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CURBSIDE BUSES AND THE TRANSFORMATION OF THE INTERCITY BUS
INDUSTRY

By

NICHOLAS KLEIN

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ABSTRACT OF THE DISSERTATION

Curbside Buses and the Transformation of the Intercity Bus Industry

By NICHOLAS J KLEIN

Dissertation Director:

Robert Noland

Since the late 1990s, a new type of intercity transportation has transformed travel in many American cities. This new travel option has not come from revolutionary technological innovation, large-scale infrastructure investment, or long-term planning efforts. Rather, the new travel option is the intercity bus, a mode that had been in decline for decades.

After roughly fifty years of steady decline in ridership, intercity buses are suddenly the fastest growing intercity mode in the United States. This growth is due to curbside intercity buses, which pick up and drop off passengers on city street corners rather than in bus terminals. This seemingly small change in operations is at the heart of the dramatic growth in intercity bus travel. On the Northeast Corridor alone, intercity bus travel has more than doubled between 1997 and 2007 from three and a half million to over seven million trips.

This research looks beyond the growth in ridership to unpack what these changes mean for the passengers on these buses, for the public at large, for competing intercity

providers, and for regulators and local transportation planners. This dissertation poses three broad research questions. First, how and why do passengers choose to take curbside buses? Second, who uses curbside buses and how are these buses influencing their travel behavior? Third, how are curbside buses changing both the intercity bus industry and how have city planners responded to the problems associated with an influx of curbside intercity buses on city streets?

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CHAPTER 1: INTRODUCTION

This dissertation examines the rapidly growing curbside intercity bus industry. Curbside buses are intercity buses that eschew bus terminals in favor of picking up and dropping off passengers on city street corners. In the past 15 years, this new segment of the intercity bus market has emerged and transformed a moribund industry. Between 1998 and 2007, the number of intercity bus passengers on the Northeast Corridor (between Boston and Washington DC) has doubled to over seven million annual passengers (more recent data on the industry are not available) (Greyhound Bus Lines, 2007). Curbside buses are credited with the first increases in intercity bus service in the United States since the middle of the last century (J. P. Schwieterman, Fischer, & Smith, 2008; J. P. Schwieterman, Fischer, Smith, & Towles, 2007). Further, these buses might offer a cheaper and more immediate alternative for improving intercity travel than investing in high-speed rail. However, policy-makers must weigh the promise of this new form of travel against concerns of unsafe buses, congested city streets and operators that ignore regulations.

The dramatic changes to the intercity bus industry pose a policy question: how should federal and local governments regulate intercity buses? In this dissertation, I address the question of regulation by providing a foundation of knowledge about the nature of these buses and their impacts. I pose three broad research questions. First, what aspects of curbside buses attract large numbers of passengers? Second, who uses curbside buses and how do these buses influence their travel behavior? Third, how are curbside

intercity buses changing the intercity bus industry and how are local planners responding to the challenges posed by these buses?

Prior to the introduction of curbside buses, US intercity bus ridership, service and revenues had been in decline for over 50 years (J. P. Schwieterman et al., 2007). As a percentage of intercity mode share, intercity bus use declined from about 10 percent at the end of World War II to 2.5 percent in the 1960s (Meyer, Oster, Gómez-Ibáñez, & Clippinger, 1987). Many travelers perceived intercity bus as a mode of last resort: fit for the poor, the very young or old, minorities and women (Meyer et al., 1987; Walsh, 2000). In the early 1980s, the federal government deregulated the intercity bus industry amid a wave of regulatory reforms (Morrison & Winston, 2000). The presumed benefits of deregulation did not develop, and intercity bus travel continued to decline (Berechman, 1993). Competition rarely emerged; that is, until curbside buses appeared on the scene.

The curbside bus industry began in New York City's Chinatown in the late 1990s with the so-called Chinatown bus. The first Chinatown bus company, Fung Wah Transportation Company, began as a charter service in 1998 at the request of a group of Chinese immigrant parents who wanted to visit their children at college in Boston (Farivar, 2005). The service quickly became popular within the Chinese immigrant community, and since the early 2000s it has attracted passengers beyond the co-ethnic community (Klein, 2009). Subsequently, several competing bus companies began offering similar service from Chinatown in New York to Chinatowns in other cities throughout the Northeast. Since 2005, large multinational transportation companies have begun operating curbside bus service throughout the Northeast and the Midwest. Even

Greyhound Bus Lines has ventured into the curbside bus market with BoltBus, a curbside bus company jointly owned with Peter Pan Bus Company (Klein, 2009). Figure 1 shows the dramatic increase in the number of cities served by curbside intercity buses between 2008 and the end of 2013. The cities indicated by red dots are those with intercity curbside bus service in 2008 while those with black dots are cities serviced by intercity curbside buses in 2013.

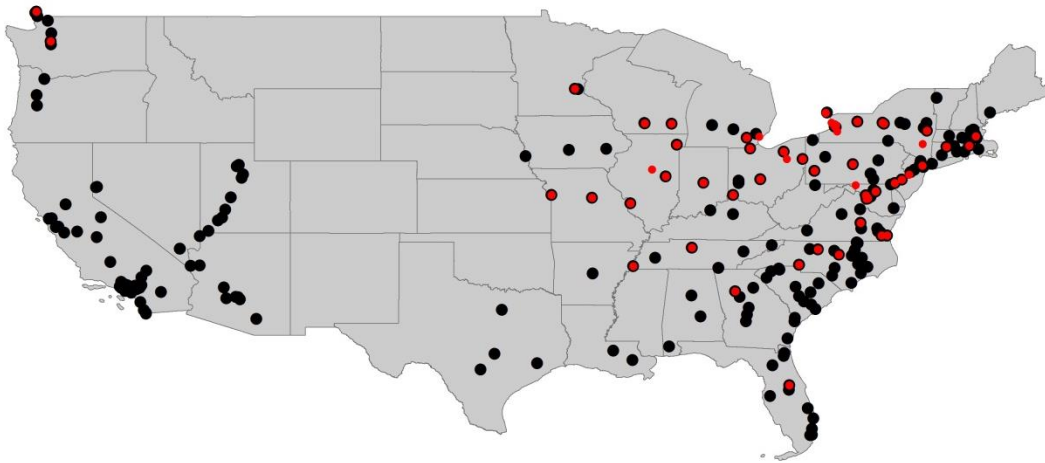


Figure 1 Cities served by curbside buses

The rise of curbside buses has not been without incident. Since 2004, at least 11 curbside buses crashed, resulting in almost 30 deaths and injuring over 150 passengers (Fanelli, 2010; Gelbart, 2007; Hill, 2003; Norton & Marsh, 2011; Slack & Daniel, 2005). These accidents have been widely publicized and media attention has focused on whether curbside operators are less safe than traditional bus companies and recent research has suggested that curbside carriers have higher rates of crashes than traditional terminal carriers (Cheung & Braver, 2012). These crashes focused media attention on the safety

concerns about low-cost buses and eventually led to the shutdown by the Federal Motor Carrier Safety Administration (FMCSA) of roughly 30 Chinatown bus companies on the East Coast.

Understanding the sources of curbside buses' new growth is crucial to evaluating their overall impact. The doubling of intercity bus travel on the Northeast Corridor since the late 1990s stems from a combination of new trips and travelers switching from other travel modes to curbside buses. If curbside buses are attracting passengers from autos to buses, then curbside buses may be contributing to decreases in greenhouse gases. However, if curbside buses are drawing passengers away from publicly-funded commuter and intercity rail services, then there may be a negative impact on the environment and on rail operators' balance sheets. Further, the ability of curbside buses to attract travelers from intercity rail may limit future ridership for high speed rail, although these two modes may attract separate market segments.

A growing curbside bus industry also has implications beyond intercity travel. A mode shift to curbside buses from other modes could signal a shift in the long-held view of intercity buses as mode of last resort. Understanding how curbside buses have transformed or bypassed this negative perspective can offer insights for transit planners. What lessons from the revival of intercity bus are transferable to local bus services to increase their ridership?

The changes in the intercity bus industry provide an opening for examining debates about regulation and the effects of competition in transportation markets. The expanding curbside industry, with its increasing ridership and innovative services as well

as concerns about safety and spillover effects, highlight both the promise and peril of deregulated transit markets. This dissertation will explore these challenges from the perspective of bus riders, bus operators and transportation planners.

Finally, I collected surveys and conducted focus groups with intercity bus passengers in 2009 and 2010 before the FMCSA shutting down the majority of the Chinatown buses (in 2012 and 2013). As such, the intercity bus industry looks very different today than it did when I conducted the focus groups and collected the survey data. Then, the Chinatown bus service was vibrant and a serious competitor to traditional terminal buses and corporate curbside buses. Today, there are no Chinatown bus companies providing service between New York and Boston or Philadelphia and only one still serving the New York to Washington DC route. As a result, while the focus group data and the survey data may not describe the current state of the industry, they capture many facets of what was the Chinatown bus.

This chapter is organized as follows. The next section describes the intercity bus industry. Next, I describe the methods and outline the research questions along with summary findings for each chapter.

Research Context

The contemporary intercity bus industry includes several different types of bus service. This study focuses on three types of intercity bus service which have the greatest potential impact on intercity travel (Figure 1).

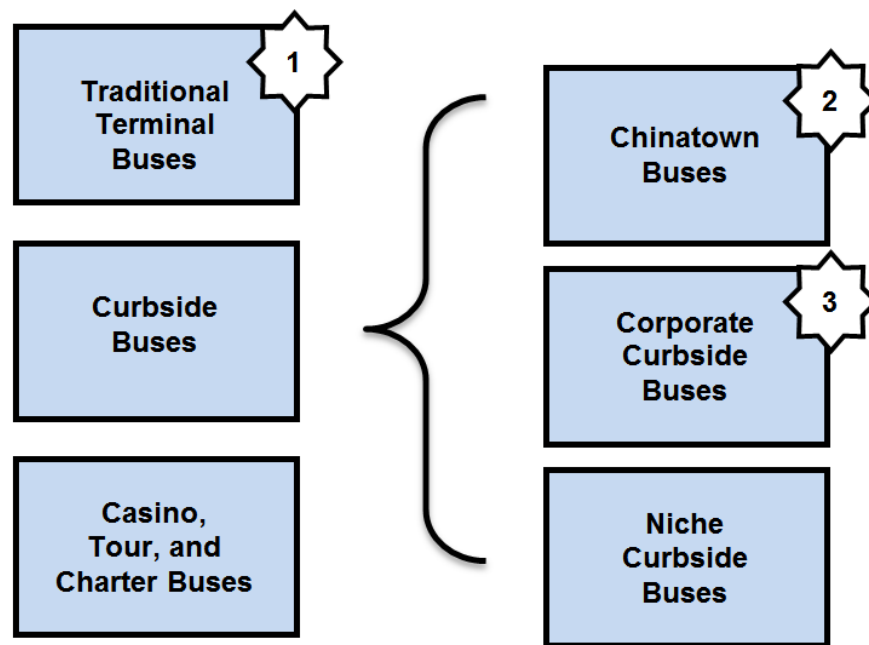


Figure 2 Intercity bus typology

Traditional terminal buses

The first type is the “traditional terminal bus,” such as Greyhound Bus Lines and Peter Pan, which continue to operate the majority of their service out of traditional bus terminals. These are the buses that have defined intercity bus travel for the latter half of the twentieth century.

The Chinatown bus

The second type is the so-called “Chinatown bus”. These buses are examples of how successful immigrant entrepreneurs identified an unmet need within the immigrant community; they have since expanded beyond the co-ethnic market (Bowles & Colton,

2007). What started as a single bus company serving the New York to Boston corridor transformed into an industry of ten to fifteen companies offering service between urban Chinese-immigrant enclaves in over 25 cities, though the connections from New York to Boston, Philadelphia, and Washington DC were the most significant routes until the FMCSA shutdowns of Chinatown buses in 2012 and 2013 (Klein, 2009). Though there are variations among the companies, the Chinatown buses generally use flat fares (prices that do not vary by time or occupancy) and sell most tickets via cash transactions on the bus itself, on the street, or in small storefronts. Many of the buses are unadorned white vehicles, making it difficult to distinguish one bus company from another. The uses of cash transactions on the street, competition with other bus companies for passengers, moving of pick-up and drop-off locations, violations for failing inspections and accidents involving these buses have all contributed to a perception that many of these companies routinely violate existing regulations, or are operating informally.

As noted above, at the time of this study, many Chinatown bus companies were operating on the Northeast Corridor, but today, there are no Chinatown bus companies providing service between New York and Boston or Philadelphia and only one still serving the New York to Washington DC route.

The term “Chinatown bus” requires some explanation. In this dissertation I use this term to describe a number of independent bus companies largely staging their operations in Chinese ethnic enclaves. Many, but not all, of these bus companies share common characteristics (described above). My use of the term, however inaccurate, mirrors the way many participants in my focus groups and interviews used the term. For

example, focus group participants used the term “Chinatown bus” to describe the collection of independent bus companies that operate in Chinatowns and made it clear that these were distinct from other types of bus companies. More often than not, participants used the generic term “Chinatown bus” rather than a specific company name (e.g. Fung Wah, Lucky Star, or New Century). However, one participant in one of the English language focus groups questioned this practice, noting, “We call it ‘the Chinatown bus’ because for us, we just see Chinese...we don’t even try to see the different companies.”



Figure 3 Chinatown Bus, New York City (Source: Travis Eby 2012)

Corporate curbside buses

The “corporate curbside buses” are curbside buses owned by large multinational corporations. This sector includes BoltBus, which is jointly owned by Greyhound (a subsidiary of FirstGroup) and Peter Pan, as well as Megabus, owned by Stagecoach Corporation. Corporate curbside buses primarily stage their operations in central business districts and use new buses with distinctive branding. Megabus first began operating in the UK in 2004. It brought its business model to the US in 2006, starting in Chicago (connecting to 16 cities in the Midwest). In 2008, Megabus and BoltBus began operating intercity bus service on the Northeast Corridor (Klein, 2009). These buses feature onboard wireless internet and power outlets for personal electronics. Corporate curbside bus companies primarily rely on selling tickets in advance via internet-based credit card transactions. Fares are set using yield management algorithms which offer low prices for first few tickets sold on each departure and higher fares for subsequent tickets. The fares for these buses can be as low as \$1 but are typically comparable to the fares on the Chinatown buses (e.g. \$20 for a trip from New York to Washington DC).

