

# Scheduled Intercity Transportation: Rural Service Areas in the United States

September 2004



U.S. Department of Transportation  
Bureau of Transportation Statistics





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# Acknowledgments



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## Rural Scheduled Intercity Transportation

**M**obility for rural America is an important transportation issue. Besides regional access to nearby metropolitan areas, rural residents are also concerned with their ability to make long-distance intercity trips by commercial transportation. The reduction in air services after September 11, 2001, and the gradual reduction of rural services by other modes has focused attention on this mobility issue for rural areas.

To identify how many of the country's 82 million rural residents are within the reasonable coverage radius of at least one intercity transportation facility, the Bureau of Transportation Statistics (BTS) undertook a geospatial analysis, using Geographic Information System (GIS) tools to plot these facilities. Reasonable coverage radius was defined as 25 miles around bus and rail stations and smaller airports. For medium and large hub airports, the study used a wider 75-mile coverage radius. These parameters are based on commonly used assumptions within the passenger transportation industry and previous work done by BTS and the Office of the Secretary of Transportation.<sup>1</sup>

The initial geospatial analysis plotted all intercity railroad stations<sup>2</sup>, airports with scheduled airline service, and intercity bus service locations as of January 15, 2003. This analysis has now been updated to reflect changes in the intercity bus network that took place on August 18, 2004.<sup>3</sup> The 25-mile or 75-mile coverage radius, as appropriate, was plotted around each facility to develop a nationwide picture of intercity transportation coverage. A complete set of the intercity rural transportation maps developed as part of this analysis, and revised as of August 18, 2004, can be found at [www.bts.gov](http://www.bts.gov). Additional methodology information can be found at the end of this report.

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<sup>1</sup> B.D. Spear and R.W. Weil, "Access to Intercity Transportation Services from Small Communities: A Geospatial Analysis", Transportation Research Record 1666 (Washington, DC: Transportation Research Board, 1999).

<sup>2</sup> Amtrak and the Alaska Railroad.

<sup>3</sup> On that date, Greyhound Lines discontinued service to about 270 locations as the first phase of a network restructuring. Replacement services at some of these locations were initiated by Arrow Stage Lines, Burlington Trailways, Jefferson Lines, and Rimrock Trailways.

## RURAL COVERAGE

Using census block group information, BTS calculated that 77 million of the more than 82 million rural residents in the United States (94 percent) live within the coverage area of at least one intercity public transportation mode.<sup>4</sup> Of those 77 million, over three-fourths have access to more than one mode. About five million (6 percent) do not live within the coverage area of any of the scheduled intercity modes (Table 1). Intercity bus has the greatest penetration into rural areas with 89 percent of the rural residents in the coverage area. Air service covers 70 percent, and intercity rail covers 42 percent.

TABLE 1

### Scheduled Intercity Transportation Coverage for Rural Residents

	Rural residents (millions)
Total rural population	82.4
Covered by at least one mode	77.0
- Covered by one mode only	17.2
- Covered by two modes	30.6
- Covered by three modes	29.3
Not covered by any mode	5.3

NOTE: Totals may not add due to rounding.

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network, as updated August 18, 2004.

Figure 1 shows the percentage of the population covered by each mode for the contiguous 48 States, Alaska, Hawaii, and all 50 states combined.

For each of the modes this report discusses the extent of the intercity network available in rural areas, and the number of rural residents who are within the coverage area of the mode. The report also examines the extent to which each mode provides the only intercity transportation available to rural residents. Table 2 shows the coverage that each mode provides to rural residents.

## INTERCITY SERVICE LOCATIONS

As of August 18, 2004, there were a total of 4,378 intercity passenger locations, all but 149 located within the 48 mainland states. There were 3,299 intercity bus stations, 543 airports, and 536 rail stations in the United States. (Table 3)

The intercity transportation facilities serving rural areas are not necessarily located in the rural location being served. In some cases, the facility is in another nearby rural community. In rural areas surrounding major metropolitan areas, the rural residents may fall within the coverage area of an airport or ground transportation terminal that is in a nearby urbanized area.

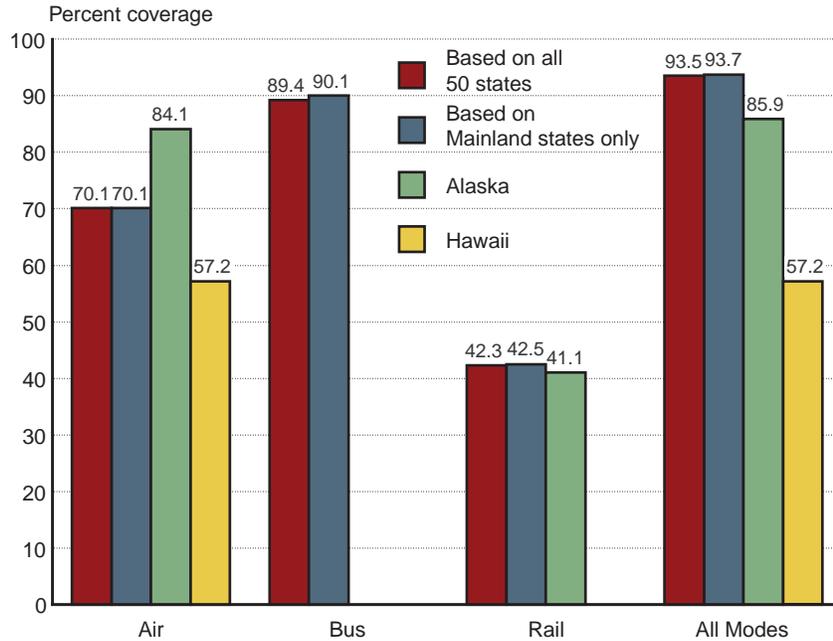
### *Intercity Rail, Bus, and Air Service Providers*

