

To measure the price of conventional bus service, we used the fares reported on Greyhound.com, which encompasses the services of not only Greyhound Lines but also Adirondack Trailways, Peter Pan Lines, Indian Trails, and numerous smaller carriers. When measuring the fares for discount city-to-city operators (“corporate curbside operators”), both BoltBus and Megabus were considered.

The analysis considers air fares available on Southwest.com, which encompasses both Southwest and Airtran Airlines. It also considers those fares offered on Orbitz.com, including major legacy and discount airlines, with Southwest being the most notable exception (*Table 1*). In the case of Orbitz, Spirit Airlines was excluded from the price observations due to the fact that the airline “unbundles” its fares, charging extra fees for carry-on and checked baggage, using a credit card, and other services. This pricing strategy makes price comparisons difficult.¹

Table 1
Categories of Transportation Service Considered

Mode	Carriers/Sample
Conventional Intercity Bus	Greyhound Lines, Peter Pan, and affiliated carriers
Discount City-to-City Bus	Boltbus and Megabus
Intercity rail services	Amtrak (both Acela and conventional prices recorded)
Airlines: Southwest.com	Includes both Southwest Airlines and AirTran
Airlines: Orbitz.com	All carriers listed on Orbitz.com, except Spirit Airlines

A total of 54 city pairs were evaluated to include representation of each of the 50 largest metropolitan areas on the U.S. mainland (*Table 2*). (Two city pairs, New York – Philadelphia and Oakland – Sacramento, were included due to their prominence in their respective regions but dropped from the analysis on account of their travel distance being less than 100 miles, bringing the final sample to 52). An effort was made to sample a heterogeneous mix of markets. Metropolitan regions are represented roughly proportional to their size while balancing the need to have a mix of different types of city pairs. For example, five city pairs involve Chicago, six involve Los Angeles, and nine involve New York City.

Table 2
List of Markets Observed with Highway Mileage

<u>Citypair</u>	<u>Mileage</u>	<u>Citypair</u>	<u>Mileage</u>
Atlanta - Birmingham	147.0	Los Angeles - San Francisco	382.1
Atlanta - Jacksonville	345.8	Los Angeles - San Jose	340.6
Atlanta - Nashville	249.5	Louisville - Nashville	174.4
Austin - Houston	165.5	Miami – Orlando	238.3
Birmingham - New Orleans	342.8	Miami – Tampa	282.7
Boise - Salt Lake City	339.1	Milwaukee - Minneapolis	336.9
Charlotte - Raleigh	166.9	New York - Baltimore	187.5
Chicago - Cleveland	345.9	New York - Boston	214.8
Chicago - Detroit	282.7	New York - Hartford	116.3
Chicago - Indianapolis	184.8	New York - Philadelphia*	94.0
Chicago - Minneapolis	408.1	New York - Pittsburgh	369.4
Chicago - St. Louis	297.3	New York - Providence	182.1
Cincinnati - Detroit	259.1	New York - Rochester	333.5
Columbus - Pittsburgh	185.2	New York - Washington, D.C.	228.3
Dallas - Houston	239.1	Norfolk - Raleigh	184.1
Dallas - Oklahoma City	206.4	Oakland - Sacramento*	81.8
Dallas - San Antonio	273.7	Orlando - Jacksonville	140.5
Denver - Albuquerque	447.2	Philadelphia - Boston	305.9
Houston - New Orleans	347.7	Philadelphia - Pittsburgh	304.9
Houston - San Antonio	197.6	Philadelphia - Richmond	248.2
Kansas City - Omaha	183.7	Pittsburgh - Buffalo	214.9
Las Vegas - Phoenix	285.6	Portland - Seattle	173.8
Little Rock - Memphis	135.3	Reno - San Francisco	218.8
Los Angeles - Las Vegas	270.4	San Fran. - Riverside, CA	433.3
Los Angeles - Phoenix	372.4	Seattle - Spokane	379.3
Los Angeles - Reno	472.6	St. Louis - Kansas City	248.6
Los Angeles - San Diego	120.6	Washington - Raleigh	280.9

* Data collected but excluded from the analysis because travel distance < 100 miles

Fare observations were made between October 2013 and January 2013 (*Table 3*). Each A/P scenario in each city pair was collected five times during this interval, with the lowest fare recorded. (See *Appendix* for further details on the data collection process).

Table 3:
Dates of Price Observations

<u>Date of Price Observation</u>	<u>Travel Time Interval</u>	<i>Day of Week of Travel Observed</i>		
		<u>1-day A/P</u>	<u>7-day A/P</u>	<u>28-day A/P</u>
October 10 and 17, 2013*	2 p.m. – 6 p.m.	Fri.	Thurs.	Thurs.
November 5 and 12, 2013**	8 a.m. – noon	Wed.	Tues.	Tues.
November 22, 2013	2 p.m. – 6 p.m.	Sat.	Fri.	Fri.
December 8, 2013	6 a.m. – noon	Sun.	Mon.	Mon.
December 13, 2013	1 p.m. – 5 p.m.	Sat.	Fri.	Fri.
January 2, 2014	1 p.m. – 5 p.m.	Fri.	Thurs.	Thurs.

* first 36 markets surveyed on October 10 and the remainder on October 17

** first 36 markets surveyed on November 5 and the remainder on November 12

*** sample limited to Midwest markets omitted from October 17 analysis

Summary of Average Fares by City Pair

A summary of the average fares by category of transportation provider in each of the 52 city pairs appears in *Table 4*. As previously noted, each cell represents the average fare based on five separate observations under this A/P scenario.

