### The Return of the Intercity Bus: The Decline and Recovery of Scheduled Service to American Cities,

1960 - 2007



School of Public Service Policy Study



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### **Executive Summary**

This study assesses the changing status of intercity bus service throughout the United States between 1960 and 2007. Drawing on data from more than 5,000 arrivals and departures in a representative sample of American cities, it shows that U.S. cities lost nearly one-third of their scheduled intercity service between 1960 and 1980 and more than half of the remaining services between 1980 and early 2006. Although commuterbus and charter-bus business expanded greatly during this period, most regularly scheduled intercity service to be a travel option of last resort.

Nevertheless, the study's findings show that the intercity bus sector began to reassert itself in the transportation market later in 2006. By late 2007, the sector was enjoying a significant rebirth and was expanding throughout the country at the fastest rate in more than 40 years. Today, growth by low-cost carriers such as Megabus and the renewed strength of Greyhound and other conventional lines suggests that demand is expanding appreciably. Coincidentally, this resurgence is taking place during the twenty-fifth anniversary year of intercity bus deregulation in the United States.

### 1. Introduction

From Greyhound and Trailways to myriad "mom and pop" lines serving rural towns, intercity bus companies have been a ubiquitous part of the American transportation scene since the early twentieth century. For generations, "Thank You for Going Greyhound" was a slogan familiar to both the rich and poor. In many cities, the local bus station was the only business open around-the-clock. Even communities with populations of less than 100,000 once boasted bus stations with dozens of arrivals and departures daily.

But the intercity bus sector slumped in the 1960s in response to the decline of central cities, improvements to other modes of transportation, and rising household incomes. By the mid-1970s, the number of passengers using scheduled bus services was falling precipitously, and the industry's image was fast deteriorating.

This study examines the changing levels of scheduled intercity bus service in U.S. cities to offer a new perspective on the industry's changing role. Using newly collected data about the arrivals and departures of bus lines, the study's findings illustrate the extent to which cities lost service between 1960 and 2006. Yet the findings also show that this sector began to experience a turnaround roughly 18 months ago. By late 2007, intercity bus service was in the midst of a significant recovery.

This year, for the first time in more than 40 years, regularly scheduled intercity bus service grew appreciably both in the eastern and in the western sections of the country, a trend that coincided with notable improvements in the speed and quality of service and which also occurred, by chance, during the twenty-fifth anniversary year of intercity bus deregulation. Our research shows that this growth is being driven by improvements in service and strong consumer demand. As a result, more growth will likely occur in the years ahead.

One noteworthy feature of our study is our review of data on more than 5,000 regularly scheduled arrivals and departures of intercity bus companies in a representative sample of cities in the continental United States. Because previously collected information was not in electronic form, we extracted information from printed bus timetables, eliminated duplicate entries, and entered this information into a data set that allowed us to evaluate the changing levels of service systematically. (We describe the characteristics of this data set in greater detail in the appendix.)

Our analysis is organized into four parts. Section II offers background and perspective. Section III focuses on the study's relevance. Section IV evaluates the

industry's decline through 2005, and Section V examines the industry's recent resurgence.

### **II.** Background Perspective

A half-century ago, when most communities with more than a few thousand residents had intercity bus routes radiating from town like spokes on a wheel, *Russell's Official National Motor Coach Guide*-stretched to 800 pages and contained nearly all the bus schedules of the 406 carriers operating in North America. A fleet of more than 20,000 buses traversed some 300,000 route-miles in service. More than 15,000 communities, including scores of small towns and rural areas, had access to at least one scheduled carrier.

Travelers held the Greyhound in high regard when the carrier named the blackand-white dog serving as its mascot "Lady Greyhound" in 1959. Indeed, in many cities, the company boasted spacious and modern depots with architecture that mirrored its streamlined "Americruisers". In the largest cities, the carrier's depots kept dozens of arrival and departure bays, restaurants, and ticket counters busy around the clock. The average American traveled several hundred miles on intercity buses annually.