Numerous air and bus carriers provide intercity transportation to rural areas. Two carriers, Amtrak in the mainland United States and the Alaska Railroad, provide

<sup>4</sup> Rural residents were defined as those residents residing outside of urbanized areas or urban clusters as defined by the Census Bureau.

FIGURE 1

Rural Population Coverage by Mode and Geographic Area



NOTE: There is no bus service in Hawaii and Alaska, and no rail service in Hawaii.

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network, as updated August 18, 2004.

TABLE 2

Scheduled Rural Intercity Transportation Coverage by Mode

	Air	Rail	Bus
Total rural population coverage (millions)	57.8	34.8	73.6
Percent of rural population covered	70.1%	42.3%	89.4%
Sole mode for rural population (millions)	2.4	0.3	14.4
Number of states by percent of population covered			
- 100% of rural population	4	1	2
- 90-99% of rural population	2	0	21
- 80-89% of rural population	7	2	11
- 70-79% of rural population	10	2	10
- 60-69% of rural population	9	6	1
- 50-59% of rural population	9	4	2
- 40-49% of rural population	5	9	1
- 30-39% of rural population	4	5	0
- 20-29% of rural population	0	13	0
- 1-19% of rural population	0	5	0
- No coverage of rural population	0	3	2

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network, as updated August 18, 2004.

TABLE 3

**Scheduled Intercity Service Locations**

	Airports	Rail stations	Intercity bus stations	Total facilities
Mainland states	414	516	3,299	4,229
Alaska	119	20	—	139
Hawaii	10	—	—	10
Totals	543	536	3,299	4,378

NOTE: Based on scheduled services provided on January 15, 2003, and changes to the intercity bus network through August 18, 2004.

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network, as updated August 18, 2004.

intercity rail service. There are many other rail transit carriers (e.g., New Jersey Transit, Chicago's METRA, and California's Caltrain to name a few). However, they provide local or regional transit service, and thus are not included in the BTS study as intercity transportation providers.

The largest intercity bus carrier is Greyhound Lines, Inc., which after August 18, 2004 provides service over a network of about 46,000 route miles.<sup>5</sup> It carries an estimated 60 percent of the scheduled intercity bus traffic in the United States. Although only 12 Class 1 bus carriers<sup>6</sup> report their scheduled intercity traffic to the BTS Office of Motor Carrier Information,<sup>7</sup> there are about 50 carriers who provide scheduled intercity service, most on a regional basis. For the most part, intercity bus carriers offer interline ticketing and connecting schedules so they collectively offer an integrated network in the 48 mainland states.

Airports served by regularly scheduled air carriers were included in this study. Among those airports are those in rural areas that receive their service under the federal Essential Air Service (EAS) Program.<sup>8</sup> Subsidized EAS is provided at 102 communities in the contiguous United States, 33 in Alaska, and 3 in Hawaii.<sup>9</sup>

### *Other Intercity Services*

In addition to intercity rail, bus, and air service, there are a few other types of intercity passenger service, especially in Alaska. The Alaska Marine Highway provides intercity ferry service to 31 coastal cities and to Bellingham, Washington. At Bellingham, these ferries connect with both Amtrak and intercity bus services. Although there are no scheduled intercity bus services in Alaska, there are several companies that operate small vans as scheduled intercity service. These services are

<sup>5</sup> Personal communication with Rex Kemp, General Manager, Greyhound Lines, Aug. 10, 2004.

<sup>6</sup> Class 1 motor carriers of passengers are those with at least \$5 million in annual passenger revenue.

<sup>7</sup> Effective September 29, 2004, motor carriers will report financial and operating statistics to the Federal Motor Carrier Safety Administration instead of BTS.

<sup>8</sup> For background on the Essential Air Service program, see <http://ostpxweb.dot.gov/aviation/rural/easwhat.pdf>.

<sup>9</sup> As of June 2004; see <http://ostpxweb.dot.gov/aviation/rural/us06-04.pdf> and <http://ostpxweb.dot.gov/aviation/rural/ak06-04.pdf>. In addition, one EAS point is also subsidized in Puerto Rico, which is not covered in this report.

not specifically addressed in this nationwide analysis, which focuses on motorcoach services only. Thus, the study may understate rural access to intercity transportation in Alaska to some degree.