For example, in the New York-Pittsburgh city pair, which appears at the bottom of the list, the average fare under the 7-day A/P scenario was \$51.30 for discount city-to-city bus service, and somewhat higher on Greyhound.com (\$57.80) and Amtrak (\$91.00). Air travel was considerably more expensive, on both Southwest.com (\$182.50) and Orbitz.com (\$186.78).

Table 4
Average Fares by Type of Carrier in 54 Citypairs

	Discount			Greyhound			Amtrak			Southwest /Air Tran			Orbitz.com except Air		
	1 day AP	7 day AP	28 day AP	1 day AP	7 day AP	28 day AP	1 day AP	7 day AP	28 day AP	1 day AP	7 day AP	28 day AP	1 day AP	7 day AP	28 day AP
Departing on Oct 24															
Atlanta - Jacksonville	\$25.90	\$29.30	\$28.90	\$26.80	\$26.40	\$21.80	N/A	N/A	N/A	\$220.00	\$186.00	\$130.80	\$231.26	\$132.48	\$108.78
Atlanta - Nashville	\$13.30	\$16.30	\$16.50	\$16.80	\$17.40	\$17.80	N/A	N/A	N/A	\$237.20	\$208.60	\$168.00	\$381.18	\$204.95	\$167.37
Atlanta - Birmingham	\$21.10	\$22.50	\$17.70	\$18.00	\$16.40	\$14.20	\$43.60	\$39.00	\$39.00	N/A	N/A	N/A	\$309.30	\$187.73	\$130.20
Austin - Houston	\$14.50	\$13.50	\$12.70	\$14.00	\$13.40	\$12.40	\$51.00	\$58.00	\$48.00	\$194.00	\$174.80	\$120.40	\$193.90	\$188.00	\$124.12
Birmingham - New Orleans	N/A	N/A	N/A	\$79.69	\$80.60	\$61.20	\$79.60	\$49.00	\$49.00	\$276.00	\$239.20	\$214.00	\$307.18	\$256.45	\$172.15
Boise - Salt Lake City	N/A	N/A	N/A	\$83.86	\$84.80	\$65.00	N/A	N/A	N/A	\$267.20	\$235.40	\$191.40	\$371.20	\$177.78	\$139.15
Charlotte - Raleigh	N/A	N/A	N/A	\$23.00	\$25.20	\$22.20	\$32.80	\$28.00	\$28.00	N/A	N/A	N/A	\$288.40	\$179.15	\$129.18
Chicago - Cleveland	\$32.50	\$37.30	\$32.10	\$39.20	\$33.80	\$32.60	\$63.33	\$65.00	\$54.00	\$206.20	\$196.20	\$119.80	\$210.30	\$172.80	\$102.70
Chicago - Detroit	\$24.50	\$29.10	\$25.90	\$21.60	\$27.60	\$26.00	\$59.00	\$48.38	\$45.38	\$198.00	\$153.40	\$118.00	\$208.90	\$127.30	\$97.30
Chicago - Indianapolis	\$23.90	\$24.70	\$21.90	\$22.20	\$26.60	\$17.80	\$32.17	\$24.00	\$24.00	N/A	N/A	N/A	\$212.90	\$144.30	\$110.30
Chicago - Minneapolis	\$23.50	\$25.90	\$23.50	\$19.00	\$38.40	\$46.60	\$89.50	\$77.75	\$66.00	\$221.20	\$155.40	\$90.00	\$121.10	\$79.30	\$62.20
Chicago - St. Louis	\$28.25	\$29.75	\$26.50	\$18.40	\$21.20	\$17.20	\$40.00	\$51.60	\$35.60	\$199.00	\$162.40	\$106.20	\$222.48	\$128.29	\$99.26
Cincinnati - Detroit	N/A	N/A	N/A	\$45.04	\$36.00	\$28.00	N/A	N/A	N/A	N/A	N/A	N/A	\$440.88	\$248.06	\$166.38
Columbus - Pittsburgh	N/A	N/A	N/A	\$22.40	\$24.60	\$22.80	N/A	N/A	N/A	\$328.00	\$248.00	\$188.80	\$304.80	\$215.80	\$189.75
Dallas - Houston	\$19.10	\$18.90	\$15.90	\$20.80	\$17.40	\$16.60	\$71.00	\$68.00	\$68.00	\$192.00	\$147.80	\$77.00	\$192.30	\$113.15	\$78.15
Dallas - Oklahoma City	N/A	N/A	N/A	\$30.00	\$33.60	\$31.00	\$42.60	\$41.40	\$37.00	\$213.00	\$170.60	\$106.00	\$251.26	\$122.49	\$89.60
Dallas - San Antonio	\$15.30	\$22.70	\$22.50	\$21.00	\$19.20	\$19.80	\$34.00	\$35.80	\$34.00	\$196.00	\$132.80	\$91.00	\$236.36	\$124.30	\$93.50
Denver - Albuquerque	N/A	N/A	N/A	\$33.00	\$36.60	\$33.60	\$94.00	\$94.00	\$98.00	\$225.00	\$179.00	\$126.40	\$224.94	\$141.09	\$110.17
Houston - New Orleans	\$22.90	\$29.90	\$24.30	\$26.20	\$22.80	\$22.40	\$53.00	\$60.00	\$67.50	\$221.00	\$169.20	\$119.20	\$256.18	\$287.46	\$177.61
Houston - San Antonio	\$14.90	\$11.50	\$11.10	\$13.40	\$13.20	\$8.00	\$40.67	\$68.00	\$34.00	\$184.20	\$136.20	\$102.40	\$327.45	\$150.83	\$133.42
Kansas City - Omaha	N/A	N/A	N/A	\$48.00	\$47.80	\$45.00	N/A	N/A	N/A	\$183.00	\$176.40	\$154.60	\$308.55	\$177.69	\$144.55
Las Vegas - Phoenix	N/A	N/A	N/A	\$36.80	\$34.00	\$32.20	N/A	N/A	N/A	\$210.00	\$135.80	\$82.20	\$139.82	\$110.30	\$89.70
Little Rock - Memphis	\$9.90	\$21.50	\$25.10	\$10.20	\$10.40	\$8.60	N/A	N/A	N/A	N/A	N/A	N/A	\$725.60	\$372.09	\$239.91
Los Angeles - Las Vegas	\$24.70	\$20.50	\$17.90	\$23.80	\$21.00	\$11.40	N/A	N/A	N/A	\$191.00	\$108.20	\$87.80	\$165.48	\$82.00	\$67.10
Los Angeles - Phoenix	N/A	N/A	N/A	\$34.80	\$33.80	\$33.20	N/A	N/A	N/A	\$218.00	\$148.60	\$102.80	\$215.48	\$120.39	\$94.20