In the past few years, curbside buses have significantly increased their operations. As of November 2013, BoltBus has expanded their operations from the East Coast and now serves both the Pacific Northwest (out of a hub in Seattle) and California (serving Oakland, San Jose, Los Angeles and San Diego) (BoltBus, 2013). Megabus has expanded much faster and as of November 2013, has hubs in Chicago, New York, Philadelphia, Pittsburgh, Toronto, Washington DC, Atlanta, Dallas and San Francisco (Megabus, 2013).

Following the shutdown of the Chinatown buses by the FMCSA, Greyhound and Peter Pan initiated a new curbside bus service based in New York's Chinatown. The new operation, Yo! Bus, initially served the New York to Philadelphia route but has since added a New York to Boston route.



Figure 4 Megabus, Philadelphia (Source: Author 2012)

Other intercity carriers

Because of their limited potential impacts, I exclude intercity bus services that have not attracted a diverse ridership and have little short-term potential to affect travel

behavior. I exclude “niche curbside buses,” meaning intercity buses that almost exclusively serve a co-ethnic immigrant ridership base, unlike the Chinatown buses which were once niche curbside buses but have since become popular beyond the co-ethnic market. Information about niche services is difficult to access outside of the community they serve (Hernández-León, 2008; Lee, 2005; Valenzuela, Schweitzer, & Robles, 2005). I also exclude casino, tour, charter and airport buses because they only provide service to specialized destinations.

A distinction between terminals and curbside buses

In this dissertation, I use the terms “traditional terminal bus,” “curbside bus,” and “corporate curbside bus,” to differentiate the types of buses. In various ways, these terms are all inadequate. The term “curbside bus” denotes intercity buses that stage operations on the street from those who stage operations inside terminals, but this term is increasingly inaccurate. Curbside bus companies do not exclusively avoid terminals in favor of curbs. Both curbside and traditional terminal buses operating in Boston stage their operations at the South Station Bus Terminal. In Washington DC, most curbside bus companies have recently moved their operations into the Union Station Garage. In addition, traditional terminal bus companies are increasingly entering the curbside bus market. The two largest traditional terminal bus companies in the Northeast, Greyhound and Peter Pan, jointly own two curbside bus companies, BoltBus and Yo! Bus. Rather than distinguishing between traditional and curbside intercity buses, it might be more

useful to differentiate “legacy carriers” from “low-cost” carriers, as is often done with the airline industry. In airline parlance, legacy carriers are those who have existed prior to deregulation and low-cost carriers are those that have entered the market since.

Methods

This dissertation relies on mixed methods, qualitative and quantitative data collected from intercity bus passengers, operators, and transportation planners. I conducted a series of focus groups with bus passengers in 2009, a survey of passengers in 2010 and a series of interviews with stakeholders from 2009 through 2013. I used the focus group data to understand why passengers choose to take curbside buses and to inform the development of the survey instrument. The survey provided information on bus passengers, their travel behavior, and experiences while traveling on intercity buses. Finally, the interviews provided perspective from bus operators and city transportation officials about the regulation of the intercity bus industry. The specific data collection and analysis procedures are described in more detail in the following chapters. I obtained IRB approval from Rutgers for this project in Spring 2009.

Dissertation outline

In this dissertation, I examine the appeal of curbside buses, the use of these buses and their impact.

What is the appeal of curbside buses?

In fewer than fifteen years, curbside buses grew from nothing to become the dominant carrier in the market for intercity travel on the Northeast Corridor. Intercity bus ridership has grown steadily since then. Researchers have not articulated what attracts passengers to curbside buses or why ridership has grown so spectacularly within this sector.

Understanding the popularity of these buses may offer important lessons for planners and policy-makers. Understanding how to attract riders to transit modes is crucial for reducing the environmental impacts of travel in the US, so curbside buses may offer valuable insights about how to make transit modes, and buses in particular, more popular. Additionally, the growing popularity of curbside buses may have important implications for the financial viability of high-speed rail and regional air travel. Intercity buses are a cheaper and more immediate alternative for improving intercity travel options compared to high-speed rail or airport expansion.

For academics, this current research contributes to a large body of literature that examines how individuals make choices about travel modes and the factors that influence transit ridership. Researchers have long known that travel time, frequency and fares are important determinants of transit ridership, and these factors may be driving much of the growth in the curbside bus industry. However, curbside buses offer an opportunity to examine the role of other factors, such as information technology and neighborhood context. Curbside bus operators have been early adopters of information technology, providing wireless internet and power outlets onboard ahead of rail and air travel

operators. Additionally, the variety of different contexts in which intercity buses operate—at traditional bus terminals, in immigrant neighborhoods, and in central business districts—can shed light on the role local contexts play in travel decisions. For example, the ownership by Chinese immigrants and location of many curbside buses in Chinatown provide a unique opportunity to examine the way that race and cultural context influences travel decisions.

Chapter two presents the results of the focus groups. During the six focus group discussions, participants were eager to share their experiences taking curbside buses. Participants relished the opportunity to opine on the pros and cons of the various travel options, describe their travel decision-making process and relate both outlandish and scary experiences they had onboard these buses. Beyond the wild tales are insights into how travelers make decisions about intercity travel. As expected, participants stressed the importance of price. Curbside buses are cheap and this appears to be an important determinant in the growth of curbside buses. In addition, participants talked about how scheduled reliability, frequency, flexibility and travel-time were important in their decisions. Onboard amenities, wireless internet and power outlets are less important. Safety concerns play a role, though more so for some people than others.

In addition to the role played by operational aspects of the curbside buses, participants made it clear that their perceptions of the different buses influenced their travel behavior. Participants avoided traditional terminal buses because they perceived them as undesirable. They associated riding the Chinatown bus with a form of cultural tourism and saw the corporate curbside buses as professional.

Who uses curbside buses and how do these buses influence travel behavior?

An analysis of the intercity bus ridership provides a way to understand the changing demographics of intercity bus travel. Who uses these buses, who will be affected by policies targeting curbside buses, and how are these buses changing travel behavior? Any proposed regulation should take into account who benefits from these services and who is at risk if buses are unsafe.

During the second half of the twentieth century, intercity travelers with the means took to the air or drove, leaving the intercity bus largely as the carrier for people too old, too young or too poor to drive; they were more likely to be female than male and more likely to be African-American or Latino than White (Jackson, 1984; Meyer et al., 1987; Oster & Zorn, 1986; Walsh, 2000). Yet there is some evidence that curbside buses attract populations who have not used intercity buses in large numbers in the past. The first curbside buses, the Chinatown buses, originally served an exclusively Chinese immigrant clientele. While these buses have become popular beyond the specific immigrant context and their ridership has diversified, it appears that Chinese immigrants still are a significant portion of their ridership base (Farivar, 2005). Corporate curbside buses claim to attract a more affluent audience by offering onboard wireless internet and selling tickets online (Stellin, 2010). A spokesperson for one of the corporate curbside bus companies noted that their ridership includes a larger share of professionals and business travelers compared with other bus companies, and more than half of riders are “leaving their car at home” (Cameron, 2008). This statement suggests that many of their

passengers do not take the buses out of necessity. By appealing to Chinese immigrants and affluent travelers respectively, both the Chinatown and corporate curbside buses appear to be changing the demographics of intercity bus travel.

In the demographic analysis, I collected information on passengers' age, sex, race and ethnicity, residential location, employment status, household income, household size and auto ownership. A changing ridership may be indicative of shifting public perception of intercity bus travel. If the different types of intercity buses attract a specific demographic clientele, then perhaps the buses are developing into a class-based transportation system.

An understanding of how curbside buses change travel behavior is crucial for evaluating the net effect of these services. If curbside buses attract passengers who otherwise would have driven, then the net environmental impact of these buses is likely positive. However, if most riders switch from more energy efficient trains to buses, then the net environmental impact may be negative. The financial implications of this shift are not the focus of this dissertation. However, if curbside buses draw a large number of passengers away from rail or air travel, then this shift may have important financial consequences for public investment in high-speed rail and airport expansion.

Chapter three presents the analysis of the survey. For many years, researchers called the intercity bus a mode of last resort (e.g. Fischer & Schwieterman, 2011). The survey data suggest that this may no longer be the case. In terms of the passengers riding corporate curbside buses, Chinatown buses and traditional terminal buses, there are important differences within the intercity bus market on the Northeast Corridor. A larger

share of corporate curbside bus passengers are affluent and white than intercity bus passengers onboard traditional terminal bus companies, while the Chinatown buses attracted more Asian passengers and more male passengers than intercity bus passengers onboard traditional terminal bus companies. In addition, contemporary intercity bus passengers appear to be different from intercity bus passengers in the 1990s. Compared with buses from before the dawn of curbside buses, today's intercity bus passengers traveling on the Northeast Corridor are younger, more racially diverse and more affluent.

Curbside buses also affect travel behavior. After using these buses, survey respondents indicated that they were less likely to use rail or to drive for the same trips. The effect of riding the Chinatown bus was not quite so extensive. After riding the Chinatown bus, survey respondents were less likely to use Amtrak, but taking the bus had no effect on their likelihood of driving.

The survey data also support the notion that the Chinatown buses may have been less safe than other intercity buses. Passengers on the Chinatown buses reported that they had observed drivers talking on their phones and driving unsafely more frequently than passengers on who used other intercity buses. Additionally, passengers also felt that these buses were in much worse physical condition than other corporate curbside buses, which is perhaps not surprising given that corporate curbside buses are typically newer vehicles than the Chinatown buses (Klein, 2009). Passengers also reported operational problems (such as more late or no-show buses) and maintenance problems with traditional terminal buses at similar, or higher rates, than the Chinatown buses and much higher than the corporate curbside buses. These problems could contribute to passengers abandoning or

avoiding traditional terminal operators.

How are curbside buses changing the intercity bus industry and how are city planners responding?

Over twenty years after the deregulation of intercity bus travel in the US, many of the predicted effects of deregulation are now being realized in the form of curbside buses. As predicted by the proponents of deregulation, the federal government removed controls on entry and exit into the market and now the industry appears to be experiencing declines in fares and increases in competition, ridership, and service, along with innovations. However, critics of deregulation also predicted some negative consequences which also appear to be coming true: threats to public safety and negative impacts to neighborhoods.

To understand these changes, I interviewed bus operators, local transportation planners, neighbors and other local stakeholders. The interviews provide an in-depth understanding of both the positive and negative aspects of deregulation. The interviews address the ability of curbside buses to spark innovation in the industry. Meanwhile, talking to local planners reveals how they are responding to the emergence of informal bus depots on their streets.

Chapter four reports the findings from the interviews with stakeholders in the intercity bus industry. The interviews suggest that traditional terminal bus companies eventually adopted many of the innovations of the Chinatown buses and later the corporate curbside buses. City planners have responded to the influx of a large number of

buses on city streets via two primary policy approaches: developing permitting programs to regulate the use of curb space and/or pushing curbside intercity buses back into bus terminals. However, these tools (particularly the permitting programs) are limited in their ability to rein in the problems associated with curbside buses. It is not clear that the alternative (requiring that intercity buses use terminals) is an approach cities should pursue. More generally, the findings in this chapter suggest that deregulation of the intercity bus industry does not indicate the absence of regulation. Rather, deregulation has in fact resulted in the devolution of regulation to local city and transportation planners.

The final chapter summarizes the findings from this research, discusses the implications for planners and policy-makers and outlines avenues for future research. There are a number of aspects to this study that temper these findings. In the focus groups, surveys and interviews, I only include a limited set of participants. The views of passengers and operators of the Chinatown buses are underrepresented, the survey data and focus group data were only collected in New York and Philadelphia, and I was not able to include travelers who do not travel by bus (both those who never have and those who stopped using buses).

This research points to a number of areas for future research. There are several aspects of the changing intercity bus industry that remain obscured. First, the most basic step would be an effort to document the growth of intercity bus ridership on the Northeast Corridor. The most recent attempt to gauge the size of the industry was in 2007, when Greyhound conducted their own study (Greyhound Bus Lines, 2007). Second, additional

research is needed to understand what has happened to all the passengers of the Chinatown buses that have been shuttered by the FMCSA. Third, the continued expansion of curbside buses outside the Northeast Corridor offers very interesting opportunities to examine the relationship between curbside buses and competing rail modes. Recently opened curbside bus routes throughout the US also provide opportunities to examine changes in travel behavior beyond the Northeast Corridor. In addition, the analysis of the focus group discussions with intercity bus passengers revealed that these travelers made decisions about how they travel based on two very different types of information. Future research should also examine the role of perceptions about travel modes and how they influence travel behavior.

This dissertation concludes with two main policy recommendations. Both recommendations build on the efforts that cities are already undertaking to expand local regulation of intercity bus operators. The first recommendation is to require that intercity bus companies provide cities with regular documentation about their bus operations so that cities can improve their own planning for these services. Second, cities should look to the past and require that bus companies provide space for their passengers. This policy would force bus companies to internalize the costs they avoid by using public space, as well as confront their negative effects on the sidewalk.

CHAPTER 2: INTERCITY BUS PASSENGER MODE CHOICE

This chapter examines the growth of the curbside bus industry in the Northeast from the perspective of passengers. Drawing on a series of five focus groups with curbside bus passengers, this analysis examines the range of factors that contribute to the rapid growth of this travel mode. First, I outline participants' narratives about the transition to curbside buses from other modes. In the focus groups, participants described switching from Amtrak to curbside buses for intercity trips because they are cheaper and switching from using Chinatown buses to corporate curbside buses because they felt they were more reliable, cleaner, and safer. As curbside buses continue to expand service throughout the country, competition between bus and rail for intercity passengers may become more common (as well as competition between regional air travel and bus).