There are many ferry services in other parts of the United States. However, these services are generally either short-distance (making them more akin to transit than to intercity service), serve primarily as highway links carrying passengers in their automobiles (rather than carrying individual passengers on intercity journeys or linking up with the commercial intercity passenger transportation network), or operate seasonally. Accordingly, we have not included these services in the rural transportation analysis. A complete inventory of these services can be found in the National Ferry Database, compiled by the Federal Highway Administration.<sup>10</sup>

## THE MODES

### *Intercity Bus*

Intercity bus has the deepest penetration of the three modes within rural America. Dominated by a single nationwide carrier, Greyhound Lines, Inc., but with about 50 carriers altogether, the intercity bus industry serves nearly 3,300 stations. Despite the recent discontinuation of some intercity bus routes, the network still covers 89.4 percent of the total U.S. rural population, and 90.1 percent of the rural population in the 48 contiguous states. Some state governments provide funds for intercity bus services through the Federal Transit Administration Section 5311(f) formula grants program.<sup>11</sup> In most states, intercity bus serves a greater share of the rural population than either of the other two modes. The only exceptions are in several Northeast states where air service covers a slightly higher percentage of the population. Details by state and region are discussed later in this report.

The intercity bus industry covers 100 percent of the rural population in two states (Connecticut and Delaware), over 90 percent in an additional 21 states, and over 80 percent in another 11 states. There are 14 mainland states where less than 80 percent of the rural population has intercity bus access, but even in these states bus covers more of the population than either rail or air.

Table 4 shows the states with the greatest and lowest percentage of rural residents covered by intercity bus transportation.

About 17 million rural residents—approximately one in five—are within the coverage area of only a single intercity mode. For most of those people, 14 million, intercity bus provides the sole access to commercial intercity transportation. The number of rural residents for whom bus service is the sole intercity access can be found, by state, in Table 11.

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<sup>10</sup> The database can be found at the BTS TranStats homepage at <http://www.transtats.bts.gov>.

<sup>11</sup> Funding for the 5311(f) program is provided through the Federal Transit Administration. See <http://www.fta.dot.gov/library/policy/prgms/nuafg.html>.

TABLE 4

**States with Greatest and Least Intercity Bus Coverage****Highest percent rural intercity bus coverage by state**

	Rural population	Coverage	Percent covered
Connecticut	595,174	595,174	100.0%
Delaware	275,710	275,710	100.0%
Vermont	448,107	447,029	99.8%
Massachusetts	887,715	884,431	99.6%
Rhode Island	175,457	174,555	99.5%
Pennsylvania	3,555,412	3,527,402	99.2%
Florida	3,618,587	3,556,355	98.3%
New York	3,541,133	3,445,631	97.3%
South Carolina	2,035,045	1,974,745	97.0%
Texas	5,427,408	5,264,743	97.0%

**Lowest percent rural intercity bus coverage by state**

	Rural population	Coverage	Percent covered
Alaska	305,546	0	0.0%
Hawaii	363,545	0	0.0%
North Dakota	343,379	169,161	49.3%
Nebraska	685,274	404,462	59.0%
South Dakota	481,959	288,663	59.9%
Montana	506,692	333,314	65.8%
Wyoming	259,459	181,837	70.1%
Kentucky	2,191,907	1,544,441	70.5%
Iowa	1,548,051	1,166,380	75.3%
Kansas	1,066,777	804,784	75.4%

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network, as updated August 18, 2004.

***Air Service***

Among the three commercial intercity modes, airlines carry the most long-distance travelers. According to the 2001 National Household Travel Survey, conducted by BTS and the Federal Highway Administration, 70 percent of nonpersonal vehicle long-distance trips are taken by air (7.4 percent of all long distance trips).<sup>12</sup> Airlines provide scheduled service at a total of 543 airports in the United States—414 airports in the mainland states, 119 in Alaska, and 10 in Hawaii.<sup>13</sup> Among those are 134 Essential Air Service airports which primarily serve nonurban areas.<sup>14</sup>

Airline service covers 70 percent of those who live in rural America. In 13 states, at least 80 percent of rural residents are covered by air service, including 4 Northeast states where all rural residents are covered. There are 41 states in which at least half of the rural population is in the airline service area.

<sup>12</sup> Long distance trips are defined as a trip of 50 miles or more away from home. The National Household Travel Survey highlights report can be found at [http://www.bts.gov/publications/national\\_household\\_travel\\_survey](http://www.bts.gov/publications/national_household_travel_survey), or ordered at [www.bts.gov/pdc/index.xml](http://www.bts.gov/pdc/index.xml). Trips by mode can be found on Table A-22 of the report.

<sup>13</sup> As of January 15, 2003, the date on which the initial Rural Intercity Transportation Study is based.

<sup>14</sup> Additional background on the Essential Air Service Program can be found at <http://ostpxweb.dot.gov/aviation/>.