Los Angeles - San Diego	\$8.50	\$1.50	\$8.50	\$12.00	\$11.40	\$8.20	\$37.00	\$38.80	\$37.00	N/A	N/A	N/A	\$346.62	\$178.42	\$117.60
Los Angeles - San Francisco	\$31.70	\$31.10	\$21.90	\$26.80	\$30.20	\$29.00	\$71.60	\$59.80	\$59.80	\$215.00	\$124.20	\$65.60	\$211.70	\$90.60	\$66.20
Los Angeles - San Jose	\$30.70	\$24.90	\$16.30	\$25.40	\$22.60	\$18.00	\$78.80	\$64.60	\$56.80	\$199.00	\$124.20	\$67.40	\$198.90	\$101.78	\$57.65
Los Angeles - Reno	N/A	N/A	N/A	\$73.60	\$74.20	\$70.20	\$95.00	\$80.00	\$80.00	\$223.40	\$163.00	\$133.60	\$235.84	\$167.58	\$116.96
Louisville - Nashville	\$13.70	\$10.50	\$4.70	\$20.40	\$17.00	\$16.00	N/A	N/A	N/A	\$262.33	\$221.40	\$182.25	\$421.29	\$293.59	\$208.08
Miami - Orlando	N/A	N/A	N/A	\$35.00	\$30.80	\$27.40	\$45.60	\$45.60	\$43.00	N/A	N/A	N/A	\$348.40	\$136.90	\$168.38
Miami - Tampa	N/A	N/A	N/A	\$42.60	\$36.20	\$31.40	\$59.80	\$49.00	\$43.80	N/A	N/A	N/A	\$202.30	\$119.30	\$128.90
Milwaukee - Minneapolis	\$22.17	\$26.50	\$22.83	\$19.80	\$24.80	\$18.40	\$75.00	\$75.00	\$57.00	\$214.00	\$153.20	\$98.40	\$263.68	\$136.20	\$98.60
New York - Baltimore	\$17.25	\$26.50	\$22.38	\$19.80	\$21.40	\$21.20	\$115.80	\$98.60	\$86.20	\$203.00	\$178.00	\$131.60	\$320.30	\$171.46	\$122.30
New York - Boston	\$20.40	\$25.70	\$23.50	\$19.00	\$29.20	\$24.60	\$73.00	\$94.00	\$69.20	\$258.60	\$217.60	\$138.00	\$232.90	\$99.75	\$79.40
New York - Hartford	\$14.10	\$20.10	\$13.70	\$19.80	\$23.20	\$20.60	\$47.00	\$44.60	\$44.40	N/A	N/A	N/A	\$349.00	\$215.52	\$163.90
New York - Philadelphia	\$12.50	\$11.90	\$11.10	\$14.80	\$14.00	\$13.20	\$53.00	\$60.60	\$41.80	N/A	N/A	N/A	\$385.62	\$243.62	\$158.61
New York - Pittsburgh	\$45.50	\$51.30	\$39.50	\$45.20	\$57.80	\$36.00	\$91.00	\$101.40	\$76.80	\$235.50	\$182.50	\$166.75	\$382.38	\$186.78	\$128.40
New York - Providence	\$17.10	\$20.50	\$17.70	\$24.40	\$25.20	\$22.20	\$71.00	\$72.80	\$53.00	N/A	N/A	N/A	\$384.60	\$252.09	\$180.70
New York - Washington, D.C.	\$19.80	\$24.50	\$20.40	\$19.80	\$25.19	\$21.00	\$117.80	\$112.00	\$94.40	\$203.00	\$170.00	\$117.20	\$188.30	\$102.20	\$81.50
New York-Rochester	\$30.75	\$39.25	\$37.00	\$38.80	\$40.40	\$37.40	\$76.60	\$76.60	\$72.20	\$121.00	\$166.00	\$168.25	\$185.44	\$128.58	\$115.10
Norfolk - Raleigh	N/A	N/A	N/A	\$51.73	\$50.50	\$39.25	\$107.25	\$73.75	\$71.50	\$332.00	\$302.60	\$232.80	\$330.68	\$263.15	\$206.45
Oakland - Sacramento	\$7.50	\$9.50	\$9.50	\$17.60	\$14.40	\$3.60	\$29.00	\$29.00	\$29.00	N/A	N/A	N/A	\$407.37	\$217.64	\$142.93
Orlando - Jacksonville	\$15.00	\$15.50	\$9.50	\$22.60	\$16.60	\$12.00	\$45.00	\$39.40	\$33.00	N/A	N/A	N/A	\$423.08	\$280.25	\$239.09
Philadelphia - Boston	\$35.10	\$37.50	\$37.10	\$43.00	\$48.60	\$44.60	\$150.80	\$117.60	\$95.80	N/A	N/A	N/A	\$158.84	\$133.48	\$83.79
Philadelphia - Pittsburgh	\$35.50	\$37.90	\$37.50	\$35.60	\$34.40	\$37.00	\$68.00	\$81.60	\$57.80	\$158.00	\$235.20	\$198.20	\$203.22	\$152.96	\$124.92
Philadelphia - Richmond	\$25.50	\$24.50	\$21.30	\$26.80	\$26.60	\$12.00	\$109.00	\$78.60	\$59.80	N/A	N/A	N/A	\$204.42	\$148.62	\$122.32
Pittsburgh-Buffalo	N/A	N/A	N/A	\$39.40	\$41.00	\$40.60	\$94.67	\$78.67	\$78.33	\$316.00	\$249.20	\$218.40	\$315.80	\$207.79	\$168.19
Portland - Seattle	\$18.30	\$21.50	\$15.17	\$21.60	\$19.40	\$18.40	\$33.00	\$47.67	\$30.33	N/A	N/A	N/A	\$183.90	\$104.70	\$80.50
Reno - San Francisco	\$16.30	\$21.10	\$16.30	\$13.60	\$14.40	\$15.20	\$60.60	\$60.60	\$58.60	\$254.60	\$255.80	\$192.40	\$340.74	\$211.03	\$139.30
San Fran. - Riverside/Orange Co	N/A	N/A	N/A	\$80.87	\$86.35	\$75.54	\$71.00	\$72.00	\$72.00	\$215.00	\$164.20	\$109.60	\$203.48	\$156.58	\$88.80
Seattle - Spokane	N/A	N/A	N/A	\$43.20	\$44.20	\$40.20	\$50.00	\$58.20	\$50.00	N/A	N/A	N/A	\$198.90	\$130.99	\$87.70
St. Louis - Kansas City	\$23.30	\$21.90	\$17.10	\$31.25	\$31.80	\$32.80	\$39.00	\$34.40	\$29.00	\$166.20	\$158.40	\$123.20	\$350.27	\$236.10	\$190.80
Washington - Raleigh	\$26.50	\$41.50	\$29.50	\$31.40	\$30.60	\$26.60	\$84.67	\$76.67	\$70.50	\$331.80	\$267.60	\$185.20	\$285.02	\$184.77	\$127.30