Second, I examine the factors influencing participants' choice of curbside buses. Focus group participants describe two types of factors that influenced their choice to use a curbside bus. First, they talked about costs, travel time, frequency and safety. Among these, cost was clearly the most important factor in their choice to use a curbside bus. But participants also talked about an entirely different set of factors, which I did not anticipate prior to conducting the focus groups. These factors were participants' perceptions of the various intercity buses and how these fuzzy emotional and experiential characterizations of the different buses influenced their travel decisions. Because I did not anticipate these perceptions, it is unlikely that they would have been uncovered without collecting qualitative data which allows research participants to introduce

unexpected topics. This research also contributes to a large body of literature that examines how individuals make choices about travel modes and the factors that influence transit ridership.

The curbside bus industry has undergone a shift following the completion of these focus groups for this study, most notably the shutting down of almost all of the Chinatown buses. Meanwhile, corporate curbside buses have continued to expand operations beyond the Northeast Corridor and now have a significant presence throughout much of the United States (J. P. Schwieterman, Antolin, Largent, & Schulz, 2013).

The rise, decline and return of the intercity bus in the US

Curbside buses are not a new phenomenon. In the 1910s, a number of jitney entrepreneurs throughout the country gradually began operating longer distance routes, using larger vehicles with regularly scheduled trips (Walsh, 2000). In this era before bus terminals, early intercity operators relied on curbside pick-ups and competed for choice locations throughout the city. In general, though, the buses were unreliable and passengers were “satisfied with reaching their destination rather than enjoying a fast or comfortable journey” (Meier & Hoschek, 1975; Walsh, 2000, p. 19).

In the ten years following federal regulations that were imposed in 1935 which imposed controls on entry and exit into the market, scheduling, pricing and safety of intercity bus operators, the intercity bus industry increased ridership and improved service as small regional bus companies consolidated into large bus companies, such as

Greyhound and National Trailways (Walsh, 2000). These larger companies could coordinate schedules and routes to ease travel, and they invested in new equipment and bus terminals. The growth of the industry was mirrored by a growing interest in intercity bus travel through journalist accounts and films, which portrayed bus travel as an appealing way for people from all walks of life to travel (Jackson, 1984). Early intercity bus travelers viewed buses as “exciting and liberating, albeit uncomfortable and somewhat unpredictable” (Walsh, 2000, p. 1).

However, the growth in intercity bus ridership did not last. A ridership boom during World War II quickly dissipated and intercity bus mode share declined rapidly. During the second half of the twentieth century, the share of passengers using intercity buses decreased from 8.8% of all intercity miles traveled in 1944 to 1.4% of intercity miles by the end of the century Figure 5 (Walsh, 2000). Investments in the interstate highway system, increases in household income and improved quality of personal vehicles all contributed to the shift in intercity travel from rail and bus to air and cars (Meyer et al., 1987).

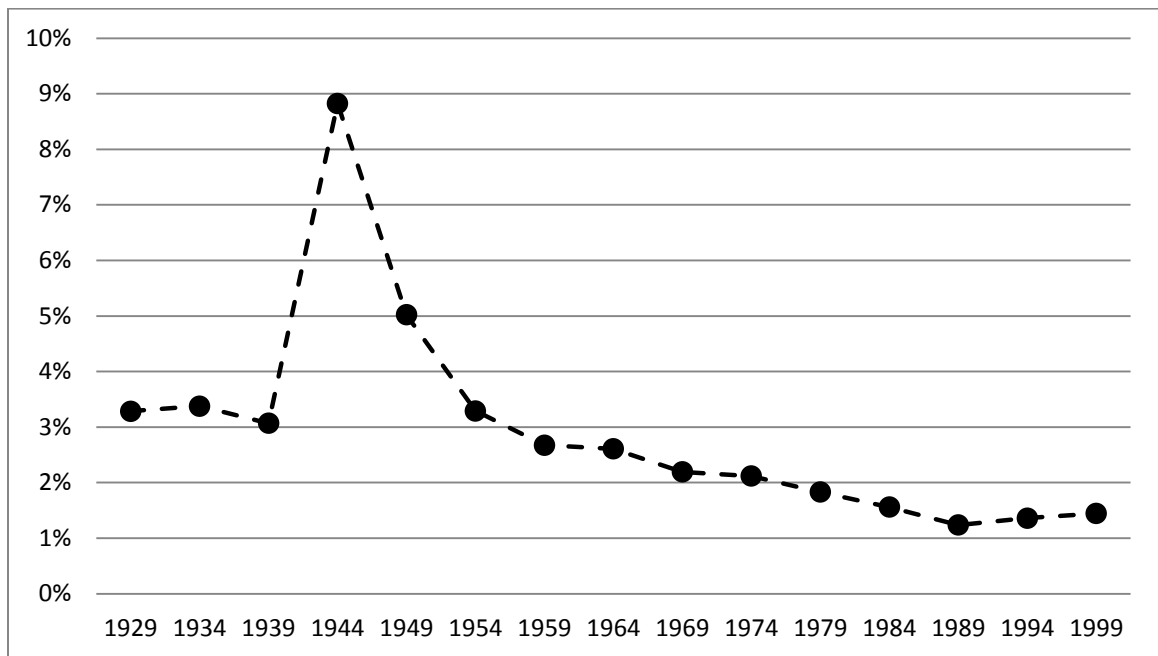


Figure 5: Intercity bus mode share as function of passenger miles, 1929-1999
(Adapted from: (Walsh, 2003a))

Over time, the public perception of intercity buses and intercity bus terminals became more negative (Walsh, 2000). Increasingly, bus passengers were old, young adults, poor and minorities. (Jackson, 1984; Meyer et al., 1987; Walsh, 2000). According to a 1970s survey, “Americans tend to have a negative opinion...of [intercity] buses today” (A Survey of American Attitudes Toward Transportation, 1978 quoted in Jackson, 1984). In a survey of air and rail travelers in the 1980s, one respondent described the intercity bus as a “low-class hound dog. We wouldn’t use this sort of dog for hauling” (Jackson, 1984, p. 109). Urban bus terminals “developed the dubious reputation as substandard and precarious conditions” due to media coverage and reports of poverty, homelessness, drugs and crime in and around bus terminals (Walsh, 2010, p. 223 see also Felson et al., 1996). A sociologist described a bus terminal in an unnamed US city in the

early 1970s as “marked by an atmosphere of what some would consider 'degeneracy.' It is a haven for indigent old men who congregate and chat for hours at a time. They are not involved with transit per se. It is more apt to say the depot is their home” (Henderson, 1975, p. 447).

In the early 1980s, amid years of declining economic health, the federal government deregulated the intercity bus industry. The *Bus Regulatory Reform Act of 1982* removed controls on pricing, operations and entry and exit from the market while retaining regulations on safety and environmental impacts (Berechman, 1993; J. Kahn, 1990). The promise of deregulation is that competition will force transit operators to be more efficient and provide better service to the public (Meyer, Peck, Stenason, & Zwick, 1959). Evaluations of deregulation in the 1980s and 1990s generally found that deregulation did not lead to either the promised benefits or the feared harms (Berechman, 1993; Button, 1987; Oster & Zorn, 1986; Talley, 1989).

Yet, in the twenty-first century, the intercity bus industry is experiencing new growth, largely due to curbside buses. As mentioned above, the first curbside buses started in Chinatown. The Chinatown buses began as a single bus company in 1998 serving the New York-to-Boston corridor and in ten years transformed into an industry of over 30 companies offering service between urban Chinese-immigrant enclaves in over 25 cities (Klein, 2009). These buses emerged out of existing transportation companies already serving the Chinese immigrant community: local jitney services, Chinese immigrant-serving charter tour bus companies, and companies that transported workers from employment centers in New York’s Chinatown to Chinese restaurants throughout

the country (Farivar, 2005; Guest, 2011; Klein, 2009; Lee, 2005). Competing companies soon followed, recognizing the unsatisfied demand for intercity service based in Chinese immigrant neighborhoods (Farivar, 2005). The Chinatown bus expanded beyond the co-ethnic ridership base through word-of-mouth and numerous news accounts which usually described students who had “discovered” an inexpensive travel option on the Northeast Corridor (Klein, 2009).

Corporate curbside buses represent a newer generation in the intercity bus market. In 2003, Megabus began operating in the UK offering “a no-frills, low cost alternative” to the incumbent, National Express (Robbins, 2007, p. 4). In 2006, Megabus brought this model of service to the US (J. P. Schwieterman et al., 2007). The company first developed a hub in Chicago, then expanded to New York in 2008 and has subsequently expanded throughout much of the US. In 2008, Greyhound Bus Lines partnered with Peter Pan to develop BoltBus, a curbside bus company providing express service (unlike normal Greyhound operations which often makes several stops) on the Northeast Corridor (Klein, 2009). BoltBus has since developed hubs in the Pacific Northwest and California.

In an analysis of several decades of intercity bus travel in the US, Schwieterman et al find that “for the first time in more than 40 years, the level of service” in the US is growing “largely due to the emergence and expansion of low-cost operators,” i.e. curbside bus companies (J. P. Schwieterman et al., 2007, p. 9). An internal study by Greyhound (2007) found that between 1998 and 2007, the number of intercity bus passengers on the Northeast Corridor doubled to over seven million passengers annually.

During this period, market share for traditional terminal buses on this corridor declined overall and as a share of the total intercity bus trips, dropping from 100 percent to 40 percent of the entire market (Greyhound Bus Lines, 2007). By 2008, there were more curbside buses than traditional inter-city buses operating on the Northeast Corridor (Klein, 2009). Since then, curbside buses have expanded throughout much of the US and have almost doubled their scheduled departures from 589 in 2010 to 1,042 in 2012 (J. P. Schwieterman et al., 2013).

Table 1 summarizes the travel costs, time and number of departures for a trip from New York to Washington in late 2009, when I conducted the focus groups. At the time, prices on the Chinatown buses, corporate curbside buses and traditional terminal buses were all within a similar range and all much cheaper than Amtrak. The Chinatown bus fares were flat while fares for the other modes varied according to demand or, in the case of Greyhound, when or where the purchased. The table shows scheduled travel times, which are shortest on Amtrak and longest on traditional terminal buses (because they often make intermediate stops). Additionally, these services usually operate in different neighborhoods (though there are exceptions, i.e. Boston) and thus provide different levels of accessibility.

Table 1 Comparison of intercity modes New York to Washington DC, circa late 2009 (Klein & Zitcer, 2012)

	Chinatown bus	Corporate curbside bus	Traditional Terminal bus	Amtrak
Cost	\$20	\$1 – \$25	\$14 – \$35	\$50 – \$180
Travel time	4:00 – 5:00	4:00 – 5:00	4:30 – 6:00	2:50 – 3:30
Departures per day	30 - 50	40 - 60	16 – 22	23 - 38

Factors driving ridership growth

Existing research suggests several possible reasons why travelers choose curbside buses and why ridership is growing in this industry. First, innovations introduced by curbside buses, such as onboard wireless, variable pricing, staging operations in new and possibly more convenient locations (Klein, 2009; J. P. Schwieterman, Fischer, Field, Pizzano, & Urbanczyk, 2009). These theories are all speculative because none of the authors talked to passengers about their reasons for using curbside buses. Research on the Chinatown buses offers an alternative reason for why some passengers may choose those buses. The focus groups (chapter 2) revealed how some passengers are drawn to the Chinatown bus precisely because it operates in an immigrant context (see also Klein & Zitcer, 2012). The buses become a way for passengers to have an authentic urban experience, for Mandarin speaking travelers to connect with aspects of the Chinese diaspora and for non-Chinese passengers to (however briefly) experience an immigrant “other.”

More generally, the large literature on transit ridership suggests that a combination of factors influences ridership. Typically, authors categorize these as either internal or external factors, depending on whether the specific factor is something that a transit agency can control (Kain & Liu, 1999; Taylor, Miller, Iseki, & Fink, 2009). External are those that are outside of an agency’s control and include metropolitan spatial structure, land use policies, regional economic status, and social and demographic changes. Internal factors, meaning those that agencies can control, typically include fares,

service quantity and quality. In general, previous research using quantitative analysis finds that internal factors have a smaller effect on ridership than external factors (Kain & Liu, 1999; Taylor et al., 2009). Among the internal factors, travel-time, speed, frequency and reliability have a greater influence on transit ridership than fares, amenities or safety (Cervero, 1990; Kain & Liu, 1999; Taylor et al., 2009; Wachs, 1976, 1991). In the case of long-distance travel, there are reasons to suspect that internal factors may have greater influence on demand than for local or habitual travel. Because long-distance trips are frequently discretionary, passengers may be more sensitive to “quality factors such as speed, in-vehicle comfort, etc.” and “will generally display higher price elasticities than local movement” (White, 2009, p. 180).

The literature on transit ridership largely relies on quantitative analysis of transit operations, spatial attributes, and passenger demographics, with little input from passengers themselves about how they make decisions or about their perceptions of transit modes. This approach assumes researchers know what types of attributes are important to travelers and that they are quantifiable (Clifton & Handy, 2003; Grosvenor, 2000). In the case of intercity bus travel, for which there is not a large and established body of research, it is particularly important to identify the range of attributes that might drive changes in ridership.

Qualitative research has the potential to reveal individuals’ own explanations about how and why they make choices about travel and, as a result, offers new, novel and possibly more nuanced explanations for travel behavior (Clifton & Handy, 2003). Further, emotional and experiential aspects about “the transit experience are difficult, if

not impossible, to measure meaningfully using quantitative data collection tools only” (Fink, 2012, pp. 10-11). But this research does suggest that perceptions about modes can influence travel behavior. Interviews with car and transit users in Portugal found that many car users avoided buses because they held outdated negative perceptions about transit based on lack of experience, past experiences or information from others (Beirão & Sarsfield Cabral, 2007). Other scholars have noted that hard to quantify factors such as “memories, images and cultural references” all influence mode choice (Guiver, 2007, p. 245).

In the case of long-distance bus travel, curbside buses may have opened up a space for new perceptions of the mode. The older notion describes traditional terminal buses in a negative light. A recent ethnographic account of social interaction on Greyhound buses, described intercity bus spaces as places where “everyone is on edge and every person is suspect” adding that these buses are “commonly depicted as a dangerous and uncomfortable mode of transport” (Kim, 2012, pp. 271-272). In the case of the Chinatown buses, the view of buses as a form of cultural tourism represents a new and more positive (though not unproblematic) perception of bus travel (Klein & Zitcer, 2012).