TABLE 5

**States with Greatest and Least Air Service Coverage****Highest rural air service coverage by state**

	<b>Rural population</b>	<b>Coverage</b>	<b>Percent covered</b>
Massachusetts	887,715	887,715	100.0%
New Jersey	846,452	846,452	100.0%
Connecticut	595,174	595,174	100.0%
Rhode Island	175,457	175,457	100.0%
Maryland	1,079,420	1,058,680	98.1%
Florida	3,618,587	3,277,979	90.6%
Ohio	3,341,447	2,990,835	89.5%
Pennsylvania	3,555,412	3,074,095	86.5%
Delaware	275,710	238,111	86.4%
California	3,835,613	3,264,381	85.1%

**Lowest rural air service coverage by state**

	<b>Rural population</b>	<b>Coverage</b>	<b>Percent covered</b>
Alabama	2,431,865	794,826	32.7%
Wyoming	259,459	91,716	35.3%
Oklahoma	1,575,634	558,156	35.4%
North Dakota	343,379	132,518	38.6%
Montana	506,692	205,553	40.6%
South Dakota	481,959	205,931	42.7%
Iowa	1,548,051	678,307	43.8%
Idaho	624,767	289,133	46.3%
Arkansas	1,645,360	820,220	49.9%
New Mexico	698,221	367,446	52.6%

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network.

Table 5 shows the states with the greatest and least percentage of rural residents covered by scheduled air service.

Air service is the sole intercity transportation mode for 2.4 million rural residents, or nearly three percent of the rural population. Other than Hawaii, where air service is the only intercity mode, Iowa is the state with the highest percentage of rural residents that have access only to air with no access to the other modes. In Iowa, 10 percent of rural residents are served only by air. Wisconsin has the most rural residents, 170,000, who are covered only by air service, although this accounts for only 7.4 percent of the state's rural population. The number of rural residents for whom air service is the sole intercity access can be found, by state, in Table 11.

***Rail Service***

Amtrak and the Alaska Railroad are the two providers of intercity (noncommuter) rail service in the United States. Nearly 35 million rural residents live within the coverage areas of these two carriers, with most of those on the mainland near Amtrak stations.<sup>15</sup> Amtrak's trains serve 516 locations, and the Alaska Railroad serves

<sup>15</sup> 34.7 million rural residents live within the Amtrak service area and 125,000 are within 25 miles of the Alaska Railroad stations.

TABLE 6

**States with Greatest and Least Intercity Rail Coverage**

<b>Highest percent rural rail coverage by state</b>			
	<b>Rural population</b>	<b>Coverage</b>	<b>Percent covered</b>
Rhode Island	175,457	175,457	100.0%
Connecticut	595,174	526,770	88.5%
Vermont	448,107	372,139	83.0%
Massachusetts	887,715	701,603	79.0%
California	3,835,613	2,729,956	71.2%
Washington	1,548,161	1,069,650	69.1%
South Carolina	2,035,045	1,365,465	67.1%
Florida	3,618,587	2,379,644	65.8%
Illinois	2,301,905	1,455,358	63.2%
Maryland	1,079,420	680,307	63.0%
<b>Lowest percent rural rail coverage by state</b>			
	<b>Rural population</b>	<b>Coverage</b>	<b>Percent covered</b>
Wyoming	259,459	0	0.0%
Hawaii	363,545	0	0.0%
South Dakota	481,959	0	0.0%
Tennessee	2,583,439	169,334	6.6%
Idaho	624,767	47,250	7.6%
Iowa	1,548,051	208,992	13.5%
Kentucky	2,191,907	309,406	14.1%
Montana	506,692	87,367	17.2%
Oklahoma	1,575,634	322,491	20.5%
Delaware	275,710	57,545	20.9%

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network.

another 20 locations.<sup>16</sup> In addition to Alaska, there are 6 states that have 20 or more intercity rail stations. California with 66 stations and Illinois with 30 have the most intercity rail service locations. There are three states whose residents are not served by intercity rail—South Dakota, Wyoming, and Hawaii.

Rhode Island is the only state where all rural residents live within the 25-mile radius around the intercity rail stations. There are two other states where at least 80 percent of the rural population is within the rail service area, two more where rail covers at least 70 percent, six states with at least 60 percent, and four more with at least 50 percent coverage by rail.

Table 6 shows the states with the highest and lowest percentage of rural residents covered by intercity rail service.

Intercity rail provides the sole intercity passenger transportation access to 332,000 rural residents, including over 5,000 in Alaska. The elimination of over 200 intercity bus locations on August 18, 2004 increased the number of rural residents served solely by rail by about 28,000. Georgia (66,000) and South Carolina (36,000) have the most residents served only by rail. These two states account for over 30 percent

<sup>16</sup> Certain Alaska Railroad trains will pick up and discharge passengers who “flag” the train anywhere along the track. For the purposes of this study, only scheduled stops at stations in places with postal zip codes are included.

of the rural residents who rely solely on rail. However, Montana and Nebraska have the highest percentage of rural residents with access only to rail, at 4.6 percent and 2.5 percent of the rural populations, respectively. The number of rural residents for whom rail is the sole intercity access can be found, by state, in Table 11.