Results

Several of the most notable results of the study are summarized below:

Finding 1: A clear hierarchy exists with respect to the prices of various modes of travel. Intercity bus services are priced on average 50-55% below rail service, depending on the A/P scenario. Rail services, in turn, are priced 55-73% less than airfares. Intercity bus services are priced 28-37% less than the variable cost of single-occupant driving, and, like rail services, are less than half of the fully allocated cost of driving.

The average fare differences by mode appear in *Table 5*. The table's first three columns show the prices, and price differences, under the various A/P scenarios for the five different transportation options. The percentage savings from both bus and train travel are comparable under these scenarios.

Table 5
Average Fare Comparison by Mode of Transportation
Intercity Bus & Train vs. Other Modes of Travel

Advance Purchase Scenario					
	1 day advance purchase	7 day advance purchase	28 day advance purchase	Weighted Avg.*	1 day A/P bus & train vs. 28 day A/P Air
Intercity Bus	\$30.92	\$32.25	\$28.04	\$31.23	
Intercity Train	\$68.15	\$64.39	\$56.29	\$65.27	
Airline	\$250.62	\$166.17	\$124.29	\$143.39	
Private Vehicle*					
<i>Variable cost</i>				\$44.72	
<i>Fully allocated</i>				\$169.77	

Percent Savings, Bus Travel vs.					
	1 day advance purchase	7 day advance purchase	28 day advance purchase	Weighted Avg.*	1 day A/P bus & train vs. 28 day A/P Air
Intercity Rail	-54.6%	-49.9%	-50.2%	-52.2%	
Airline	-87.7%	-80.6%	-77.4%	-78.2%	-75.1%
Private Vehicle*					
<i>Variable cost</i>	-30.9%	-27.9%	-37.3%	-30.2%	
<i>Fully allocated</i>	-81.8%	-81.0%	-83.5%	-81.6%	

Percent Difference, Train Travel vs.					
	1 day advance purchase	7 day advance purchase	28 day advance purchase	Weighted Avg.*	1 day A/P bus & train vs. 28 day A/P Air
Intercity Bus	54.6%	49.9%	50.2%	52.2%	
Airline	-72.8%	-61.3%	-54.7%	-54.5%	-45.2%
Private Vehicle*					
<i>Variable cost</i>	52.4%	44.0%	25.9%	46.0%	
<i>Fully allocated</i>	-59.9%	-62.1%	-66.8%	-61.6%	

* based on advance purchase behavior as described in text of this report

The savings from bus travel proved remarkably robust, regardless of whether a consumer books in advances or waits until just a day before departure to buy a ticket. The fourth column shows the weighted-average fare based on the typical mix of A/P buying habits of travelers. These calculations are based on the assumption that:

- Air travelers buy tickets in equal proportion under the 7- and 14-day A/P fares. (In this scenario, air travelers avoid buying tickets less than 7 days in advance).
- Rail travelers buy tickets in equal proportion under the three A/P scenarios.
- Bus travelers tend to wait until the last minute, booking either 1 or 7 days in advance.²

Using this weighting scheme, the average fare is \$31.23 on intercity buses and \$65.27 on Amtrak conventional trains. The average airfare, conversely, is \$143.39 (*Weighted Average column, Table 5*). These estimates, as well as comparison of bus fares one day before departure with air fares 28 days before departure (*Column at far right, Table 5*), show that even those who “procrastinate” before buying bus tickets enjoy savings of 75%, while procrastinators who buy rail tickets save 45%.