Qualitative research suggests that perceptions may play an equally important role in mode choice as do operational aspects of transit services such as price, frequency and duration. While researchers cannot use qualitative research to adjudicate whether transit fares and frequencies are more important than emotional or cultural references in determining mode choice, researchers can use these methods to generate hypotheses for

understanding travel behavior. New theories are necessary when studying new phenomena, as is the case with curbside buses.

The context

I conducted the focus groups described in this chapter in Philadelphia and New York City. By design, the conversations primarily addressed participants' experiences using curbside buses on the Northeast Corridor (from Boston to Washington DC). In many cases, participants made reference to or compared these experiences with other modes of travel. As expected, these modes include traditional terminal buses, such as Greyhound, driving and occasionally air travel. However, discussions also included commuter rail as an option for intercity travel. Commuter rail is an option for travel between Philadelphia and New York. Leaving from Philadelphia, travelers can board a Southeastern Pennsylvania Transportation Authority (SEPTA) commuter rail train to Trenton Transit Center in Trenton, New Jersey. There, travelers can transfer to a New York City bound New Jersey Transit commuter rail train.

Data collection and methodology

The following presents the results of five focus groups conducted in English and Mandarin with curbside bus passengers, held in Philadelphia and New York between August and October 2009. The focus groups had two purposes. In this chapter, I use the focus group transcripts to generate theories and hypotheses about how and why passengers make choices about curbside buses. In the following chapter, the focus groups

informed the language used on a passenger intercept survey.

Prior to conducting the focus groups, I also evaluated the possibility of gathering data through interviews with intercity bus passengers. Compared with interviews, focus groups typically “provide less depth and detail about the opinions and experiences of any given participant” (Morgan, 1997). However, during the three pilot interviews I conducted, participants only mustered brief responses to questions. Even when prompted for follow-up explanations, participants’ responses lacked the personal experiences and detailed descriptions that are a hallmark of qualitative interviews. In particular, participants struggled to answer why they chose to take a particular bus during an individual interview. In contrast, the focus groups provided rich discussions on a variety of topics. This is supported by research showing that participants find it easier to discuss topics “either habit-ridden or not thought in detail” in focus groups when compared to interviews (Morgan, 1997, pp. 10-11).

Thus, I relied on focus groups as an exploratory tool to generate new theories and hypotheses about the growth of curbside buses in the Northeast United States. This format allows “the facilitator the flexibility to explore unanticipated issues as they arise in the discussion” (Marshall & Rossman, 2010, p. 149). Given that there is little previous research about this sector of intercity transportation, the exploratory framing allowed participants to talk about what they felt was important. Further, I did not collect a large sample of data from which I could draw generalizable conclusions. Instead, I used a small but rich data set to generate theories about why passengers chose curbside buses based on the “everyday knowledge and experiences” of participants (Fern, 2001, p. 7). Due to

budget restrictions, I planned to conduct only six focus groups rather than collecting data until reaching saturation (when collecting additional data no longer produces new information or insights) (Marshall & Rossman, 2010). However, I do feel that I did achieve saturation in the English language focus groups (though not in the Mandarin focus group). This conclusion was evident during some of the fourth and clearly in the fifth English language focus group, most of what I heard from participants reinforced what I had already learned from the earlier focus groups.

For the English language focus groups, I moderated the focus groups with an assistant. I recruited participants at intercity bus stops in Philadelphia and New York. Identifying potential participants was relatively easy since bus passengers generally line up on the sidewalk, preparing to board the bus 15 to 30 minutes prior to departure. At each stop, I approached the waiting passengers and asked them if they were waiting for the bus and if they were interested in participating in a focus group about intercity buses. If they were, I handed them a flyer advertising the focus group and contact information. I screened potential participants to ensure that they were at least 18 years old and had taken an intercity bus in the past 12 months.

For the Mandarin language focus group, I hired a native Mandarin speaking graduate student and used the same focus group protocol. She moderated, transcribed and translated the Mandarin focus group. I helped set up the focus group (arranging the tables, providing snacks, pens and blank name tags, and set up the recording equipment) but left the room before the discussion began. We attempted to recruit participants using the same technique as in the English-language focus group, but recruiting Chinese

language participants was not as successful with this approach due to a number of challenges. These challenges included a higher refusal rate, bus passengers who said they did not speak Mandarin (they spoke Fuzhounese or Cantonese), and a large number of Mandarin speaking bus passengers who were embarking on trips of longer duration and would not return to New York in time for the focus groups (while passengers embarking on longer duration trips was also an issue with the English language recruitment, it was much more common among Mandarin speakers). To overcome these challenges, we also posted a flyer online on a Chinese language message board (<http://www.mitbbs.com>) to recruit participants.

Because I conducted the Chinese language focus group in Mandarin, this study cannot speak to the diverse experiences of all Chinese immigrants. I chose Mandarin because it is the most commonly spoken Chinese dialect and I could easily find an assistant who spoke Mandarin. However, we did encounter a large number of potential focus group participants who spoke other dialects. In Manhattan's Chinatown, where we attempted to recruit participants for this focus group, Cantonese was the dominant language for Chinese immigrants for many years, though many recent immigrants to the US speak Fuzhounese (Guest, 2011; Wilson, 2006).

I held the focus group sessions on weekday evenings at the offices of nonprofit or community organizations that were located near public transit and curbside bus stations. The discussions had six to nine participants and lasted between 90 and 120 minutes. At the end of the focus group, I gave participants \$75 and asked them to fill out a simple questionnaire that asked for a brief summary of their intercity travel in the past year and

basic demographic data.

I prepared a topic guide (see Appendix A) but the discussions during the focus groups did not follow a linear path. The prepared topic guide included the following broad themes: how participants made decisions to take a curbside bus, the differences between the various buses and other modes, their experiences and satisfaction with these various modes, and thoughts on how their travel behavior has changed over time. After a round of introductions and explanation of the focus group, I began by asking an initial question and let the conversation follow the path that most interested the participants. The first question was

MODERATOR: Let's imagine that you are talking to a friend who is going to go to New York next week. This friend asks you, "How should I get to New York?" Let's start by first telling them their various options. What are the different ways they could get to New York?

When I held focus groups in New York, I asked about the different ways they could travel to Philadelphia, Boston and Washington DC.

Participants quickly began explaining each possible option and the various advantages and disadvantages, talking about how they decide and so on. When the conversation reached a natural stopping point, I would return to one of the items on the topic guide.

After completing all the focus groups and preparing the transcripts, I coded the transcripts using qualitative analysis software (Atlas.ti version 6.2). Coding is the process by which segments of the transcripts are associated with codes that stand for specific concepts, ideas and themes (Coffey & Atkinson, 1996; Corbin & Strauss, 2008). I used Atlas.ti to associate specific segments of the transcripts to a combination of predefined

and inductive codes. The predefined codes were themes that I identified prior to reading the transcripts, such as cost, frequency, bus stops and comfort. The inductive codes are themes that I identified during the process of reading the transcripts but which I had not anticipated beforehand. Inductive codes include such varied topics as the disregard of norms, insider knowledge, and adventure. The coding process is an interpretive and iterative procedure that involves multiple readings of the transcripts to refine the codes and to identify the varied locations where these themes occurred. In total, I used 53 different codes which identified over 464 transcript segments. Following the coding, I used output to identify themes and concepts which became the basis for “more abstract interpretations of data and theory development” (Corbin & Strauss, 2008, p. 54).

In total, 37 people participated in the focus groups. The average age of participants was 31 (ranging from 20 to 58) and there was a roughly even split among men (18) and women (19). In addition, 19 percent of respondents had household incomes less than \$25,000 per year, 22 percent were between \$25,000 and \$50,000, 41 percent had incomes between \$50,000 and \$100,000, and the remaining 19 percent had incomes greater than \$100,000 per year. Almost half of the participants (46 percent) were employed full-time and almost one quarter (23 percent) were students. The remainder were looking for a job or unemployed, employed part time or did not answer the question.

Focus group participants made 756 round trips with a median of 13 trips per person on the intercity modes in the 12 months prior to the focus groups. Five participants were regular commuters who made 65 to 150 round trips in the preceding

year and five participants had only made one round trip in the preceding year.

Participants made their largest share of trips onboard Chinatown buses (39 percent of all trips), followed by Amtrak (20.6 percent) and corporate curbside buses (20 percent). The smallest share of trips was onboard Greyhound (1 percent of all trips) though twenty percent of participants had made at least one trip on Greyhound in the past year and, according to the transcripts, almost all participants talked about using Greyhound at some point in the past.

There are several limitations to these focus groups. Since I recruited participants for these focus groups from curbside buses, their discussion of mode choice for intercity travel may be very different than travelers who rely primarily on rail or other modes. Similarly, participants' characterization of traditional terminal buses, Amtrak or other modes might be very different from that of travelers who regularly use other modes. Additionally, only one of the focus groups was with Mandarin speakers and thus I may miss out on a broader range of experiences of Mandarin speakers as well as other Chinese language speakers (e.g. Cantonese or Fuzhounese speakers).

Focus group findings

The following sections present the findings from the five focus groups organized around three themes. In the first section, I analyze participants' narratives about coming to use curbside buses. In the second section I present participants' discussion about the role of internal factors in their mode choice for long-distance travel. The third section describes participants' perceptions about traditional terminal, corporate curbside and the

Chinatown buses, which were very different and had a strong influence on their travel choices.

Notably absent from this discussion are external factors that might affect ridership. This absence is not totally surprising given that participants are unlikely to be able to offer much perspective on the role that metropolitan spatial structures, regional economic factors (e.g. unemployment rates), or land use have on the aggregate demand for intercity buses. In addition, it is consistent with interviews of transit operators which emphasized internal factors (Taylor et al., 2009).

To protect participants' confidentiality, I changed the names of the participants.

Switching to a Curbside Bus

During the focus group sessions, I asked participants what mode or modes they usually used before they came to ride curbside buses. The purpose of this topic was to gather information about how curbside buses might be affecting competing intercity modes, to suggest hypotheses about the nature and reasons for possible impacts of curbside buses, and for future analyses quantifying the impact of curbside buses on intercity bus mode choice.

The most common mode switch that participants described was from rail to curbside buses. The main reason for this switch was the high cost of Amtrak tickets compared with curbside bus fares. One participant described his initial embarrassment that he could no longer afford Amtrak but he came to realize that taking the Chinatown bus was becoming more common so he was no longer ashamed of it.

WES: I love that high speed train but my cash flow doesn't allow me [to ride it]. And so now I frequent the Chinese bus [SIC] all the time. ... I think cause of the economics people are trying to be frugal so they are willing to lower their standards. At one time, when my cash flow was stronger, I wouldn't do the bus, strictly for comfort. But now, I'm not reluctant to tell anyone about the Chinese bus. ... I don't care if I ran into, what's-his-name, vice president Biden. I would whisper to him, "Yo family, take the Chinese bus!"

Other focus group participants transitioned from routinely using commuter rail to curbside buses for travel between New York and Philadelphia. This was most common among long-time residents of Philadelphia. One participant described commuter rail as "old school" and went on to explain that this transition from primarily relying on commuter rail to primarily using curbside buses was a change that happened to everyone in his social group.

Many focus group participants also switched from using traditional terminal buses to curbside buses. Participants made this transition because they felt that curbside buses were cheaper and more frequent and flexible; many participants also have a negative perception of Greyhound and bus terminals.

JOAN: I'm from New York. I've always taken the bus. Ever since I moved here I took the Greyhound. Then when I found out about the Chinatown bus, I took that. Then as soon as Greyhound became cheap because of the competition with the Chinatown bus, I took that. Then as soon as Megabus and those buses came around, I started taking those buses.

ERIN: I took Greyhound first. Then, I took Megabus and Fung Wah bus. I took Megabus more frequently recently because it is cleaner and more orderly. I heard about these buses also from friends.

In addition to transitioning from other modes to curbside buses, focus group participants also talked about switching from one type of curbside bus to another. The most common of these changes involved switching from Chinatown buses to corporate

curbside buses. Participants made this transition for a variety of reasons including a belief that corporate buses are more reliable, cleaner, safer, and offered more convenient locations. Participants also wanted to use the onboard wireless internet and power outlets to get work done during the trip. As one participant noted,

SUZANNE: I had heard, kind of, the stories or read something in the newspaper, you know, horrible bus accident with one of the Chinatown buses so I stopped taking,

Other participants said they had not switched modes at all. These participants patronized curbside buses for intercity travel since they moved to New York or Philadelphia, or since they started traveling to other cities on the Northeast Corridor. Typically, these participants learned about the buses from friends. As one participant described, “when you move here [Philadelphia], everyone just starts talking about the Chinatown bus” (Kara). Another claimed that “When I first came to the US, my friend suggested me to take Fung Wah bus” (Claude). One participant, perhaps hyperbolically, stated that the “Chinatown bus is the first thing I learned about when I came to the city [Philadelphia], which was five years ago” (Dena).

During the sessions, I also asked participants whether they were traveling to other cities more often because of curbside buses. Almost all the participants reported traveling to other cities on the Northeast Corridor more often and they mostly attributed this to decreased travel costs. As one participant stated, “[I] made a transition from Amtrak and airplanes to Chinatown bus. I was making many fewer trips because the cost was so prohibitive” (Emma). Another noted that while, “I need to go to New York anyway but I take more trips because it is so cheap” (Janice).

A few participants felt that the curbside buses made it feasible for them to live in one city and work in another. These participants were clear that without curbside buses they would not have attempted to commute: “I would never commute if it wasn’t there. I would never, ever consider commuting” (Emma). Another who lived in New York and worked in Philadelphia noted,

LEWIS: Without these buses, I would not have been able to move back to New York and maintain my job here [Philadelphia]. It would have been fiscally impossible and schedule-ly, if that’s a word, impossible.

The participants’ responses suggest several possible behavioral changes as a result of these new buses. First, a large portion of the growing curbside bus ridership may be former rail passengers. Perhaps Amtrak’s record ridership on the Northeast Corridor during the past ten years would have been even larger in the absence of these curbside buses. Second, by lowering the costs to travel, curbside buses have led some participants to make more trips. And finally, within the curbside bus industry, travelers are switching from Chinatown buses to corporate curbside buses.