The federal government, considering bus service akin to a public utility, controlled how carriers entered and exited interstate routes and regulated the prices they charged. State governments enforced similar regulation for *intra*state carriers. Most major cities relied heavily on intercity bus operators for both long-distance travel and for linking distant suburbs to the central city.

#### Falling on Hard Times

By the end of the 1960s, the tide was turning against the intercity bus business. The opening of interstate highways, increased automobile ownership, and the deterioration of downtown business districts in major cities all weakened the demand for intercity bus services. By the mid-1970s, the rate of car ownership in the United States had risen to more than 80 percent and airlines were experimenting with steeply discounted fares. Also, there was a significant decline in bus travel by women who were from middle-income households and who traveled alone, a demographic category that once accounted for a large share of the bus industry's business.

The industry's partial deregulation, which occurred upon passage of the Bus Regulatory Reform Act on September 22, 1982, provided relief from most federal controls on pricing and routes as well as gave carriers a mechanism to appeal regulations imposed upon them by state governments on intrastate routes. However, unlike the airline, truck, and rail freight sectors, which saw dramatic traffic increases after deregulation, the act failed to resurrect intercity bus traffic.

Some argue that regulatory reform came too late for the sector to overcome its tarnished image. Increasingly, ridership on buses consisted of minority groups and

lower-income passengers who could not afford to travel by other means. Regional lines suffered the most and were abandoned or assimilated into publicly owned transit companies.

Although commuter-bus and charter-bus business flourished in the 1980s and traffic on some intercity routes, such as the Northeast Corridor, remained strong, regularly scheduled service to points outside of major metropolitan areas suffered greatly from rising labor and fuel costs as well as expansion by Amtrak. Making matters worse, Greyhound faced worsening labor-management strife that culminated in several strikes, causing further damage to its public image. The carrier attempted to strengthen its competitive position by making improvements to buses and facilities and by acquiring rival Continental Trailways in 1987. Three years later, however, it entered bankruptcy.

Greyhound successfully reorganized, but neither this struggling giant nor the smaller operators feeding it shared appreciably in the passenger-traffic boom that benefited the airlines, Amtrak, and charter-bus operators in the 1990s. Changes in travel behavior after the terrorist acts of September 11, 2001 appeared to bode well for the industry, but soon more cutbacks were underway. In 2004, Greyhound began another round of major cuts that continued through late 2005. Ultimately, the carrier eliminated nearly 1,000 communities from its route map.

### Signs of a Revival

In 2006, the outlook for the intercity bus at last began to improve. Rising highway congestion made automobile driving more stressful and unpredictable than before. A sharp escalation in the price of oil, which pushed gasoline prices above \$3 per gallon, and the economic rebound of central business districts in major cities, encouraged travelers to reconsider the bus. Consumer disenchantment with air travel, attributable to overcrowded terminals, air-traffic delays, and rigorous security processes, made bus travel seem relatively more attractive, especially on short and medium distance routes.

The recovery began slowly but was fueled by a new breed of bus operators, some of which accepted bookings only on the Internet. As explained in Section IV, Megabus emerged in the Midwest and West, while Apex, DC2NY, and other carriers expanded in the East. Sensing the timing was right for large-scale investments, Greyhound completed a \$60 million overhaul in late 2007.

But has the regularly scheduled intercity-bus industry really rebounded? As we note in the following section, previously-published research has suffered from a paucity of reliable data about the scale of intercity bus operations and passenger traffic.

#### III. Need and Timeliness of This Study

The social and economic forces that reduced the role of the intercity bus industry are widely documented in the literature (Walsh, 2000; General Accounting Office, 1992;

and Federal Transit Administration, 2002). Analysis of this sector, however, has been hampered by the absence of data on the number of fare-paying passengers and the changing level of service. All available national passenger statistics are consolidated with certain commuter- and charter-bus statistics, making it impossible to isolate changes in conventional intercity bus use.<sup>1</sup> By contrast, passenger statistics for the air and rail industries are accurately categorized, available, and evaluated in great detail.

As a result of measurement problem, previous research on the changes to the intercity bus network tended to focus on the number of communities served or on changes in route-mileage. These measures, while useful, do not adequately answer the question of how much the amount of service provided by intercity bus lines has changed.