Finding 2: Single-occupant driving is substantially more expensive than bus travel, even for motorists who consider only the *short-term variable costs* of vehicle operation (fuel and tolls). Rail fares are roughly equal to driving costs for those booking 28 days in advance but somewhat more expensive for those waiting until a day before departure, with the greatest premium paid in the Northeast.

The following charts showcase the difference between the average price for air, bus, and rail travel in the Northeast, Midwest, and Pacific Region routes and the variable costs of driving. These estimates were made by considering single-occupant auto travel at 26 mpg and include allowances for tolls.³

- Travelers in the Midwest (*Figure A*) save \$16 per one way trip from discount bus travel with a 1-day A/P and \$17 with a 28-day A/P. Amtrak fares are about equal to driving for those booking 28 days in advance and \$15 more for those booking just 1 day in advance.
- Travelers in the Northeast (*Figure B*) save a much greater amount (\$20-\$21) if they take the bus rather than drive compared to their Midwestern counterparts. Train fares tend to be appreciably higher than bus fares, regardless of the number of days booked in advance.
- Travelers in the Pacific Region (*Figure C*) face incentives for bus and train quite similar to those in the Midwest, with bus travel prices \$25-\$29 below driving costs, and train travelers booking long in advance, paying an amount roughly equal to the variable costs of driving.

Figure A

Average Fare Difference vs. Driving,* Midwest Routes

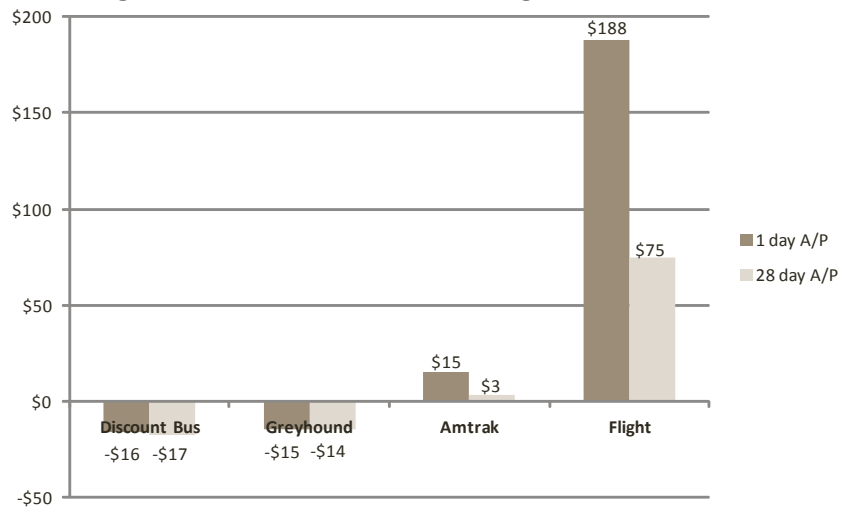


Figure B

Average Fare Difference vs. Driving,* Northeast Routes

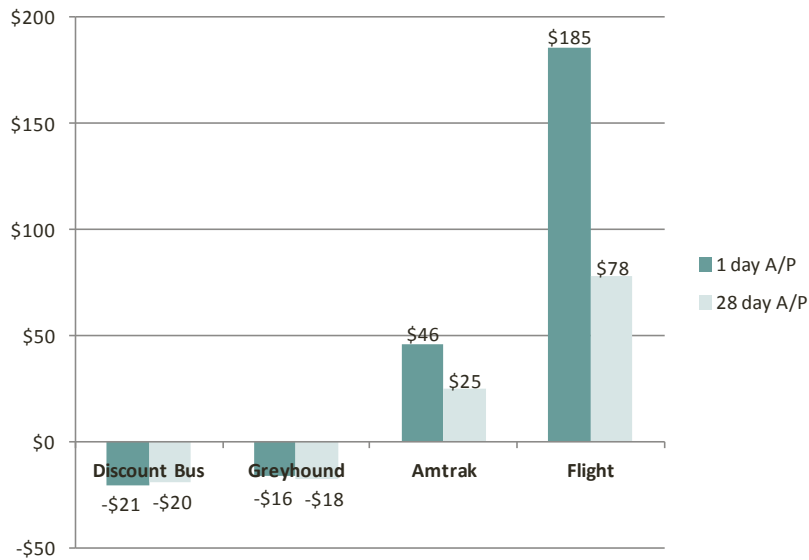
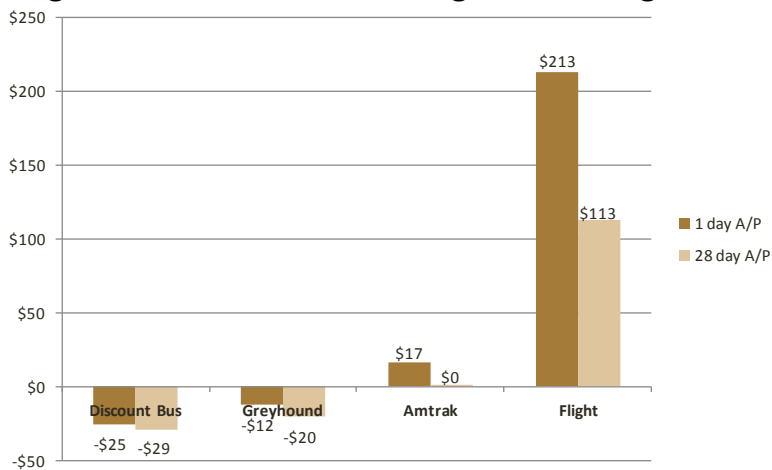