Internal factors

According to the focus group discussions, cost, travel-time, reliability, frequency and flexibility, amenities and safety all influence participants’ decision to patronize curbside buses. These factors are all internal factors. The following describes how each of these factors are included in participants decision making about whether to take a curbside bus and which of the curbside bus operators to use.

Cost

In all the focus groups, participants most frequently cited price as the reason why they patronized curbside buses; one participant succinctly stated “it always comes down to the bucks” (Kevin). Others added buses are “the most affordable way to get from point A to point B” (Roger) and “taking buses is the cheapest way” to travel (Claude). Participants talked about the role of price in their mode choice calculus, debated which buses were the cheapest, compared curbside bus fares with other modes, and noted how their mode choice decisions changed when price was not a factor.

According to previous research on transit ridership, price is generally thought to be secondary to quality of service factors such as frequency, travel-time, and reliability (R. Cervero, 1990; Taylor et al., 2009). White (2009), however, suggests that price may be more important in long distance travel than local travel. The focus group discussions suggest that in the case of curbside buses, price is a crucial factor driving ridership growth.

During the discussions, some participants vociferously debated which bus company offered the cheapest tickets, others always patronized the same company, and a few priced out all the options for each and every excursion. Fares on the Chinatown bus, corporate curbside buses and traditional terminal buses are roughly equivalent (see Table 1). However, the average prices may mask differences that the participants experienced. Buying tickets weeks in advance can ensure low prices for the corporate curbside buses, but if participants try to buy them shortly before departure they may be more expensive than other buses.

The strong opinions and debate point to the importance of price as a determining factor in their travel decisions. According to participants, “I would much rather take [the] Chinatown [bus] because it is cheaper” (Megan), “I’ve found that Megabus is less expensive than BoltBus, so I always take it” (Joan), “You’re going to end up spending a little bit more [on Greyhound]” (Dena), and “Actually, Greyhound is not expensive. I took it once, it only cost \$1. But you need to book it really in advance” (Stephen). Rare was the participant who recognized that the fares are more or less the same on the different modes:

EMMA: I started taking the Chinatown bus like, ages ago, from Boston to New York ... Part of the reason I did was that, back then. It was ridiculously cheap. It was \$10 each way - \$10 or \$12. And then all their prices started to ratchet up so that they’re all about the same price as BoltBus or Megabus. So it’s six of one, half dozen of the other, to me.

Participants carefully compared the costs of traveling on curbside buses with competing modes: driving, flying and taking the train. In general, participants preferred taking the bus to driving because it was cheaper: “It is too expensive to drive by yourself” (Glen). Compared to driving, participants felt that taking a bus was more relaxing and their time onboard the bus was useful. One participant stated, “I would drive only if I absolutely had to because it is more expensive and you can’t do anything while you drive” (Zachary). Another noted,

PETER: I tended to take the bus just because it’s more relaxing; I can just kind of sit there and not worry about it. Honestly, I think it’s less expensive than a tank of gas to Boston.

Even compared with carpooling, curbside buses can be cheaper: “I was going with some friends, the last time we were looked into taking a car. It was three people and

it turned out to be more expensive than a bus” (Greg).

Cost was also the main reason why participants choose the bus over Amtrak. Most of the time, participants just did not feel it was worth spending *their* money on Amtrak’s expensive fares. For some, it was a simple cost comparison: “I was a student, I searched Amtrak and [it] was expensive. When my friend told me that the Chinatown bus only costs 15 dollars, I suddenly turned to the Chinatown bus” (Matthew). Others felt that the extra cost did not come with sufficient time savings, “I’ve taken the train, but I think the train takes just as long and the cost is more expensive” (Roger). Another participant talks about her elderly father who was planning to take the bus rather than Amtrak despite physical and possible psychological discomforts,

DOROTHY: My father is older and has incredibly bad knees and is a touch claustrophobic so even last Thanksgiving when my parents came to visit me, he came on the train and my mother came in on the bus because she was feeling that she wasn’t going to pay that much ... But this year, he’s determined that he’s going to try the bus... I think he decided financially that the train was a bit much.

Although participants in the focus groups did not want to pay Amtrak’s high fares, they did appreciate Amtrak’s greater comfort, what they felt was reliable service and avoiding highway congestion. One participant who usually patronized buses described occasionally taking Amtrak as “a treat” (Roy).

Examining instances where participants do not have to pay for their own travel offers further support for the primacy of cost as a determining factor in mode choice. As one participant put it, his decision to take a curbside bus or another mode “depends if cost is a factor” (Eric). Price was not a factor in participants’ decisions when employers or parents paid for their travel or in case of an emergency. In these instances, participants

chose to travel by Amtrak or airplane. As one stated, “There are some times I won’t take the bus. Like, if my work is paying for it, I’m not going to take the bus. I’ll take the train” (Joan). Another noted, “If work is paying, and I’m taking work time off to go to the airport, that’s when I fly” (Jim). Describing an emergency, one participant noted that when “I had to get to DC as soon as I possibly could, I took Amtrak.” (Sharon). Another noted that, “I think if money is not an issue, [take] the train..... I just think it’s nicer, it’s more comfortable, the seats are bigger, [and] it’s fast” (Eileen).

Travel-time

Travel-time also factored into participants’ decisions about whether to take a curbside bus and what bus to take. Participants described complex mental calculus requiring comparisons on travel time from various drop-off points, the probability of encountering highway congestion, whether the bus driver was likely to speed and whether they were comfortable with that.

When choosing between different buses, some focus group participants factored in the travel-time to and from bus pick-up and drop-off locations. One participant described how his decision about which bus to take was based on travel-time from his bus stop to his final destination:

CLAUDE: I choose them depending on where I want to go. For example, the bus stop of BoltBus is in Midtown. If I want to go to the north part of New York City, I will take these buses [i.e. BoltBus]. If I want to go to the south part of New York City, I will take Chinatown buses. So, I do not need to take subway after I get off the bus.

Others talked about habitually using a particular bus based on proximity to their

home, “When I was living in Brooklyn, I’d take the Chinatown because it’s closer” (Samuel).

Access and egress time was one of the reasons why some participants in the focus groups said they favored buses over air travel. As one participant noted,

ROGER: Well the problem with flying is that it takes less time [in the air], however when you go from airport to airport and it right into the city, it takes longer getting to your destination. The advantage of the buses is that basically they leave you at very centric metropolitan urban areas of the city.

Discussions about access and egress were more common among participants who had more experience traveling on curbside buses. Those who had only taken the buses a handful of times did not talk about this aspect of their travel-time calculation.

Participants also talked about how they factored congestion into their mode choice decisions. For example, one participant noted

EMMA: I’ll take Megabus, or BoltBus, or Greyhound, just because, they have a little [exclusive bus lane] that goes right through the [Lincoln Tunnel] so they skip all the traffic.

When comparing buses with rail modes, a few passengers factored in the probability of a delay due to highway congestion. These passengers thought about whether they were traveling on a holiday or during peak hours. One participant described being willing to pay a premium for Amtrak, when the likelihood of highway congestion was high,

JOAN: If I go up [to New York] on a holiday, to my family, I’m not going to take the bus because I’ll sit in traffic for four hours. So even I’ll pay 80 dollars [for Amtrak].

A more problematic set of travel-time savings that participants discussed were

those due to bus drivers speeding and driving aggressively or illegally. While speeding and aggressive driving are typically thought of as safety issues, a subset of participants in these focus groups had positive, or conflicted, feelings about speeding and aggressive driving. As the following statements by participants make clear, they had “divided” feelings about the speeding, relishing the time saved while worrying about their personal safety.

EMMA: The Chinatown buses but they speed. They drive really crazy.... I have divided feelings about it because on the one hand I like getting somewhere really fast and so I'll take the risk but I wouldn't necessarily put that risk on someone else. I feel it is a risk.

MIRIAM: As for the speeding, they go really fast and they do some really questionable things. I remember one time, we were trying to get into the Holland, which is always really crowded going to the road, so the guy went around Jersey City and went down the opposite side of the road [i.e. crossed into oncoming traffic] because it was empty. There was a car coming and he somehow managed to swerve and miss and go right into the Holland [tunnel]. But he did save us about a half an hour so I'm like, 'Thanks!'

Frequency and Flexibility

According to participants, one of the main benefits of the buses in Chinatown is their frequent departures which offer travelers a great deal of flexibility with their travel plans because they do not require a reservation and schedule many trips per day, starting earlier, operating at higher frequencies during the day and ending later in the day than BoltBus, Megabus or Greyhound. In practice, this meant that participants did not need to decide ahead of time when they wanted to depart or even what bus company they would patronize. As one participant noted, “If you don't get [on] one, you can get another one” (Joan). Another stated, “That's the convenience of the Chinatown bus, it comes every 30

minutes” (Kevin).

LEWIS: Chinatown is very flexible. ... Their turn-around on buses is, for the most part, very fast. They have buses always coming in, going out. ... And the hours, I think they are later. I think the last BoltBus is 6:30/7:30. The last Mega is a little later than that but the Chinatown is running until 10/11.

Another participant noted, “If you want to go somewhere without preparation, you can take Chinatown bus” (Iris). Others echoed this sentiment:

EMMA: I would just go to Boston’s South Station and see what’s leaving next.

PETER: That’s my favorite part about Chinatown bus. I don’t have to be so strict on my schedule. I can just grab whenever the next one is, pay cash and be on my way. I hate the “time thing” with BoltBus, Megabus and Greyhound.

MEGAN: I think Chinatown is good if you don’t have very concrete plans. If you decide last minute [that] you want to go to New York. Or just don’t know when you’re going to go back. So it is very flexible.

Corporate curbside buses do not necessarily require purchasing a ticket in advance, but because most of their buses sell out in advance, purchasing in advance is a de facto requirement.

Amenities

For many of the focus group participants, the plugs for computers and onboard Wi-Fi provided by the corporate curbside buses were important reasons why they chose that option. These amenities allowed them to get work done or just pass the time during the trip. While participants clearly appreciated the usefulness of these features, they did not talk about them as influencing their travel choices.

LEWIS: Because I work [in Philadelphia], and I live in New York, so I can get a lot of work done on the bus before I even get to the office. It was really good.

ZACHARY: Same thing. I live here [Philadelphia] and work in New York but it's great to be on the bus for two, two and a half hours and if you're working it's not a big deal.

Another participant felt "I think the wireless also makes a huge difference ... the ability to get work done while you're riding was huge" (Suzanne). Even participants who were not using the wireless to work appreciated the ability to plug in electronic devices "just to keep, say a DVD player, or to charge something that's dying" (Dorothy).

Corporate curbside buses were first among intercity providers to offer onboard outlets and onboard wireless, though it has since become common among many of the intercity bus carriers. At the time of the focus groups, some airlines were offering wireless (though unlike the buses, it was not complimentary, and power outlets are on some but not all planes). Greyhound had recently upgraded some of the buses operating on the Northeast Corridor with onboard wireless and outlets. These new Greyhound buses are very similar to buses used by BoltBus (which Greyhound jointly owns with Peter Pan) though only a few participants were aware of these changes. After these focus groups were completed, some Chinatown buses and all Northeast Corridor Amtrak trains began providing onboard wireless internet. However, SEPTA/NJT does not have onboard wireless internet, though there are a few power outlets on each train car.

Safety Concerns

Focus group participants weighed the operational advantages of curbside buses against serious concerns about their safety. Participants in every focus group repeatedly brought up this topic. Many focus group participants felt that the Chinatown buses were

less safe than other buses and this perception led some to switch from using Chinatown buses to corporate curbside buses. As one participant dramatically put it, “I haven’t taken the Chinatown bus in a long time. I stopped taking it because I felt like I was putting my life on the line every time I took it” (Joan). A number of participants explained their switch from using Chinatown buses because they heard about accidents. As one put it, “in Chinatown, there’ve been tons of accidents that I know of... I try to stay away from the Chinatown bus unless absolutely necessary” (Lewis). Another described hearing “horror stories,”

VANESSA: I took [the Chinatown bus] when I first got to New York like, three years ago. ... I didn’t have a problem with it at all. But I had a friend who was coming from Baltimore to come visit me and on their way, they got in an accident so that kind of changed my opinion. And I heard of a lot of other horror stories. [They are] smaller, more private so they can kind of get away with not as much regulation on them. So that’s kind of when I stopped doing that. And then Megabus and Bolt came in and I’ve had great experiences with them.

Others avoided the Chinatown bus all together because of their reputation: “I never took the Chinatown bus because of the stories I was too scared” (Jim). Many participants expressed concerns about bus drivers speeding, driving recklessly and talking on the phone while driving. These complaints were more common when discussing the Chinatown bus than other buses. Recent research has found that curbside buses are less safe than traditional terminal buses, though this work did not make a distinction between Chinatown buses and other curbside carriers (Cheung & Braver, 2012).

According to one participant, “the Chinatown bus, their drivers are a little more reckless” (Janice). Another described how she was “stressed” onboard a Chinatown bus

because the driver was “a lunatic... he was cutting people off ... you could see he was on the phone the entire time. And he just seemed to have road rage” (Eileen). In addition, a number of participants observed bus drivers talking on their phones while driving.

DENA: With Chinatown, a couple of times, I’ve had bus drivers who have just been on their cell phones talking really loudly through the entire trip.

MODERATOR: Has anyone else had that experience with the cell phone? Just raise your hands [2 others raise their hands]. ZACHARY: I’ve seen it on the BoltBus, I don’t know if I’ve seen it on the Megabus. Except for when they are trying to figure out how to get around a detour.

LEAH: The drivers may be on their cell phones; talking through the entire trip.

ERIN: They are not professional. LEAH: This is not only not professional, it is really bad. It is very dangerous. MODERATOR: Did any of you encounter similar situation on Greyhound or Megabus? ERIN: No IRIS: Never. CLAUDE: At least not taking through the entire trip. IRIS: They do not have personal calls. LEAH: I agree. The drivers from other bus companies will not have their personal call. They may be on their phone with the bus company to talk about dispatching or some other things. But they will not talk about personal stuff.

Participants’ safety concerns were not limited to speeding and distracted driving.