In 1992, the General Accountability Office attempted a systematic evaluation of changes in ridership since the 1960s. The study showed that traffic declined from 140 million passengers to 40 million in 1990. Nevertheless, the authors acknowledge that their estimates are far from perfect due to significant changes in ways carriers are categorized.<sup>2</sup> Moreover, there has apparently not been any subsequent attempt to estimate the ridership changes.

The absence of data on the number of paying passengers adds to the importance of reviewing published schedules to assess the extent of the industry's decline and factors contributing to its recent recovery. We provide such analysis in the following section.

### IV. Key Findings

Our review allowed us to make four principle conclusions. As shown in the appendix, our focus is on available service through a representative sample of cities across the country at six points in time.

## Finding I. The amount of intercity bus service in American cities dropped by nearly one-third between 1960 and 1980. A reduction in service occurred in all parts of the country, including areas experiencing rapid economic growth.

Cities in the United States, our analysis suggests, experienced an estimated 30.9 percent loss in service between 1960 and 1980. (The margin of error associated with our estimate is +/-3.3 percent). The total number of weekday operations encompassed by our data set fell over this period from 1,862 to 1,286, respectively, while the share of departures accounted for by Greyhound dropped from 66 to 64, respectively (Table 1).

| Table 1  |
|--|
| <b>Change in Number of Scheduled Arrivals and Departures</b> |
| American Cities, 1960 – 2002                                 |

| Daily Buses |  |  | Percent Change  |   |
|-------------|--|--|---|---|
| <u>1960</u> | <u>1980</u>                            | 2002   | <u>1960-80</u>  | <u>1980-2002</u>                                      |
|             |  |  |   |   |
| 151         | 200                                    | 147  | 26 20/  | 40.20/  |
| -           | 290                                    | /  |   | -49.3%  |
| 89          | 64                                     | 45   | -28.1%  | -27.9%  |
| 165         | 117                                    | 38   | -29.1%  | -67.5%  |
| 127         | 102                                    | 58   | -19.7%  | -43.1%  |
| 1,862+      | 1,286+                                 | 635+   | -30.9%  | -50.6%  |
| *           |  |  |   |   |
|             |  |  | +/-3%   | +/ -4%  |
|             |  |  | -1.4%   | -1.9%   |
|             | <u>1960</u><br>454<br>89<br>165<br>127 | $\begin{array}{ccc} 1960 & 1980 \\ 454 & 290 \\ 89 & 64 \\ 165 & 117 \\ 127 & 102 \end{array}$ | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ |

+ denotes number of observation in data set for this year.

In the 1960s, the number of intercity arrivals and departures exceeded that of commercial airlines as well as passenger railroads in major cities by a substantial margin. By the 1980s, most of the trains had been discontinued, but the number of departures by commercial airlines grew to such as extent that it generally exceeded the number of intercity bus departures by a factor of two.

Not all cities suffered to the same degree. In Chicago, the largest city in our sample, service dropped from 454 departures to 290 during this interval, a 36.2 percent decline. Chicago continued to be home to the country's largest station operated by Greyhound, but the carrier's daily activity there dropped from 287 to 186 buses. The loss of service, in percentage terms, was even greater in Charleston, South Carolina, and Columbus, Ohio, which witnessed declines of 59 and 71 percent, respectively, but generally much smaller in cities farther west, such as El Paso and Kansas City.

Much of the decline observed during this period was attributable to the declining viability of neighborhoods near major bus stations. The construction of the interstate highway system, of course, also contributed to the sharp reduction in service. Adding to the industry's problems, many companies concurrently faced significant cost escalation.