Figure C

Average Fare Difference vs. Driving,* Pacific Region Routes



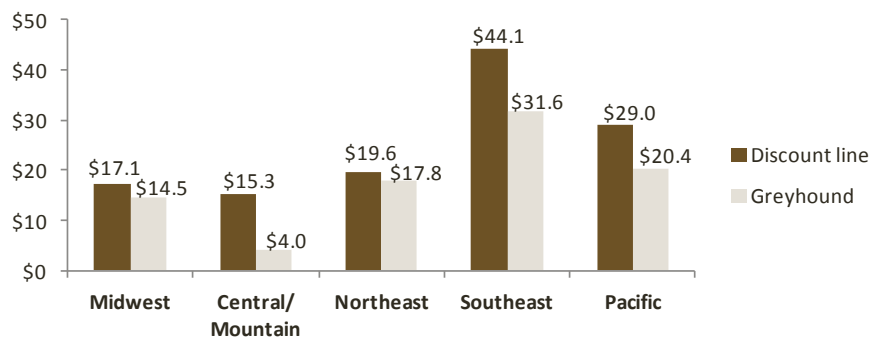
*Fuel & tolls only, per one-way trip

In each region, the premium paid for air travel is at least \$75 for travelers booking 28 days in advance and at least \$185 for those who wait until a day before departure. Air, bus, and train travel, of course, look much more attractive when considering the fully allocated costs of driving, an issue that we intend to consider in subsequent analysis. The results in the Central/Mountain states and Southeastern U.S. are similar to those in the Midwest. (For these results, please refer to the *Appendix*.)

Finding 3: Bus travel is less costly than the variable cost of driving in all regions of the country, regardless of whether a traveler uses a conventional operator, such as Greyhound or Trailways, or a discount city-to-city operator, such as BoltBus or Megabus. The price gap between categories of operators appears to diminish as the market for discount service matures (which occurred in the Midwest and Northwest).

Discount city-to-city bus lines, such as BoltBus and Megabus, charge \$17/trip less (on average) than the variable costs of driving in all regions of the country. The largest savings are found on the Pacific Region routes. The greatest savings from travel on Greyhound and affiliated lines relative to driving, conversely, are found in the Northeast.

Figure D
Savings from Bus Travel vs. Driving *
By Type of Bus Operator with 28-day A/P
 *Fuel & tolls only, per one-way



These results support the commonly held view that discount city-to-city lines tend to become more aggressive in pricing as they strive to initially establish themselves in new markets. For example, such carriers appear to have scaled back the extent of their discounting in the Midwest and Northeast, regions in which they have operated the longest, compared to other parts of the country.

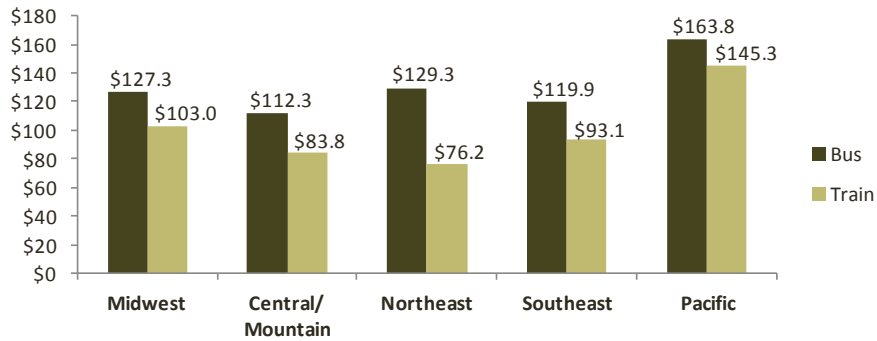
Finding 4: Travelers facing budgetary constraints have a strong incentive to avoid air travel on routes with travel distances between 100-500 miles. With a 7-day A/P, air travel costs \$76-\$145 more per one-way trip than traveling by train, depending on the region, and \$112-\$164 more than by traveling by bus.

Figure E shows the fare savings from bus and train travel relative to flying with a 7-day A/P. The largest savings from both bus and train travel can be found in the Pacific region, where the average fare difference exceeds \$145/one way trip.

The lowest savings from train travel relative to flying are found in the Northeast, in part because of the

relatively high fare on Amtrak trains in the busy Boston-Washington, D.C. corridor. Amtrak and bus lines tend to be more similarly priced on Midwest routes than in other regions. Both buses and trains in the Midwest and Pacific regions offer average savings of more than \$100 per one-way trip compared to flying. As noted earlier in this report (*Table 5*), the savings from avoiding air travel is much larger for travelers who book only one day before departure.

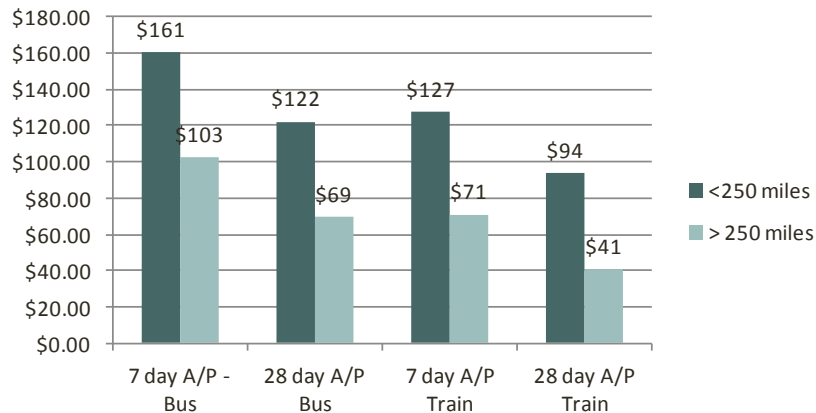
Figure E
Time vs. Money: Average Savings per One-Way Trip vs. Flying
 7-Day A/P



Finding 5: The “price premium” that travelers pay to fly compared to traveling by bus or train is greater on short distance routes than on longer distance ones. These higher premiums, together with the diminished benefit of time savings of flying on short-haul routes, makes bus and train travel particularly attractive to flying on trips less than 250 miles.