A few participants were on board buses that got in accidents. One participant noted that one Chinatown bus she was on was “in an accident and we hadn’t even left Manhattan” (Joan). She went on to note that, “I don’t think it was an accident that it was a Chinatown bus that got in an accident” implying that these particular buses are not safe.

Not all participants believed that the Chinatown buses were less safe than other buses. One participant, talking about the corporate curbside buses, suggested that perhaps it is “just because you [know] that they are new buses and you think that they’re more safe” (Megan). Another, who had not ever been on a Chinatown bus, referred to the rumors she heard about these buses as “all second-hand or even worse, tall tales ... the tales of spontaneous combustion, breakdowns, drivers who don’t speak a bit of

English.... It can happen on any bus” (Dorothy). Similarly, a participant in the Mandarin focus group suggested that the media may report accidents involving Chinatown buses differently than when other buses are involved in accidents. This participant noted that,

EUGENE: American buses also have traffic accidents. They just do not report their accidents in the newspapers in an impressive way. [Laughing] Every bus has a risk of traffic accident.

Despite concerns, many of the participants continued to use the Chinatown buses. As one participant said, “I heard stories about breakdowns and accidents a lot. ... But it just wasn’t enough for me to deter me from taking the Chinatown bus” (Eric). Another participant summed it up: “I take it because it’s cheap! If I want to ride safe, I go Greyhound. But if I want to ride cheap, I’m taking the Chinatown bus” (Kevin). The same participant went on to explain,

KEVIN: Do you have the same expectations from the Greyhound driver as you would from the ten-dollar driver [Curbside Bus]? That’s like saying you have the same expectations from a ten-dollar shoes versus a pair of Vera Wang or Jimmy Choos. I’m not worried about the bathroom, the crazy psychopathic driver. I just get on and get off and get to New York and have some extra money. So I just pay 10 dollars.

The Chinatown bus is not necessarily cheaper than other buses. If they book early, participants can book similarly priced fares on corporate curbside buses or on Greyhound.

Finally, participants talked about how their feelings of personal safety at the bus pick-up and drop-off locations influenced their travel decisions. More often than not, it was women who voiced concerns about this particular aspect of safety (similar to research on feelings of safety among men and women at local bus stops, e.g. Loukaitou-sideris, 1999). However, there was no clear consensus about whether one particular bus

terminal or curbside station was more or less safe. Participants' perceptions of safety often depended on the time of day and whether they were traveling alone. When traveling at night, a number of women talked about avoiding Chinatown. As one noted, "When I've traveled at night, by myself, I've had to take Greyhound, even though I didn't want to, just because it has a terminal where I can sit down and wait" (Megan). Though participants did not necessarily enjoy the bus terminal or traveling on Greyhound, for nighttime travel they viewed the terminal as safer than waiting on a street corner in Chinatown.

Perceptions

Beyond the rational choices, operational advantages and safety concerns, participants revealed a set of emotional and experiential factors that coalesced into a set of perceptions about each type of intercity bus. Operators can attempt to influence perceptions of their service but myriad social forces such as media representations, past experiences, rumors, stereotypes, and biases might also influence these perceptions. As such, perceptions do not fit easily into either the internal or external categories researchers typically use to analyze changes in transit ridership.

Additionally, perceptions are not limited to the characterizations of the different bus types presented below. The descriptions of internal factors described above are the focus group's perceptions of cost, travel time and safety.

Traditional terminal buses

Most participants in the focus groups had an overwhelmingly negative view of traditional terminal buses and terminals themselves, avoiding this option when possible. As one participant noted, “Greyhound sucks. I have never had a good experience with Greyhound” (Jananne). Participants characterize these buses and terminals as unsafe, used by drug addicts and the mentally ill.

The following analysis of participants’ statements of traditional terminal buses only represents the voices of the focus group participants recruited from curbside bus stops. Thus, these are travelers who have already made a choice not to use traditional terminal buses. However, the post-focus group questionnaire reveals that one-fifth of the focus group participants had taken a trip onboard a Greyhound bus on the Northeast Corridor in the 12 months prior to the focus group session.

This negative perception of typical users was one of the main reasons participants claimed they stopped using Greyhound. As one participant put it, “I haven’t taken a Greyhound in a long time and the reason I stopped is that, the people ... People throwing up, you know, a couple of arguments.” (Roy). Another claimed he frequently encountered “conspiracy theorists on Greyhound,” the kind who “want to talk to you about their conspiracy about 9/11 and those kind of people” (Jeffery). Yet another described Greyhound passengers as “weird people ... really strange people who shout at bus drivers, engage in weird ways at the bus stop” and because of this, he said, “I’d rather not take Greyhound” (Greg). This participant, and another, went on to describe how there is a certain class of Greyhound passengers who are strange or weird.

GREG: There is a certain group of people, who travel the country wandering around, taking Greyhound. They know that Greyhound runs and they only take Greyhound and not everyone on the Greyhound bus is like this but there are a lot of people who just kind of go around taking Greyhound buses and they are very strange people. JANICE: That's why I have always avoided Greyhound because I feel like that whenever I go to the Greyhound station. MODERATOR: Feel like what? JANICE: A weird feeling.

Another participant talked about having to sit next to drug addicts on Greyhound buses.

DENA: I've only taken Greyhound maybe a couple times in the last three to four years and both times I have been sitting near drug addicts who have lost their phones or whatever, they are trying to get somewhere and they ask to borrow my phone. It is bizarre; you get into these weird conversations.... I don't know how I know that they are drug addicts. MODERATOR: So they didn't use drugs on the bus? DENA: No, no, it's just their actions. MODERATOR: Can we contrast that, or compare that, to the people that take Chinatown bus, or Bolt or Megabus? Is there a different group of people or is the same conspiracy theorists riding all the buses? DENA: Most people [on the Chinatown bus or Corporate curbside buses], from what I see, people are on the buses are people who are traveling to New York for reasons for pleasure; they want to tour the city or maybe a younger crowd. I don't see many [business travelers].

The reality of a trip onboard a traditional terminal bus or to a traditional terminal is likely more mundane than these descriptions. Recent ethnographic accounts of riding Greyhound buses throughout the US describe passengers mostly trying to keep to themselves (Kim, 2012), though there may be differences between longer cross country trips and the shorter intercity trips described by participants in my focus groups.

In addition to undesirable passengers, focus group participants also felt like bus terminals themselves were undesirable, describing them as dangerous places where they felt uncomfortable and worried for their personal safety. Describing the Port Authority Bus Terminal in New York, one participant noted that "it seems so miserable in there" (Roy) and another expressed a fear that "someone is going to come out with knives and

take care of business” (Roger).

Concerns were not limited to New York. Participants disliked and felt unsafe at the bus terminals in Philadelphia and Washington DC as well. According to one participant, the Philadelphia bus terminal, “is strange; it really does make you uncomfortable” (Zachary). Another said of the Philadelphia bus terminal, “That’s called the bad one” (Roy). Participants did not talk much about the Boston bus terminal (South Station) where both curbside buses and traditional terminal buses stage operations.

These negative perceptions of the bus terminals factored into participants’ travel decisions; they chose not to patronize the buses that use them. According to other participants, “The Philly Greyhound station is awful. I never leave on Greyhound from Philly. I only take it to Philly” (Emma). Another claimed that she would never use Greyhound because “it would require using those two end points,” i.e. the bus terminals (Sharon). One participant, who recognized that the costs on the various buses are roughly similar, claimed he could not “stomach” going to the bus terminal,

ROGER: At some point, Greyhound was trying to compete with the lower end buses; you know Lucky Star and Fung Wah bus. Again, it just, when it comes down to it, to me, it’s too much of a rough environment for me to deal with. I can’t stomach it. As a working professional, I have my boundaries. I just don’t go there.

The fact that participants in the focus groups have negative perceptions of bus terminals should not be surprising. But what is surprising is that curbside buses have been able to distance themselves from these negative perceptions. Despite the fact that curbside buses stage operations on street corners where they lack any amenities, even the most basic things like seating, restrooms or cover from the elements, participants readily

used and recommended using curbside buses because it meant avoiding the bus terminal.

SHARON: I'd have to say, I wouldn't be very comfortable advising a female friend to take the bus to DC, to their bus terminal, to the Greyhound but I would tell them it's OK to take one of the buses to let you in Chinatown, during the day.

DOROTHY: It's kind of nice to not land in Port Authority at something like one in the morning. Strangely enough, being right outside Penn Station, where it [BoltBus] lands now, outside of the Fashion Institute [nearby, where Megabus drops off passengers], is a little less sketchy because there's always people around and there's usually people from Megabus there. Or at least it's a well-traveled area. It can be painful in the middle of summer and it can be awful in the rain, but that's what I figure [that] for what I'm paying for that's I get.

A few focus group participants who had recently taken a Greyhound bus shared positive experiences. One participant described recent upgrades of the Greyhound fleet making them similar to the corporate curbside buses, noting that the bus “had wireless internet [and a] plug-in on both sides of every seat” (Iris). Another was pleasantly surprised with the comfortable seats on the Greyhound buses, “I thought I was on a jet. I mean the comfort. It's worth it.” (Wes). And finally, the one participant who patronized Greyhound frequently noted that she actually felt safer at the Port Authority Bus Terminal late at night than in Chinatown,

EMMA: I always feel really safe there. I've been there at, like, 3 o'clock in the morning ... I've never felt unsafe. There's always people walking around who work there and everyone has always been very friendly, like if you're lost, they are more than willing to help you. Whereas the times that I've gone, and taken the Chinatown bus, it's been a little bit more, for me, it felt a little bit unsafe.

Corporate curbside buses

Focus group participants had positive views of corporate curbside buses which they repeatedly characterized as “professional.” Participants use the word “professional”

to capture the corporate ownership of these buses, their presumed reliability and stability, and to characterize the passengers on the buses. Further, they used the word as a foil to contrast the attitude of the corporate curbside buses to the traditional terminal buses and the Chinatown buses. One participant described the corporate curbside bus companies as “real companies” which were not going to disappear between the time she booked her ticket and traveled (Dorothy). According to this participant, she felt comforted that corporate curbside buses are “real companies” that “been in business for a number of years. It wasn’t the, ‘Oh they’re here to steal my money and I’m not going to get home’” (Dorothy).

As indicated earlier, the perception of these buses as professional was not the only reason passengers used corporate curbside buses. Passengers clearly appreciated the amenities that these buses offer, such as the ability to buy guaranteed seats online in advance as well as onboard wireless internet and power outlets for their personal electronic devices.

Another participant described how she got the “professional feel” from the bus company even before boarding the bus. The bright painted logos covering the sides of the buses, the uniforms that the drivers wear, and the orderly boarding process all inspired confidence in focus group participants. She went on to state that the buses are

DENA: professional starting from the fact that it’s easy to buy tickets online and then when you get there, they... you just show your cell phone and you go into the bus and you have the internet connection. It’s cleaner, newer, the people who are driving have uniforms, you can easily tell who your driver is and you can communicate with your driver.

Compared with the Chinatown buses, corporate curbside buses “just look more

professional” (Lewis). Participants also used the notion of professionalism when describing the corporate curbside buses’ communication. One participant noted that, “they had people there directing and making sure people got on the correct bus and it wasn’t like it was willy-nilly” (Eileen).

With the corporate curbside buses, passengers took comfort knowing that they could call a central office if there was a problem or complain directly to the driver, “They have a 1-800 number that you can call if something was wrong, they would send someone there if anybody was in the area” (Lewis).

Interestingly, participants also used the word professional to differentiate the passengers on the curbside buses from other bus passengers. Participants described the corporate curbside passengers as “professional, all typing on their computers and trying to do things” (Samuel) and noted that there are “a lot of people are professionals or graduate students” on the corporate curbside buses (Sharon). Another participant noted that the corporate curbside passengers did not comport with his idea of intercity bus passengers. He observed “a lot of what looked like affluent couples. I was surprised because of my perception of people who ride the bus is more like blue-jeans and all that” (Travis). One participant claimed that she did not take the corporate curbside buses because she was not a professional and did not need to work on the bus:

MODERATOR: You said earlier, you were talking about, you don’t take the Megabus because you said it’s too “frou-frou.” MIRIAM: Like I said ... most of the time by the time I get there I’m tired so I’m taking a nap. I can understand maybe for like a professional who needs that type to type away, maybe he needs the internet. But I personally don’t really see the need for that ... All I’m going to do is sit, maybe nap, or stare out the window to cows, or something like that

Participants also differentiated the corporate curbside buses by noting that these

buses, as compared to others, might be acceptable to their parents. This claim that their parents (or grandparents) currently patronize or would consider patronizing corporate curbside buses suggests a broad social acceptability of these buses. As one noted, “I’ve had my parents come visit me on the Megabus” (Joan). Another noted that she might even advise her grandmother to use the bus,

VANESSA: I would be comfortable with her [my mom] taking a Megabus ... I wouldn’t necessarily send my grandmother on [Megabus] ... [but] if I had been there before with them and done a trip with [my grandmother], I think I’d be comfortable with sending them on the bus.

In contrast, no one mentioned their parents when discussing traditional terminal buses, and references to parents taking the Chinatown buses were more negative. One participant said, “My parents were visiting and I did take them to Chinatown but I wish I hadn’t” (Megan) and another said that “I took my Mom on the Chinatown bus once and she definitely didn’t like it” (Emma).

Chinatown buses

According to the focus group participants, taking the Chinatown bus is more than just a bus ride. Participants described taking the Chinatown bus as a way to experience an immigrant neighborhood and immerse oneself in a cultural experience. The decision to take a Chinatown bus goes beyond considerations of price, frequency and other operational aspects (though these are certainly important) to include an experiential aspect of immersing oneself in an immigrant enclave, however briefly.

Participants in the English and Mandarin language focus groups talked about taking the Chinatown bus in different ways. For participants in the Mandarin language

focus group, part of the appeal of the Chinatown bus was the location in Chinatown and that Chinese immigrants operate these buses. As one participant noted, “psychologically, Chinatown just feels more convenient...If something happens, it would be easier to communicate and solve the problem because we have the same culture” (Erin).

Additionally, the location in Chinatown provides access to familiar goods and services:

GLEN: When you get off the bus at 2:00am at night and feel hungry, it is easier for you to find someplace to eat in Chinatown than in Midtown. Also, after you get off the bus, you can call the taxi run by Chinese.