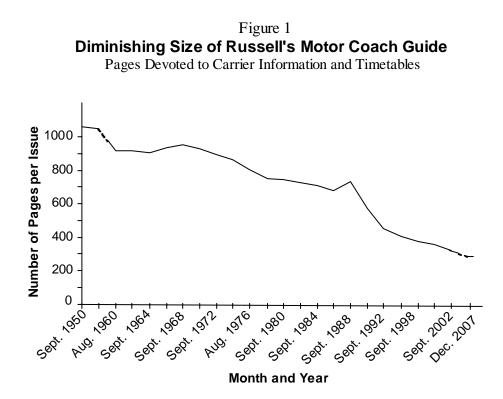
# Finding II. The decline of service greatly accelerated after 1980, leaving many metropolitan areas with populations of more than a million with fewer than a dozen daily departures. By 2002, the number of intercity bus operations was less than a third of what it had been in 1960.

We estimate that there was a 50.6 percent decline in scheduled service between 1980 and 2002. (The margin of error associated with our estimate is 4.4 percent). Cleveland, Kansas City, and Sacramento, which all had more than 150 daily bus operations at the start of the period, saw the number of daily buses diminish to 64, 38, and 53, respectively. Louisville, Ky., lost nearly 75 percent of its service over this interval. The annual compounding rate of decline accelerated from 1.4 percent during the previous period to 1.9 percent.

The intercity bus network diminished after 1980 in a manner similar to that of the country's passenger-train network a quarter-century before. Higher-income travelers turned to other modes of transportation, and competition from airlines intensified. (Bus lines, which focused more heavily on short-distance routes and lower-income passengers than rail lines, did not feel the effects of airline competition as early as the railroads). As the system withered, many travelers came to expect service to be unreliable and stations to be decrepit and unsafe.

By the late 1980s, it was clear that deregulation in 1982 had failed to halt the industry's decline. The lifting of regulations resulted in changes that helped the industry lower costs and bolster efficiency, but the largest carriers used the freedoms provided to further rationalize their networks. Prior to deregulation, there had been a tendency for carriers to reduce frequency on routes rather than to eliminate routes entirely. After deregulation, conversely, it became commonplace for cities to face wholesale reductions in the number of routes. In many instances, carriers "spun off" lightly used routes to smaller operators, which in some cases discontinued service only a few years later. As a result, the intercity bus system ceased to be truly comprehensive.

The enormity of these traffic losses are reflected in the diminishing size of the Russell's Guide (see Figure 1). The number of pages devoted to timetables and traveler information by bus companies fell from 880 in 1960 to 260 in 2002. Currently, the Guide has just 242 pages of such information.



Finding III. The industry's number of departures continued to shrink through early 2006, largely due to Greyhound's heavily publicized cuts. The shift away from air travel after the 9/11 terrorist attacks failed to halt the industry's long-term decline.

Despite the added cost and complexity of airline travel engendered by the 2001 terrorist acts, the intercity-bus sector did not enjoy appreciable expansion over the next four years. Conversely, Greyhound suffered terrorism scares of its own and experienced several heavily publicized accidents. By 2004, Greyhound was in the midst of another round of heavily publicized cuts, reductions of more than 20 percent in the number of daily buses in some cities. Yet there were also signs of an impending turnaround. Some cities were beginning to see modest increases in service, apparently for the first time in years.

We estimate the amount of service available in cities dropped by another 32 percent between early 2002 and early 2006 (the margin of error is +/-4 percent). It should be noted, however, that despite the size of this percentage estimate, the reductions during this period involved far fewer buses than in previous periods due to the industry's diminished size. Most of the decline was attributable to the elimination of service by Greyhound, which saw traffic drop from 21.2 million in 2004 to 19.3 million in 2006.<sup>3</sup>

|  | Daily Buses<br><u>2002 2006 2007</u> |     |     | Percent Change<br><u>2002-06</u> <u>2006-2007</u> |        |  |  |
|--|--------------------------------------|-----|-----|---|--------|--|--|
| Experience of Selected Cities                              |                                      |     |     |   |        |  |  |
| Cleveland, Ohio  | 64                                   | 45  | 47  | -29.7%  | +4.4%  |  |  |
| Louisville, Ky.  | 20                                   | 24  | 25  | +20.0%  | +4.2%  |  |  |
| Minneapolis, Minn.   | 42                                   | 30  | 39  | -28.6%  | +30.0% |  |  |
| Sacramento   | 45                                   | 29  | 26  | -47.2%  | -6.9%  |  |  |
|  |                                      |     |     |   |        |  |  |
| National Average   | 635                                  | 422 | 481 | - 36.1%   | +13.0% |  |  |
| Error Margin   |                                      |     |     | +/- 3%  | +/- 4% |  |  |
| Annualized change  |                                      |     |     | -8.0%   | +7.6%  |  |  |
| + denotes number of observation in data set for this year. |                                      |     |     |   |        |  |  |