For trips less than 250 miles that are booked 7 days in advance, one-way air fares, on average, are \$127-\$161 more expensive than bus and train travel, respectively (*Figure F*). On routes greater than 250 miles, conversely, the premium is just \$71 - \$103. The reduced monetary savings from diverting to slower modes of travel on longer trips is even more pronounced for travelers booking 28 days in advance.

Figure F
Savings from Bus/Train Travel vs. Flying
 By Travel Distance



This inverse relationship between relative cost of air travel and travel distance is likely attributable to both the diminished level of airline competition on routes less than 250 miles (on these routes demand is often relatively weak, necessitating the use of smaller planes with higher costs per seat-mile) and the heightened intensity of intercity bus competition in this mileage range. Discount city-to-city bus lines, for example, generally do not offer direct service on routes more than 300 miles long, leaving consumers with only conventional bus service, such as Greyhound. Interpreted broadly, these results show why travelers who place a significant value on their time, and traveling between cities separated by more than 250 miles, have a much higher tendency to fly than those on shorter distance routes.

Finding 6: Discount city-to-city bus services provide American consumers a cumulative monetary savings of \$1.2 billion annually. This figure encompasses only travel on discount city-to-city carriers, such as BoltBus and Megabus, as well as the premium express services of Greyhound and Peter Pan, and does not include the rest of the intercity bus network.

This estimate, made in our study, “The Motor Coach Metamorphosis: 2013 Year in Review of Intercity Bus Service in the United States,” released in January 2014, uses a preliminary version of the data set featured in this study. This estimate was made by considering both the number of daily passengers that use these services, as well as survey results showing how travelers would change their behavior if discount city-to-city bus services were not available. Please refer to our earlier study for an extended discussion of this estimate.

Conclusion

Various modes of transportation differ sharply with respect to their affordability for travel distances between 100 and 500 miles. Intercity bus fares are priced to undercut Amtrak by a considerable margin, while both Amtrak and bus services are priced below air travel to an equally large extent. Similarly, discount city-to-city bus lines appear to price their services slightly below those of conventional bus lines.

With gasoline prices generally above \$3.50/gallon, many travelers face strong disincentives for single-occupant driving trips. Even when costs in addition to fuel and tolls, such as depreciation, are ignored, bus travel tends to undercut the cost of driving by more than 25%. Amtrak fares are roughly equivalent to driving costs for travelers booking in advance, but somewhat more expensive for those waiting until the last minute to book, with the greatest premium paid by last-minute travelers in the Northeast.

The price difference between air service and other modes was found to depend heavily on travel distance. The premium paid for air travel diminishes sharply when trip distances are longer than 250 miles. Even longer-haul travelers booking at least 28 days in advance, however, can generally save more than \$50 each way by traveling by bus or train.

Perhaps the most basic conclusion that can be drawn from this study is that consumers who are able to productively use their time on buses and trains have much to gain by opting against automobile travel when making intercity trips of less than 500 miles. On the basis of the pricing data presented in this report, more robust growth in bus and train travel appears likely in the years ahead.

Appendix: Multimodal Fare Analysis

Data Set Overview: The data set measures the prices of travel on different modes of transportation in 54 markets. The lowest fare in a four-to-six hour window was recorded.

Notes on Bus Fares: Various assumptions were made to assure the analysis was not skewed in favor of intercity bus travel. If both BoltBus and Megabus provided service, the fare for discount city-to-city operators was determined by computing the *average* of the two (rather than simply taking the lowest fare). This was done to provide a conservative estimate of the associated monetary savings from bus travel. For intercity train (Amtrak) travel, trips involving Amtrak Thruway buses were included. Highly circuitous routing, however, was avoided, since the associated fares were non-competitive. Their inclusion would have resulted in an upward bias of the cost of train travel. The \$0.50 booking fee was added to all discount city-city bus tickets, even though passengers pay \$0.25 per segment on roundtrip tickets.

For airline travel, the lowest fare was determined by comparing prices from LaGuardia, Kennedy, and New York. In the case of Southwest, Long Island McArthur Airport (Islip) was also considered due to the manner in which the airline markets its service from that facility. San Francisco and Oakland were treated as separate airports due to the manner in which prices are displayed on major websites.

Three advance purchase scenarios were evaluated:

For 1-day A/P airfares, the prices of nonstop flights were exclusively considered. Connections were not considered.

For 7-day and 28-day A/P airfares, the prices of connecting service were considered, even though this often involved considerable convenience on short distance routes of less than 200 miles. Roundtrip prices were recorded in this scenario based on a one-week stay, and the total fare was divided by two.

Omitted Airlines Carriers: The analysis considered all airlines appearing on major travel websites, except Spirit, which “unbundles” its fares, making price comparisons difficult. For example, Spirit charges extra fees for both carry-on and checked baggage, using a credit card, and other services. Nevertheless, Spirit provided nonstop service in less than a half-dozen of the city pairs evaluated.