Among Mandarin speakers, the fact that the Chinatown bus operates in Chinatown and that the operators are members of the same diaspora is appealing for practical reasons. The shared culture and language made certain aspects of travel easier.

In contrast, for many non-Chinese participants in the English language focus groups, part of the appeal of the Chinatown bus is that it enables passengers to engage, however briefly or shallowly, with a different culture. For these participants, the Chinatown bus is an exotic adventure, a form of cultural tourism or slumming (Klein & Zitcer, 2012). One participant who regularly took the Chinatown bus kept a journal of experiences on the bus of meeting and interacting with people from different cultures.

EMMA: I kept a little journal for a little while when I first started doing it because you kind of learn a lot about people when riding the Chinatown bus. And the way they interact with people in really close quarters, and also you see so many cultures, all in one place. It is just thousands of different types of people, who ride the Chinatown bus, and I really liked that and I liked listening to the different languages.

Participants in the English language focus groups also talked about buying food in Chinatown before boarding the bus (e.g. noodles or bubble tea) and hearing the driver speaking “another language” (Dena). One participant described how taking the

Chinatown bus was different from other buses,

MEGAN: The Chinatown bus is more like a phenomenon ... it is not just like a company who said, "Oh, we're just going to transport people from Philly to New York." It has more to do with that it comes from Chinatown to another Chinatown. That at first it catered to a particular group of people. ... I guess since it is more like an experience. It is not like "Oh, I am taking a bus or I am taking the train." It is, "I am taking the Chinatown bus!"

The perception of the Chinatown bus as a form of cultural tourism may not translate to continued ridership. One participant who used the Chinatown bus regularly found that eventually, "the charm wore off ... I pretty much 90% of the time will not take a Chinatown bus" (Emma). Perhaps the experience of taking the Chinatown bus has become less of a cultural experience as the companies have become less reliant on Chinese immigrants. Referencing the changing demographic profile of riders was a common trope among the participants, particularly as a way to mark themselves as experienced users of the Chinatown bus. As one said, "When I first took the bus in Boston, most of the [passengers were] Chinese. When I left Boston, 90 percent of the bus passengers" were not Chinese (Leah). The combination of a changing ridership and a growing sense that the Chinatown buses are not safe may cause participants to be less enamored with the cultural tourism of taking the bus.

Discussion

The focus group discussions with curbside intercity bus passengers focused on two research questions that have implications for our understanding of intercity travel behavior. First, how and why has the travel behavior of these participants changed over time? Second, how do passengers make mode choice decisions for long-distance trips?

According to focus group participants, curbside buses may influence travel behavior. First, the focus group discussions suggest that many curbside bus passengers switch from Amtrak and commuter rail (between New York and Philadelphia) to buses. According to these focus group participants, the reason, for this change is the lower costs of curbside service compared to Amtrak and the greater convenience of curbside service compared to commuter rail. Second, many focus group participants in talked about transitioning from primarily using the Chinatown buses to primarily using corporate curbside buses. According to participants, they switched modes not only because of concerns about safety and reliability but also because of the amenities offered by corporate curbside buses. Following these focus groups, the FMCSA shut down almost all of the Chinatown buses, supporting the focus group participants concerns about the safety of these buses.

When curbside intercity bus passengers make decisions about how they are going to travel, two very different types of factors enter into their decision-making process. On the one hand, travelers consider economic, operational, physical and locational attributes about each mode. Above all else, participants emphasized the importance of cost in their choice to take a curbside bus and which type of bus service to use. The primacy of cost as a deciding factor in participants' decisions was underscored by their choice to use rail when cost was removed from their mode choice calculus, such as when participants' employers paid for their travel. The focus groups also suggest that scheduled reliability, frequency, flexibility, location of staging areas and travel-time are important in participants' travel decisions. Onboard amenities, wireless internet and power outlets are

less important. Safety concerns, both onboard the bus and at the bus stop, play a role, though more so for some people than others.

On the other hand, participants made it clear that their perceptions of the different buses influenced their travel behavior. These perceptions were unexpected and not part of the focus group topic guide. Participants avoided traditional terminal buses because they perceived them as undesirable, associated riding the Chinatown bus with a form of cultural tourism and saw the corporate curbside buses as professional. The three distinct perceptions about these bus services are important, but it is not clear how big a role they play in influencing travel behavior and to what extent they are distinct from or independent of the operational aspects of each bus service.

For transit planners and policy-makers, improving perceptions of transit modes could be a useful tool for increasing ridership. The experiences of curbside intercity buses may be instructive as changes have resulted in widespread changes in the perception of intercity buses as a viable mode for travel on the Northeast Corridor. If changes in the perceptions of intercity buses lead to large increases in ridership, there may be opportunities for local planners to improve perceptions and thus increase transit patronage.

CHAPTER 3: GET ON THE (CURBSIDE) BUS: THE NEW INTERCITY BUS PASSENGERS

Curbside buses have brought about not just an overall increase in the number of travelers choosing to go by bus, but also a shift in *who* is riding buses and *what* types of modes intercity travelers prefer. This chapter outlines these changes via a passenger intercept survey that addresses the following three questions.

First, who uses curbside buses? Analysis of the ridership on intercity buses provides a way to understand the changing demographics of intercity bus travel. Second, what is the effect of curbside buses on competing intercity modes? If curbside buses attract passengers who otherwise would have driven, then the net environmental impact of these buses is likely positive. However, if most riders switch from possibly more energy efficient trains to buses, then the net environmental impact may be negative. Third, how prevalent are safety and operational problems on intercity buses? Coinciding with the rapid ridership growth and expansion of curbside buses has been an increase in public concern about the safety of curbside buses and the negative impacts on neighborhoods where buses stage operations. The survey also provides some basic information about the incidence of a small number of problems found across curbside and traditional terminal based intercity buses.

As stated in the previous chapter, since the completion of this survey in 2010, the curbside bus industry has undergone significant changes. In 2012 and 2013 the Federal Motor Carrier Safety Administration (FMCSA) cited almost all of the Chinatown buses which pick up and drop off in Chinatowns on the Northeast Corridor, for safety and

licensing violations, and subsequently shut them down (U.S. Department of Transportation, 2012, 2013).

Changing Intercity Bus Market

During the post-WWII era, intercity buses experienced a long decline, as many travelers came to view the intercity bus as a mode of last resort, and travelers with the means took to the air or drove (Meyer et al., 1987; Walsh, 2000). As early as 1956, Greyhound's own studies showed that intercity buses were disproportionately used by the young, the old, females, African-Americans and the poor (Jackson, 1984). Greyhound reinforced these trends by actively courting the black, Latino, college age and senior markets through advertising, community outreach and services tailored to these populations (Jackson, 1984; Walsh, 2010). In 1972, almost 30 percent of intercity bus passengers had incomes below \$5,000 (~\$28,000 in 2013 dollars), compared with less than 9 percent of travelers on other intercity modes (Meyer et al., 1987, p. 2). In addition, almost half (47.9 percent) of intercity bus passengers were "either under 18 or 65 and older" compared with roughly one third (30 percent) on other intercity modes (Meyer et al., 1987, p. 276). The deregulation of the intercity bus industry in the early 1980s did little to change the perception of intercity buses, help the economic position of bus companies, or stop the declines in ridership (Fischer & Schwieterman, 2011). Intercity bus ridership in the 1980s and 1990s was disproportionately comprised of the young, the old, females, minorities, and the poor (Bricka, 2001; Meyer et al., 1987; U.S. Department of Transportation, 1998).

Since the advent of curbside buses, research on intercity bus passengers has been sparse, but suggests that curbside buses are altering intercity travel patterns.

Schwieterman and Fischer (2012) recently surveyed over 1,000 passengers boarding buses in the Midwest and in the Northeast, finding that curbside buses are generating significant amounts of new travel, that roughly one-third of curbside bus passengers would have used rail if the curbside bus was unavailable, and that three quarters of curbside bus passengers are 18 to 35 years old. While providing some basic information, the study offered a limited demographic profile of curbside bus users (only age and sex were reported) and excluded passengers on the Chinatown buses. Similarly, a small UK-based survey (100 respondents) of curbside bus ridership found that compared with passengers on the established carrier (National Express), Megabus passengers are younger, more likely to be students, and less likely to own a car (White & Robbins, 2012).

Until recently, researchers paid little attention to the problems associated with curbside buses. An analysis of bus crashes and inspections found that although curbside bus companies represent only a small fraction of the total number of bus operators in the US (most are charter bus companies), they have the highest rates of crashes per vehicle and more driver violations (for driver fitness and fatigue); though surprisingly, they have lower rates of unsafe driving and vehicle maintenance violations compared with conventional carriers (Cheung & Braver, 2012). These problems are compounded by challenges facing regulators who enforce existing regulations. Focus groups with bus inspectors, investigators, and drivers suggest that regulators are unable to keep up with

the rapidly growing industry, in particular with curbside operators. This is because they do not use bus terminals, en route inspections are difficult, bus companies frequently misreport information, fines for violations are low and bus companies have been able to easily reincarnate as a new company when violations rack up (Braver, Dodd, Cheung, & Long, 2012). The market may not solve these problems independently. In the only study of passenger experiences using focus groups, passengers continued to use the Chinatown buses despite perceiving them to be unsafe and observing drivers speeding, talking on cell phones, and buses getting into accidents (Klein & Zitcer, 2012). However, because of the small number of focus group participants these findings are tentative.

Passenger Survey

In the summer of 2010, I surveyed 770 intercity bus passengers about their intercity travel on the Northeast Corridor across all modes, how frequently they have observed problems on board the intercity buses, and their basic demographic information. I include the survey instrument as an appendix. Because intercity bus users are a small portion of the overall population, I used an intercept method to administer the survey to passengers waiting to board intercity buses in New York and Philadelphia, with the help of several research assistants. Survey teams of two arrived 30 minutes prior to the scheduled departure to survey waiting passengers. I instructed research assistants to ask each passenger waiting to board the bus if he or she would participate in the survey. The survey took three to five minutes to complete.

In total, we collected 770 valid responses, of which 86 percent (667) were

collected in Philadelphia (see Table 2). We had less success in New York City because the research assistants did not speak Mandarin, Cantonese or Fuzhounese there, and because administrative hurdles made it difficult to administer many surveys at the Port Authority Bus Terminal in New York (One of the research assistants collecting surveys in Philadelphia was a native Mandarin speaker and this may have helped increase the response rate in Philadelphia). I asked the interviewers to estimate the refusal rate, the share of potential survey respondents who declined to participate in the survey. In Philadelphia, research assistants estimated that the refusal rates were roughly 10 percent for corporate curbside bus passengers, 20 percent for traditional terminal buses and 25 percent for Chinatown bus passengers.

Table 2 Survey distribution

	New York	Philadelphia	Total	Percent
Chinatown Bus	4	227	231	30.0%
Corporate Curbside Bus	99	226	325	42.2%
Traditional Terminal Bus	0	215	214	27.8%
Total	103	668	770	

Because I administered this survey in Philadelphia and New York, the set of intercity travel modes includes commuter rail in addition to the more traditional intercity modes: intercity bus, Amtrak, car, and airplane. As explained earlier, commuter rail is an option for intercity travel between Philadelphia and New York. Leaving from Philadelphia, travelers can board a Southeastern Pennsylvania Transportation Authority (SEPTA) commuter rail train to Trenton Transit Center in Trenton, New Jersey. There,

travelers can transfer to a New York City bound New Jersey Transit commuter rail train.

There are several limitations to this survey. The data were only collected in New York and Philadelphia and the populations and experiences of bus passengers in other parts of the country may vary. The survey only collected a small number of Chinese language responses (19) and thus may underrepresent Chinese language speakers. Finally, the survey excludes travelers who choose not to take intercity buses. As a result, I exclude anyone who tried curbside buses but then continued to use other modes. Including these individuals could lead to overestimating changes in travel behavior because I only look at curbside bus passengers. Further, the results may underestimate the number of issues relating to the safe and reliable operation of the buses by excluding persons who had negative experiences on these buses and then switched to other modes. Finally, I did not collect survey refusal rates in a systematic fashion and thus do not have a better picture of whether refusals were more common among particular population groups (for example, I do not know if they were more common among passengers of Chinese descent).

Findings

In the analysis below, I classify survey respondents as Chinatown, corporate curbside, or traditional terminal bus passengers based on where we surveyed them. For example, I classified persons surveyed prior to boarding the Chinatown bus as “Chinatown bus passengers.” This approach only makes sense if travelers consistently use the same bus or mode. I evaluated this by analyzing the number of round trips

respondents took in the previous year on each mode on the Northeast Corridor. If passengers consistently used a variety of modes, then classifying passengers as “traditional terminal bus” or “corporate curbside bus” passengers would have been inappropriate.

Table 3 summarizes the number of trips made by all passengers on each of the three bus types. (While passenger recollection of their intercity trips may not be 100 percent reliable, there is no a priori reason to suspect that their responses are biased) The summary data suggest that Chinatown bus riders primarily use the Chinatown buses. The median number of trips taken by these passengers on this mode is 2 and the mean number of trips is 9.3. The mean is particularly high because a small number of participants who made a very high number of trips onboard Chinatown buses during the past year. (Three participants reported making over 100 trips and one of them reported that they made 200 round trips on the Chinatown bus during the past year). Passengers surveyed boarding corporate curbside bus and traditional terminal buses used other modes at a higher rate.