## **RURAL TRANSPORTATION BY STATE AND REGION**

In addition to looking at each mode's role, BTS also looked at the overall availability of rural intercity transportation on a state and regional basis. The regional breakdowns use the U.S. Census Bureau population divisions. The regional analysis breaks out the Census Bureau Pacific Division by looking at the west coast states of Washington, Oregon, and California separately from Alaska and Hawaii. BTS has looked at California, Oregon, and Washington as a group, and looks at the other two states separately because their transportation environments are unique and unlike the mainland states. Also, BTS examines the area commonly referred to as the Northeast corridor (NEC) separately because the Census Bureau splits this important transportation corridor among three divisions.<sup>17</sup>

Intercity transportation coverage is most comprehensive in the East and along the west coast. In these areas, the combination of bus, rail, and air service reaches most rural residents. By contrast, in the less heavily populated West North Central and Mountain states a greater percentage of rural residents find themselves beyond the coverage areas of intercity transportation. These two areas are the only ones where less than 90 percent of rural residents are within the coverage areas of any of the modes. Table 7 details the percentage of the rural population with commercial intercity transportation coverage in each area of the country, while Table 8 ranks the states by highest and lowest percentage of rural residents with coverage.

While intercity bus is the most widely available mode, followed by airline service and then intercity rail service, the relative importance of each of these modes in providing rural intercity transportation mobility varies geographically. Also, mobility varies for rural residents depending on how many modes offer coverage in their area. Although 94 percent of the 82 million rural residents (77 million) are in the coverage area of at least one commercial mode, only 36 percent (29 million) have a choice of all three modes, a level of access similar to that available to residents of many urbanized areas.<sup>18</sup> The heavily populated Northeast and the west coast have the highest percentage of rural residents with access to all three modes. This results in a higher level of mobility than that enjoyed by rural residents in the south and central parts of the country who are more likely to be served by only a single intercity transportation mode.

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<sup>17</sup> For purposes of this analysis, the Northeast Corridor is considered to include the states of Connecticut, Delaware, Maryland, Massachusetts, New Jersey, New York, Pennsylvania, and Rhode Island.

<sup>18</sup> Although many urban areas are served by air, bus, and intercity rail, there are urban areas that are served by fewer than three modes.

TABLE 7

**Rural Access to Commercial Intercity Transportation by Census Division**

Percent of rural population within the coverage of each area

Census Bureau division (except as noted)	States included	Rural population	Rail	Air	Bus	Any mode	One mode only	All three modes
New England	CT/ME/MA/ NH/RI/VT	3,611,665	64.5%	80.2%	91.7%	92.8%	9.9%	60.6%
North Atlantic	NJ/NY/PA	7,942,997	55.3%	83.8%	97.9%	99.5%	10.8%	49.0%
South Atlantic	DE/FL/GA/MD/ NC/SC/VA/WV	17,719,984	50.3%	76.1%	93.2%	96.4%	17.0%	43.9%
Northeast Corridor (see note)	CT/DE/MA/MD/ NJ/NY/PA/RI	10,956,473	59.7%	87.8%	97.4%	99.6%	9.3%	55.0%
East North Central	IL/IN/MI/OH/WI	13,430,581	47.2%	77.2%	89.7%	95.3%	14.1%	37.7%
West North Central	IA/KS/MN/MO/ NE/ND/SD	8,189,424	25.7%	54.0%	77.7%	84.8%	30.9%	18.8%
East South Central	AL/KY/MS/TN	8,987,970*	20.9%	51.2%	87.9%	91.0%	34.9%	12.9%
West South Central	AR/LA/OK/TX	10,386,799	31.3%	63.1%	94.7%	95.6%	28.4%	26.3%
Mountain	AZ/CO/ID/MT/ NV/NM/UT/WY	4,962,904	24.0%	61.3%	78.3%	85.1%	25.6%	18.4%
Pacific(Mainland) (see note)	CA/OR/WA	6,477,035	66.2%	81.0%	92.7%	95.0%	12.2%	62.2%
	Alaska	305,546	41.1%	84.1%	N/A	85.9%	46.6%	N/A
	Hawaii	363,545	N/A	57.2%	N/A	57.2%	57.2%	N/A

NOTE: For this analysis BTS has considered Alaska and Hawaii separately from the Mainland portion of the Census Bureau Pacific Division. The Northeast Corridor Division is not a Census Bureau division, but was created for this study due to the importance of these states as a single transportation corridor. The Northeast Corridor overlaps portions of the New England and South Atlantic Divisions and all of the North Atlantic Division.

\* Due to technical adjustments involving geographic coordinates, this number has changed slightly from the April 20, 2004 version of this report.

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network, as updated August 18, 2004.

Table 9 ranks the states by highest and lowest percentage of rural residents with access to all three modes of intercity transportation.

Table 10 shows the states with the highest percentage of rural residents that have access to only a single mode.

Table 11 shows for all states the number of rural residents, the number covered by each mode, and the number relying on each of the modes as their only access to scheduled intercity transportation.