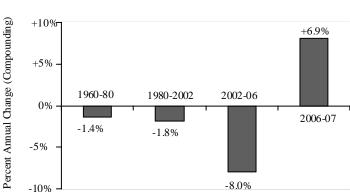
## Table 2Change in Number of Scheduled Arrival and DeparturesAmerican Cities, 2002 – 2007\*

\* Compares February 2002, February 2006 and December 2007

These findings may overstate the decline in service due to the unmeasured effects of bus companies that operate in the "gray areas" of the law, mostly notably those linking Midtown Manhattan and the Chinatown district in Washington, D.C. These carriers, which are not listed in the Russell's Guide, frequently change their schedules and in some cases operate in violation of safety laws. Needless to say, these so-called "Chinatown bus" operators do not report passenger statistics or issue printed timetables. Our estimates also exclude commuter-bus and certain suburban-bus operators, which expanded markedly during this period.

Nevertheless, the intercity bus network shrunk markedly throughout the country between 2002 and 2006. During this period, the intercity bus network reached its nadir.

Finding IV. A modest recovery began in early 2006 and gradually gathered momentum. By 2007, for the first time in more than 40 years, the level of service on the East Coast, in the Central States, and on the West Coast was growing significantly, largely due to the emergence and expansion of low-cost operators. Our analysis suggests that the volume of service in cities in the sample increased by 13.0 percent between early 2006 and December 2007, with an error margin of 3.3 percent. Cities experiencing gains outnumbered those experiencing losses by a ratio of roughly three-to-one. The annual rate of growth during this period, shown in Figure 2, illustrates the extent of this turnaround.





The 6.9 percent annual growth rate, compared to an 8 percent annual rate of decline during the previous period, was largely attributable to a new breed of motorcoach operators operating without conventional terminals, generally leaving from curbside locations or public-transit facilities. (These carriers typically do not publish timetables in the Russell's Guide). The expansion was especially noteworthy in three areas:

1. <u>Megabus</u>. The largest and best-known of these operators, Megabus, a subsidiary of Coach USA (owned by Stagecoach, Ltd., a British company) opened its Chicago hub on April 10, 2006. The hub initially consisted of 32 daily buses (16 roundtrips) between eight Midwestern cities: Chicago, Cincinnati, Columbus, Detroit, Indianapolis, Milwaukee, Minneapolis, and St. Louis.

In 2007, Megabus expanded service at its Chicago hub to 42 daily bus operations and added service to Kansas City and several intermediate stops on other routes. In August 2007, it added service to 12 cities in Arizona, California, and Nevada, including Las Vegas, Phoenix, and San Francisco, from a new hub in Los Angeles.

2. <u>New East Coast and West Coast Operators</u>. A variety of carriers expanded in coastal areas. DC2NY Bus began service between New York City and Washington, D.C. in mid-2007 while differentiating its product with wireless Internet service and other

amenities. Apex Bus Lines, which operates a route system emanating from New York City, more than doubled its bus operations to 100 daily departures over this period, adding service to points as far away as Atlanta.

In addition to Apex, other so-called "Chinatown carriers" expanded as well. In 2006, two new carriers, Vamoose and Washington DeLuxe, began operating from Midtown Manhattan to other points in the Northeast. USAsia sprung up on the West Coast, offering service between the Chinatowns in Reno, the San Francisco Bay Area, Los Angeles, the San Gabriel Valley and Las Vegas. Once serving primarily immigrants and other travelers with extremely tight budgets, these types of operators are now reaching a more diverse clientele.