Vehicle Costs and Tolls: Estimates of the variable costs of driving consider only fuel and tolls. These estimates are based on an assumed 26 mph, which is slightly higher than the 24 mpg enjoyed by automobile travelers in the United States in 2013. Tolls for bridges and highways were variable by region: Midwest, Pacific, and Southeast: \$5 per vehicle trip region; Northeast: \$15 per trip; and no costs in the Central/Mountain region.

Travel Distances: Travel distances in the 52 markets in the study was 262 miles, based on distances in Interstate highways, except the Los Angeles-Reno market, where a non-Interstate route was selected due to the unique geography of that city pair. Travel distance in the subset of markets served by discount city-to-city operators was 262 miles.

Other Data Fields for Future Analysis: Fares for Chinatown Buses and Acela Express were also recorded but were not considered in this report.

Appendix: Additional Figures

Figure G

Average Fare Difference vs. Driving: Southeast Region

*Fuel & tolls only, per one-way trip

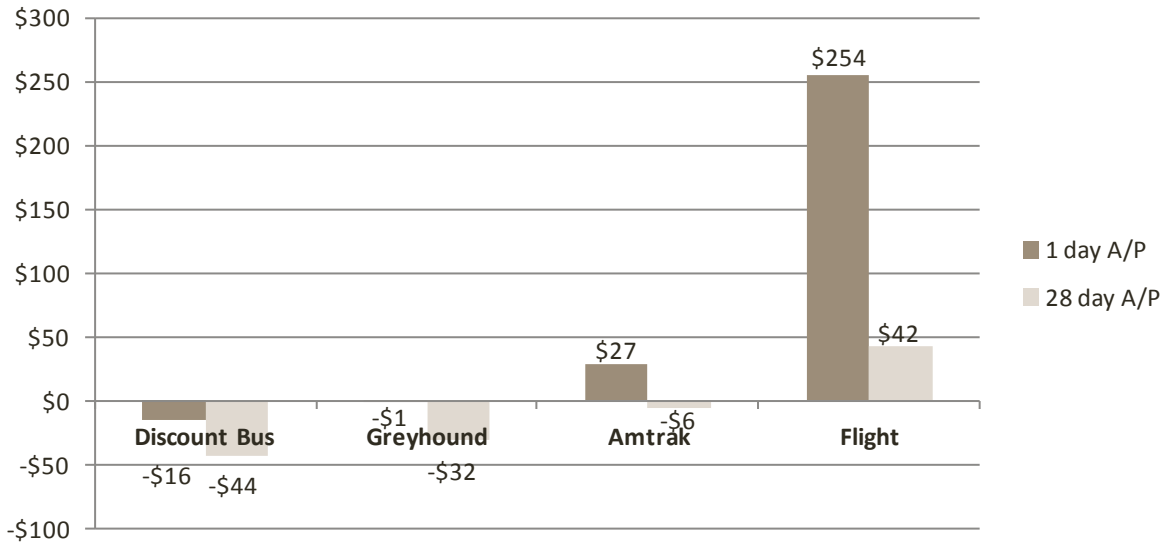
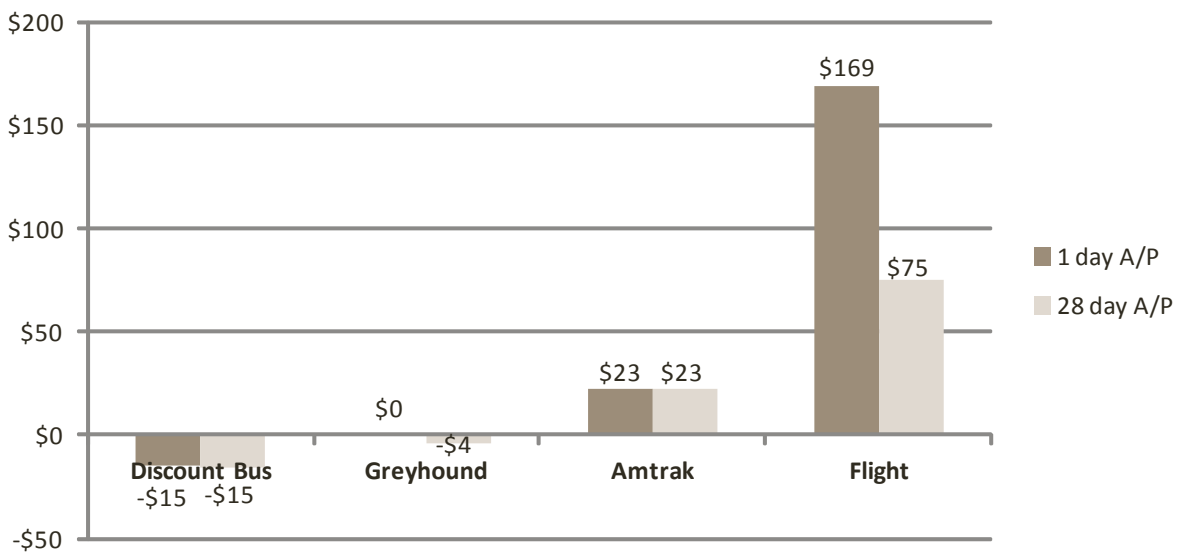


Figure H

Average Fare Difference vs. Driving: Central/Mountain Region

*Fuel & tolls only, per one-way trip



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¹ Several other airlines, most notably Allegiant Airlines, maintain a similar strategy but do participate in Orbitz or others major travel websites. The expansion of these carriers, which regularly collect more than \$50 per passenger in ancillary fees, makes price comparisons with other modes difficult.

² The assumption that most bus travelers tend to wait until shortly before departure before buying ticket is data provided to us by Wanderu.com, a major website catering to intercity bus travelers.

³ For a discussion of the estimated cost of tolls per region, see Appendix.