**SERVICE LEVELS AND CONNECTIVITY**

This study does not specifically address the service levels provided at each of the intercity transportation facilities. BTS included any facility that has year-round scheduled service. In a few cases, service is provided on a less-than-daily basis, such as Amtrak routes with triweekly service, or the Alaska Railroad that runs less than daily service during the winter months. In addition, the facilities range from large hub airports with an array of ancillary services down to intercity bus loading points

TABLE 8

**Rural Population Coverage by Commerical Intercity Transportation****States with highest coverage (99 percent or better)**

	<b>Rural population</b>	<b>Coverage</b>	<b>Percent covered</b>
Massachusetts	887,715	887,715	100.0%
New Jersey	846,452	846,452	100.0%
Connecticut	595,174	595,174	100.0%
Delaware	275,710	275,710	100.0%
Rhode Island	175,457	175,457	100.0%
South Carolina	2,035,045	2,033,789	99.9%
Indiana	2,367,966	2,363,111	99.8%
Vermont	448,107	447,029	99.8%
Maryland	1,079,420	1,075,286	99.6%
Pennsylvania	3,555,412	3,538,920	99.5%
Florida	3,618,587	3,599,108	99.5%
New York	3,541,133	3,514,366	99.2%
Ohio	3,341,447	3,314,693	99.2%

**States with least coverage (85 percent coverage or less)**

	<b>Rural population</b>	<b>Coverage</b>	<b>Percent covered</b>
Hawaii	363,545	207,829	57.2%
North Dakota	343,379	200,116	58.3%
South Dakota	481,959	302,710	62.8%
Nebraska	685,274	490,912	71.6%
Montana	506,692	384,817	75.9%
Wyoming	259,459	200,949	77.4%
Kentucky	2,191,907	1,730,389	78.9%
Maine	885,540	710,145	80.2%
West Virginia	1,183,772	954,176	80.6%
Kansas	1,066,777	877,451	82.3%
Arizona	1,022,470	844,823	82.6%

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network, as updated August 18, 2004.

that are simply a designated location along a highway. The criterion for being included as an intercity transportation facility is that the location is one where an intercity service carrier makes regular scheduled stops to pick up and discharge intercity passengers.

Connectivity, or intermodalism, is an important factor in determining how well the intercity transportation network serves the transportation needs of rural areas. The ability to access the services of one mode and conveniently transfer to another mode extends the reach of all the modes. For example, although some rural areas may be in the coverage area of only intercity bus, if the intercity bus provides service to a hub airport and an Amtrak station, rural residents in that area may effectively have access to all three modes, even though they reside in the service area of only one mode. BTS plans to examine the degree and availability of intermodal connections in future work.

TABLE 9

**States with the Greatest and Least Residents with Three-Mode Access Among States Served by All Three Modes**

**States with highest percent of three-mode access**

	<b>Rural population</b>	<b>All mode access</b>	<b>Percent covered</b>
Rhode Island	175,457	174,555	99.5%
Connecticut	595,174	526,770	88.5%
Massachusetts	887,715	701,603	79.0%
California	3,835,613	2,572,751	67.1%
Washington	1,548,161	1,013,330	65.5%
Vermont	448,107	289,091	64.5%
Maryland	1,079,420	669,515	62.0%
Florida	3,618,587	2,178,671	60.2%
New York	3,541,133	1,828,064	51.6%
New Jersey	846,452	413,102	48.8%
North Carolina	4,046,391	1,945,518	48.1%

**States with lowest percent of three-mode access**

	<b>Rural population</b>	<b>Coverage</b>	<b>Percent covered</b>
Idaho	624,767	0	0.0%
Tennessee	2,583,439	89,492	3.5%
Iowa	1,548,051	81,549	5.3%
Montana	506,692	37,869	7.5%
Kentucky	2,191,907	237,495	10.8%
Oklahoma	1,575,634	189,409	12.0%
Alabama	2,431,865	363,756	15.0%
Georgia	3,121,275	514,590	16.5%
Wisconsin	2,284,517	411,122	18.0%
New Mexico	698,221	133,870	19.2%

NOTE: Alaska, Hawaii, South Dakota, and Wyoming are not shown as these states do not have service from all three modes.

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network, as updated August 18, 2004.

## **METHODOLOGY NOTES**

The Rural Intercity Transportation study employed a four-step GIS analysis:

1. Identify the areas and population comprising "Rural America."
2. Develop a database of all intercity air, rail, and bus terminals, and map those facilities.
3. Draw a service coverage area radius around each terminal.
4. Determine the total population served by identifying those rural points falling within the reasonable access radius of any of the intercity terminals.