<u>3. Expansion by established carriers</u>. Established operators, including Peter Pan Bus and Bonanza Bus Lines also expanded service on certain routes during this period, and Greyhound has held its number of departures constant for the first time in years. In several cities, such as Chicago and Minneapolis, the expansion of Megabus more than offset the service reductions that Greyhound and other carriers made over the previous five years.

### Finding V. The demand for intercity bus service between cities is growing robustly, suggesting that further expansion will occur in 2008.

In addition to the expansion of scheduled service, there is growing evidence that the revival of the bus industry is being propelled by rising consumer demand, which is manifesting itself in at least three ways.

<u>1. Traditional carriers, such as Greyhound, are reporting a significant increase in</u> <u>ticket sales</u>. Conventional intercity bus lines are benefiting from the same factors that have contributed to robust growth in short- and medium-distance Amtrak traffic in recent years. These factors include high fuel prices, rising traffic congestion, and the resurgence of central-business districts. Travelers too young to remember the stigma associated with bus travel, especially those living on college campuses and in large cities, are turning to motor coaches in especially large numbers.

Amtrak has recorded 10 percent growth in traffic on such routes since 2006 growth similar to that recently reported by Greyhound, which has disclosed that ticket sales, expressed on a per-bus-departure basis, have increased 15 to 20 percent since completing its heavily publicized cuts in 2005. Peter Pan, the largest operator in New England, also reports double-digit growth in ticket sales on nearly all of its routes. According to the American Bus Association, smaller regional operators have also experienced a significant increase in demand.<sup>4</sup>

2. Rising demand is encouraging low-cost carriers such as Megabus and various East Coast operators to add capacity to existing routes. Demand has been strong enough so that Megabus is in the process of putting into service 17 double-deck buses, which have the capacity to carry 79 passengers, on its Midwestern routes. The carrier's low promotion fares, which start at \$1 per trip, have helped build product awareness.

Megabus handled more than 500,000 passengers in its first 15-months of operation, and has seen sharply increased quarterly traffic since launching its Los Angeles hub. During the Thanksgiving holiday period in 2007, the carrier operated several dozen extra buses at its Chicago hub in response to strong bookings.

<u>3. The industry is engaged in more aggressive marketing than in previous years</u> and reaping the benefits of persistently high fuel costs. After years of relative passivity in advertising and promotion, the intercity bus sector is becoming more creative and aggressive in these areas.

In autumn 2007, Greyhound announced the completion of a \$60 million product overhaul, in which it refurbished 970 buses and upgraded 125 stations with plasma screen televisions, new signage and renovated bathrooms. The carrier also added "greeters" to major stations to improve the level of customer service. Greyhound concurrently launched its first national advertising campaign in years, which includes spots on national television and print adds in major national entertainment magazines.

The American Bus Association reports that the "Megabus Effect"—i.e., rising product awareness attributable to that carrier's service, advertising, and steeply discounted fares—is benefiting the entire industry. In December, Megabus launched a heavily publicized promotion, giving away 100,000 free tickets as part of a campaign to build awareness that it is an environmentally friendly ("green") travel choice. A motor coach that is three-quarters full achieves more than 250 passenger-miles per gallon of fuel—several times the energy efficiency of airplanes or cars.

### V. Conclusion

During this twenty-fifth anniversary season of intercity bus deregulation, the sharp recovery in service might begin a long-term shift toward increased motor coach travel on routes operating outside of major metropolitan areas. A minibus service, Shuttle Express, for example, will begin offering door-to-door service between Portland and Seattle on January 15, 2007, with wireless Internet service, television monitors, and other amenities. Megabus is studying the possibility of adding more cities to its system, and several new operators are poised to launch service in the near future.

The jury is still out on whether more people other than the low-income will take the bus on trips more than a few hundred miles or between small cities, where traffic congestion is not an issue. Greyhound probably has little chance of winning back many affluent travelers anytime soon. The image of intercity bus lines, however, is clearly on the mend.

Yet the industry faces vexing roadblocks to expansion. Little is known about the profitability of Megabus or other low-cost operators. Regulation still discourages private

operators from freely entering certain intrastate routes. Another problem is the slow pace of creating expressway lanes for high-occupancy vehicles on congested routes within major metropolitan areas, a move that would afford priority to long-distance buses and other high-capacity vehicles.

There is also concern over the practice some companies have of using curbside locations next to Amtrak or transit terminals rather than paying for station facilities. This has given rise to allegations that the companies are "free-riding" off the investments of others. A lawsuit filed by Peter Pan bus lines actually forced one local bus line to change the location of its Boston station.

Nevertheless, during this anniversary season of intercity bus deregulation, it is noteworthy that the intercity bus is again off and running—and regaining respectability among the traveling public.

### **Technical Appendix**

The authors collected information for published bus schedules over a five-month period primarily by consulting editions of "Russell's Official National Motor Coach Guide" published between 1960 and 2007. Overall, data-collection required about 250 hours of research time, most of which was conducted at DePaul University and the Transportation Library at Northwestern University. Due to errors in the Official Guide for Greyhound Lines in 2005 and 2006, the research team used data from printed Greyhound timetables dating to that period.

The research team collected arrival and departure information on all routes operating through twelve cities: Charleston, SC., Chicago, Ill., Cleveland, Ohio, Columbus, Ohio, El Paso, Texas, Evansville, Ind., Kansas City, Mo., Louisville, Ky., Minneapolis, Minn., Portland, Ore., Providence, R.I., and Sacramento, Calif. The information was then organized into a panel (cross sectional time-series) data set. For each bus operation, we recorded: i) the name of the carrier, ii) the bus number (or arrival and departure time if there was no bus number shown), iii) the timetable number (route), iv) whether the bus originated in a community or was part of a through route, v) the days of the week of operation. The numbers shown throughout this volume represent the total number of weekday (Monday) departures.

The methodology included research to assure that any one arrival or departure was not counted more than once, as some buses are listed in more than one of the sequentially numbered timetables in the Russell's Guide. In instances where buses were not numbered, the itinerary of the bus was examined to identify duplicative entries. Roughly 20 percent of all arrivals and departures in cities were listed in more than one table in the Guide. As a result, the number of arrivals and departures in the data set was reduced from about 6,400 to 5,200.

The propensity for intercity carriers to be absent from the Official Guide was not a significant problem prior to 2005: only the smallest carriers (as well as carriers not relevant in our analysis, such as commuter-bus companies) tended to be absent. The severity of this problem, however, grew after the emergence of low-cost operators in the Northeast in the early 2000s, and grew further when Megabus (which does not publish its schedules in printed form) launched service in the Midwest in 2006. We handled the problem by adjusting our numbers to include these carriers in our frequency numbers.

### Notes

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<sup>&</sup>lt;sup>1</sup> The amount of service provided by intercity bus operators in American cities from 1960 to the present day is not easily quantifiable in the same way as the amount of airline travel. Whereas airlines routes rarely consist of more than four or five segments, some bus trips involve more than 30 segments, some of which are only a few miles apart, making analysis by city-pair difficult. There is also a propensity for bus companies to operate services without giving each departure a distinct numbers, which adds to complexity of assembling a data set.

Although other sources, such as the American Bus Association, provide extensive statistics about intercity bus travel, their numbers include passengers handled on certain non-scheduled bus trips as well as commuter operators. These numbers generally overstate the traffic handled by the regularly scheduled intercity network and, indeed, show almost continuous traffic growth since 1980.

 $^2$  The authors note that the estimates in the USGAO were derived from three separate sources and that these estimates include only Class I bus lines. The revenue threshold that carriers needed to meet to be in this category, however, changed over the period, which the authors note affected the accuracy of their results.

<sup>3</sup> Data provided by Greyhound, Inc., on December 17, 2007.

<sup>4</sup> Interview by the author with American Bus Association, December 7, 2007.

<sup>5</sup> U.S. General Accounting Office, *Surface Transportation: The Availability of Intercity Bus Service Continues to Decline*, GA0/RECD-92-126 (Washington, D.C., USGAO, June 2002)