### *Definition of Rural America*

BTS considered as rural any area in the United States that the Census Bureau did not identify as either an "urbanized area" or an "urban cluster." Urbanized areas are towns, cities, or other places, or more than one contiguous place, with a population of 50,000 or more. Urbanized areas are generally, but not always, located around larger cities. Urban clusters, a new census category added in 2000, are places

TABLE 10

**States With the Highest Rural Population Percentage with Single Mode Coverage**

	Rural population	Single mode coverage	Percent
Hawaii	363,545	207,829	57.2%
Alabama	2,431,865	1,231,868	50.7%
Wyoming	259,459	128,345	49.5%
Alaska	305,546	142,409	46.6%
Iowa	1,548,051	715,628	46.2%
Oklahoma	1,575,634	727,734	46.2%
Arkansas	1,645,360	666,228	40.5%
Montana	506,692	181,269	35.8%
Idaho	624,767	220,251	35.3%
New Mexico	698,221	225,991	32.4%
Georgia	3,121,275	983,876	31.5%
Missouri	2,231,672	690,926	31.0%
Kentucky	2,191,907	663,194	30.3%
Tennessee	2,583,439	781,530	30.3%
Louisiana	1,738,397	507,721	29.2%
Kansas	1,066,777	293,008	27.5%
Minnesota	1,832,312	494,407	27.0%
Mississippi	1,780,759	461,441	25.9%
Maine	885,540	221,765	25.0%
Colorado	995,034	238,570	24.0%
Oregon	1,093,261	261,055	23.9%
Virginia	2,359,784	560,601	23.8%

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network, as updated August 18, 2004.

of 2,500-50,000 population away from urbanized areas. Urban clusters account for about 30 million people. These cities, towns, or adjacent communities have the density to be considered urban in character. However, they are often located far from major metropolitan areas and are in the part of the country that many people would consider “rural America.”

After careful study we decided that consistency required us to consider urban clusters as urban, regardless of their location. In this way, the BTS methodology for determining rural populations will be consistent with those used by other Federal entities when discussing rural America. Also, to determine which urban clusters are rural in nature and which are not would have added a significantly complex layer to the analysis in an area outside of BTS expertise.

### *Intercity Passenger Facility Database Development*

Information on the location of intercity transportation terminals, including geographic coordinates, came from several sources as follows:

- BTS’s geospatial database of Amtrak Stations. Based on the year 2000 Amtrak system, this database was updated to add all current stations shown in Amtrak’s winter 2002-2003 Northeast and National Timetables.
- The January 15, 2003 North American Edition, Official Airline Guide (OAG Worldwide, Downer’s Grove, IL) was used to select the active airline airports from the BTS geospatial database of all airports with FAA reported enplanements

TABLE 11  
Scheduled Intercity Transportation and the U.S. Rural Population

State Name	Total Rural Residents	Rail		Air		Bus	
		Residents in service area	Residents in rail service area only (not in bus or air areas)	Residents in service area	Residents in air service area only (not in rail or bus areas)	Residents in service area	Residents in bus service area only (not in rail or air areas)
Alabama	2,431,865*	642,048	0	794,826*	23,395	2,258,196	1,208,473
Alaska	305,546	125,458	5,399	257,069	137,010	0	0
Arizona	1,022,470	262,407	0	735,908	70,569	774,254	88,470
Arkansas	1,645,360	400,596	5,284	820,220	6,888	1,531,640	654,056
California	3,835,613	2,729,956	13,297	3,264,381	30,832	3,667,913	309,496
Colorado	995,034	269,676	2,911	695,366	63,840	825,444	171,819
Connecticut	595,174	526,770	0	595,174	0	595,174	0
Delaware	275,710	57,545	0	238,111	0	275,710	37,599
Florida	3,618,587	2,379,644	0	3,277,979	24,581	3,556,355	138,328
Georgia	3,121,275	665,482	66,211	2,076,094	93,889	2,878,338*	823,776
Hawaii	363,545	0	0	207,829	207,829	0	0
Idaho	624,767	47,250	11,254	289,133	17,164	499,798	191,833
Illinois	2,301,905	1,455,358	6,810	1,691,583	84,298	2,030,994	153,286
Indiana	2,367,966	1,172,690	1,463	1,987,455	87,887	2,264,057	157,382
Iowa	1,548,051	208,992	8,748	678,307	160,650	1,166,380	546,230
Kansas	1,066,777	349,008	19,381	587,786	50,604	804,784	223,023
Kentucky	2,191,907	309,406	0	1,181,232	157,752	1,544,441	505,442
Louisiana	1,738,397	699,352	0	1,001,950	24,700	1,678,535	483,021
Maine	885,540	224,806	8,715	491,630	3,241	683,780	209,800
Maryland	1,079,420	680,307	0	1,058,680	95,799	968,695	16,606
Massachusetts	887,715	701,603	0	887,715	3,284	884,431	0
Michigan	3,134,746	1,777,236	22,339	2,206,335	48,999	2,828,632	593,889
Minnesota	1,832,312	507,854	9,598	1,116,931	63,472	1,570,932	421,337
Mississippi	1,780,759	760,022	1,167	952,654	12,135	1,680,556	448,139
Missouri	2,231,672	751,270	19,416	1,319,179	51,239	1,956,313	620,271
Montana	506,692	87,367	23,291	205,553	13,791	333,314	144,187
Nebraska	685,274	192,667	16,821	385,423	57,028	404,462**	79,287**
Nevada	342,690	122,724	0	285,571	15,049	295,406	14,121
New Hampshire	619,672	327,004	5,388	437,598	0	525,465	72,014
New Jersey	846,452	420,584	0	846,452	37,202	801,768	0
New Mexico	698,221	202,178	0	367,446	41,807	575,589	184,184
New York	3,541,133	2,225,302	4,166	2,739,004	47,124	3,445,631	395,569
North Carolina	4,046,391	2,026,517	0	3,234,643	61,430	3,843,039	588,827
North Dakota	343,379	97,462	7,431	132,518	13,847	169,161	50,210
Ohio	3,341,447	1,343,597	1,539	2,990,835	65,289	3,183,651	189,467
Oklahoma	1,575,634	322,491	0	558,156	28,798	1,361,376	698,936
Oregon	1,093,261	489,503	5,268	750,083	11,101	1,014,317	244,686
Pennsylvania	3,555,412	1,749,641	0	3,074,095	11,518	3,527,402	364,664
Rhode Island	175,457	175,457	0	175,457	0	174,555	0
South Carolina	2,035,045	1,365,465	36,361	1,266,040	22,683	1,974,745	320,301
South Dakota	481,959	0	0	205,931	14,047	288,663	96,779
Tennessee	2,583,439	169,334	0	1,670,462	57,970	2,415,894	723,560
Texas	5,427,408	1,832,924	4,799	4,170,231	25,197	5,264,743*	1,021,108
Utah	513,571	198,393	4	373,748	35,474	402,765	53,858
Vermont	448,107	372,139	0	309,506	0	447,029	54,475
Virginia	2,359,784	1,238,326	997	1,498,973	62,604	2,121,458	497,000
Washington	1,548,161	1,069,650	1,280	1,234,046	61,046	1,322,217	110,081
West Virginia	1,183,772	505,037	18,626	840,489	29,607	897,225	82,171
Wisconsin	2,284,517	594,912	4,163	1,497,442	170,056	1,746,303	309,244
Wyoming	259,459	0	0	91,716	19,112	181,837	109,233
Totals	82,378,450*	34,833,410	332,127	57,754,945*	2,421,837	73,643,367	14,406,238

BTS analysis based on scheduled services provided on January 15, 2003, and changes to the intercity bus network through August 18, 2004.

\* Due to technical adjustments involving geographic coordinates, these numbers have changed slightly from the April 20, 2004 version of this report.

\*\* Although intercity bus service continues to be provided at all points previously served in Nebraska, the number of state residents who have intercity bus access is lower than in the April 24, 2004 report. Intercity bus access for some Nebraska towns was provided by nearby service in Iowa and South Dakota, which was discontinued on August 18, 2004.

SOURCE: U.S. Department of Transportation, Bureau of Transportation Statistics' January 15, 2003 analysis of the U.S. rail, air, and bus network, as updated August 18, 2004.

- Intercity bus terminal data was obtained from an electronic database provided to BTS by Greyhound Lines of all the intercity bus stations in its TRIPS ticketing system database.
  - Russell’s North American Motorcoach Guide, January 2003 edition, was used to validate locations in the Greyhound database and to add locations not included by Greyhound.
  - Locations discontinued by Greyhound through August 18, 2004 at which no other carrier provides intercity bus service were removed from the database.
- Bureau of the Census, 2000 population data.
- Bureau of the Census, 2002 definitions of urbanized areas and urban clusters.

### *Service Coverage Areas*

For this analysis, BTS used a 25-mile radius to reflect a reasonable coverage area around a bus or rail station or a small or nonhub airport.<sup>19</sup> For medium and large hub airports the study used a wider 75-mile coverage radius. These parameters are based on commonly used assumptions within the industry and previous work done by BTS and the Office of the Secretary of Transportation.<sup>20</sup> They are consistent with criteria used to determine eligibility for subsidized air service under the Essential Air Service (EAS) program. For the purposes of this analysis, there was no adjustment made to coverage areas to account for natural boundaries to access such as lakes, mountains, bays, etc., with the exception of Hawaii. In Hawaii, the coverage area for each airport was confined to the island on which that airport was located.

### *Population Data*

The following steps were taken to identify and quantify the rural population within the coverage area of each of the modes:

- Identified rural population from the latest available census data (2000) at the time the analysis was conducted.
- Used census block group data to determine population.
- Identified Amtrak, Alaska Railroad, and Intercity Bus Stations as well as Airline Airports.
- Mapped stations using geographic coordinates when available, or via the place name or zip code when geographic coordinates could not be obtained.
- Drew reasonable access radius (25 or 75 miles, as discussed above) around facility.
- Population for block groups identified as rural falling within the reasonable access radius determines the total rural population with access to that mode of transportation.

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<sup>19</sup> A large hub is one that annually enplanes at least 1% of all domestic enplanements, medium hubs enplane 0.25%-0.999% of domestic enplanements, small hubs 0.05%-0.249%, and non-hub airports less than 0.05% of domestic enplanements.

<sup>20</sup> B.D. Spear and R.W. Weil, “Access to Intercity Transportation Services from Small Communities: A Geospatial Analysis,” Transportation Research Record 1666 (Washington, DC: Transportation Research Board, 1999).