Table 3 Intercity round trips during the previous 12 months to cities on the Northeast Corridor

	Surveyed at Chinatown bus			Surveyed at Corporate bus			Surveyed at Traditional Term. bus		
	Median	Mean	St. Dev	Median	Mean	St. Dev	Median	Mean	St. Dev
Chinatown Bus	<u>2.0</u>	<u>9.3</u>	<u>22.0</u>	0.0	0.5	1.8	0.0	0.4	2.1
Corp. Bus	0.0	0.7	3.0	<u>2.0</u>	<u>4.6</u>	<u>8.5</u>	0.0	1.1	3.9
Trad. Term. Bus	0.0	0.3	0.9	0.0	0.2	0.7	<u>1.0</u>	<u>3.5</u>	<u>9.6</u>
Driving	0.0	2.2	8.3	0.0	2.4	7.0	0.0	1.9	4.5
Amtrak	0.0	0.6	3.7	0.0	1.0	3.6	0.0	0.8	2.5
SEPTA/NJT*	0.0	0.3	1.6	0.0	2.0	8.7	0.0	0.3	1.9

*note: SEPTA/NJT only includes respondents surveyed making a trip between PHL and NYC

Figure 6 graphs the share of each survey respondents’ trips made on the mode

where the survey was collected. The graph confirms that most Chinatown bus passengers primarily use this mode. Fifty-two percent of respondents who boarded a Chinatown bus took 75 percent or more of their intercity trips using Chinatown buses. Further, 70 percent of survey respondents took 50 percent or more of their intercity trips on these buses. Sixty-four percent of corporate curbside bus passengers took 50 percent or more of their trips on corporate curbside buses. However, only 46 percent of traditional terminal bus passengers used these buses for 50 percent or more of their intercity trips (which may suggest dissatisfaction with these buses). This analysis suggests caution in interpreting the survey analysis of traditional terminal bus passengers since they often use other modes

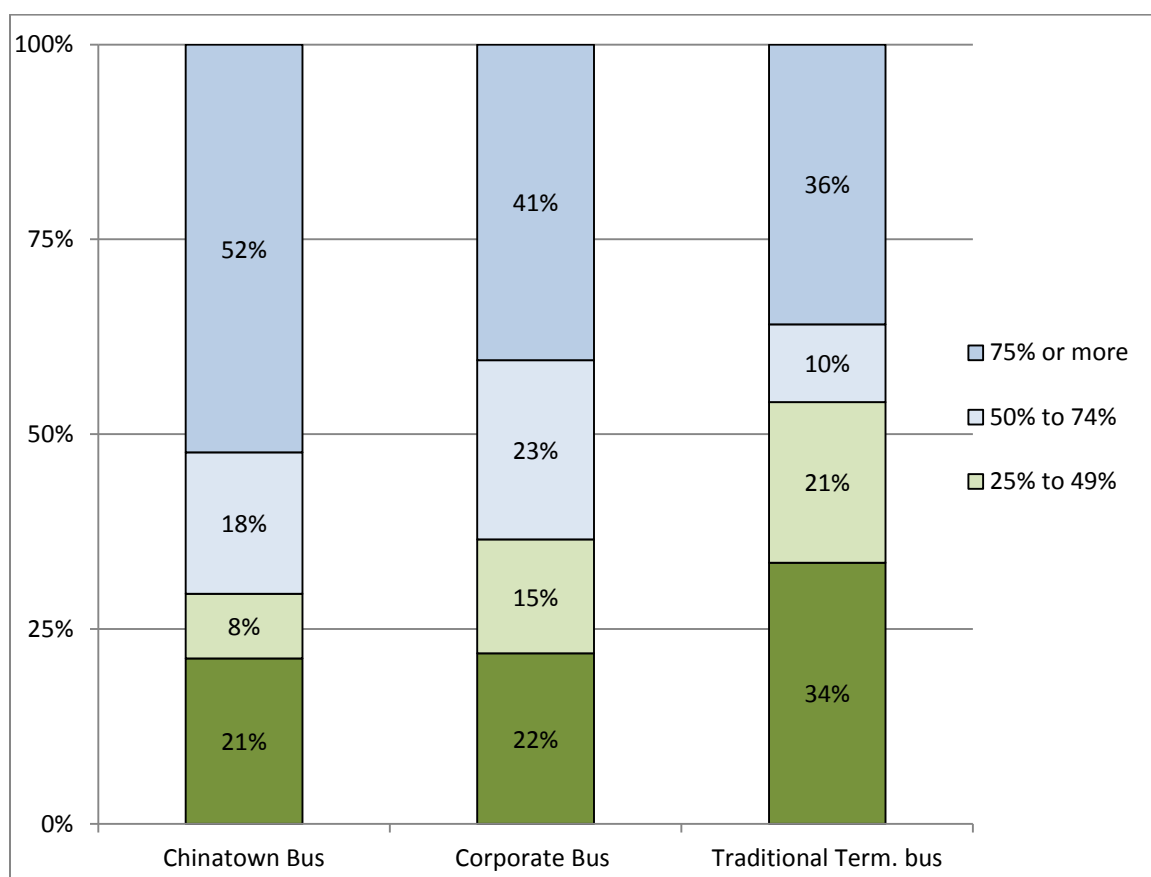


Figure 6 Share of trips made by each respondent on their surveyed mode

Passenger demographics

The Chinatown and corporate curbside buses attract passengers that are markedly different from traditional terminal bus passengers across age, sex, income and race/ethnicity.

Table 4 summarizes the demographics data from the intercept survey. Chinatown bus respondents are younger than traditional terminal bus passengers. Compared with the other bus passengers, a larger share of the Chinatown bus respondents are male. This finding is notable since previous research on intercity bus travel (prior to the rise of curbside buses) consistently found that women used intercity buses at higher rates than men. The lower share of female passengers boarding the Chinatown bus could reflect some aspect of these buses that make women feel less comfortable using these buses. In the focus groups, some women did report avoiding the Chinatown bus at night out of concerns for their safety at the bus stop. However, the lower share of female passengers could be a potentially higher rate of refusals among women to complete the survey.

The survey data also show that a higher proportion of the Chinatown bus respondents were Asian/Pacific Islander (26 percent) compared with 14 percent on corporate curbside buses and 8 percent on traditional terminal buses. However, White passengers made up the largest race/ethnic group on all the buses (37 percent on Chinatown buses). Fewer on the Chinatown bus were working full-time (41 percent) and more were employed part-time (18 percent) compared with traditional terminal buses (51 percent employed full-time and 10 percent employed part-time). These rates of full- and part-time employment were the same for passengers on the Chinatown and corporate curbside buses. Other demographic differences were not statistically significant.

Table 4 Intercity Bus Passenger Demographics

	Corp. Curbside Bus A	Chinatown Bus B	Traditional Bus C	T-tests or pr-test sig.		
				A vs. B	A vs. C	B vs. C
Count	325	231	214			
Survey in English (%)	100%	92%	100%	p < 0.01	n.s.	p < 0.01
Gender (% female)	56%	46%	59%	p < 0.05	n.s.	p < 0.01
Household Income (%)						
Less than \$40,000	40%	46%	42%	n.s.	n.s.	n.s.
\$40,001 to \$80,000	30%	36%	37%	n.s.	p < 0.10	n.s.
Greater than \$80,000	31%	18%	20%	p < 0.01	p < 0.05	n.s.
Household Size (median)	2.8	3.0	2.8	n.s.	n.s.	n.s.
Has access to auto (%)	47%	42%	46%	n.s.	n.s.	n.s.
Auto owner (%)	66%	64%	66%	n.s.	n.s.	n.s.
Age (mean)	29.4	27.8	30.3	n.s.	n.s.	p < 0.05
18 to 35 years old	75%	79%	68%	n.s.	n.s.	p < 0.01
36 to 50 years old	14%	12%	16%	n.s.	n.s.	n.s.
51 to 65 years old	8%	5%	8%	n.s.	n.s.	p < 0.10
Over 65 years old	3%	4%	8%	n.s.	p < 0.10	p < 0.10
Race/Ethnicity (%)						
Af-Am./Black	12%	25%	30%	p < 0.01	p < 0.01	n.s.
Asian (API)	14%	26%	8%	p < 0.01	p < 0.05	p < 0.01
Hispanic	7%	8%	14%	n.s.	p < 0.10	n.s.
White	60%	37%	41%	p < 0.01	p < 0.01	n.s.
Other	2%	4%	6%	n.s.	p < 0.10	n.s.
Multiple						
Race/Ethnicity	5%	1%	1%	p < 0.05	p < 0.05	n.s.
Employment Status (%)						
Working Full-Time	41%	41%	51%	n.s.	p < 0.10	p < 0.05
Working Part-Time	18%	18%	10%	n.s.	p < 0.10	p < 0.05
Student	19%	20%	20%	n.s.	n.s.	n.s.
Not working	13%	13%	14%	n.s.	n.s.	n.s.
Other	8%	8%	5%	n.s.	n.s.	n.s.

The corporate curbside bus passengers form another distinct group of intercity bus passengers. The most striking attribute of this group is that the proportion of passengers reporting household incomes greater than \$80,000 per year (31 percent), compared with

18 and 20 percent on the Chinatown and traditional terminal buses, respectively.

Additionally, higher shares of corporate curbside passengers are White (60 percent) or Asian (14 percent), compared to traditional terminal bus passengers (41 percent White and 8 percent Asian). The survey did not distinguish between US-born and foreign-born persons; it is possible that the Chinatown bus attracts more foreign-born passengers than the corporate curbside bus, as research on immigrant oriented bus operators has shown (Valenzuela et al., 2005). Fewer corporate curbside bus passengers are Black (12 percent), compared with 25 percent of Chinatown bus passengers and 30 percent of traditional terminal bus passengers. Other differences were not statistically significant.

Survey respondents for all bus types were very young and those on the Chinatown buses were the youngest. Unlike previous research from before the era of curbside buses, few of the survey respondents were 50 years old or older (Bricka, 2001; Meyer et al., 1987; U.S. Department of Transportation, 1998). While these changes may be due to demographic shifts in the US, they may also be due to the survey method. The mean age of corporate curbside bus passengers and the proportion of student passengers in the survey might have been higher had I conducted the survey in a different season (i.e. not during the summer). This may be particularly true for corporate curbside buses given that Megabus explicitly tries to locate their stations near colleges and universities to attract student passengers (White & Robbins, 2012).

The survey also asked about trip purpose (see Table 5). For all respondents, the primary purpose for most intercity trips was visiting friends or relatives, followed by vacation trips. Passengers boarding the Chinatown buses and corporate curbside buses

were more likely to report traveling for work-related purposes when compared with those boarding traditional terminal buses.

Table 5 Trip Purpose (more than one reason allowed)

	Corp. Curbside Bus A	Chinatown Bus B	Traditional Bus C	T-tests		
				A vs. B	A vs. C	B vs. C
Visit Friends or Relative	46%	42%	48%	n.s.	n.s.	n.s.
Vacation	20%	18%	20%	n.s.	n.s.	n.s.
Business	14%	15%	6%	n.s.	p < 0.01	p < 0.01
Entertainment	10%	11%	12%	n.s.	n.s.	n.s.
Shopping	2%	5%	7%	p < 0.05	n.s.	n.s.
To or From Work	2%	5%	2%	n.s.	n.s.	p < 0.1
School Related Activity	3%	3%	2%	n.s.	n.s.	n.s.
Other	3%	2%	3%	n.s.	n.s.	n.s.
N	377	263	203			

To provide some insight into changes in the composition of intercity bus passengers over time, I include a brief summary of comparable demographic data from the 1995 American Travel Survey (ATS)¹. The ATS is a national survey of inter-metropolitan travel from 80,000 households during 1995 and into spring of 1996 about all domestic and international trips during the preceding three months. The following includes three subsamples from the ATS of intercity bus trips, excluding those made on charter buses: all domestic intercity bus trips; intercity bus trips between 75 and 300 miles; and intercity bus trips between 75 and 300 miles in length that began or ended in a metropolitan area in the Northeast Corridor. While the 1995 ATS and the passenger

¹ I include the 1995 ATS and not the 2001 and 2009 National Household Travel Surveys (NHTS) because these later surveys include few intercity bus travelers (roughly 100 intercity bus trips, excluding charter buses, in the Northeast Region for each survey).

intercept survey rely on different data collection methods, screening criteria and geography, they provide points of comparison to understand how intercity bus passengers may be changing over time.

is a summary of demographic data from the ATS that is comparable to the passenger intercept survey. I converted the ATS data on household income to 2010 dollars though the categories are not exactly the same. The summary also excludes data on automobile access, and the race/ethnicity and employment categories are slightly different.

The comparison of this study's intercept survey and the 1995 ATS suggest several changes since the advent of curbside buses. Intercity bus passengers in the intercept survey, regardless of bus type, are significantly younger than those in the 1995 ATS. Additionally, smaller shares of the passengers in the intercept survey are White and more are Black or Asian, though the differences in share of White passengers are less pronounced on the corporate curbside buses. Passengers boarding corporate curbside buses are also more affluent than bus passengers on the Chinatown bus, traditional terminal bus and those in the 1995 ATS. Fewer passengers in the intercept survey are students compared with the 1995 survey. These findings suggest large changes over time but are not conclusive because of the differences in data collection methods between the two surveys and may just represent increasing diversification of the US population

Table 6 Intercity Bus Passenger Demographics from 1995 American Travel Survey

	US Trips	Short Trips	NEC Trips
Count	966	619	290
Gender (% female)	59%	60%	59%
Household Income (%)			
Less than \$42,923	55%	55%	48%
\$42,923to \$85,847	28%	28%	30%
More than \$85,847	17%	17%	22%
Household Size (median)	2.5	2.3	2.2
Auto owner (%)	71%	64%	66%
Age (mean)	44.1	44.8	41.6
18 to 35 years old	32%	32%	42%
36 to 50 years old	23%	22%	21%
51 to 65 years old	14%	11%	10%
Over 65 years old	31%	34%	25%
Race/Ethnicity (%)			
Af-Am./Black	20%	16%	20%
Asian (API)	3%	3%	6%
Hispanic	12%	8%	10%
White	71%	77%	70%
Other	6%	4%	4%
Employment Status (%)			
Working Full-Time	31%	30%	41%
Working Part-Time	9%	8%	9%
Student	23%	25%	27%
Not working	38%	37%	22%

Finally, I also collected information on residential location. Seventy-five percent of the respondents (550) provided a valid ZIP Code, and we mapped the responses using Geographic Information Systems (GIS) software. The largest number of respondents ZIP Codes were in Philadelphia (194) followed by New York (147). Fewer respondents lived in Boston, Washington DC, Baltimore and the surrounding suburbs. Sixty-two respondents (8 percent of the survey) indicated that they lived abroad and a smaller number of respondents listed ZIP Codes outside the Northeast. Figure 7 shows maps of

the distribution of residential locations of passengers living in Philadelphia, divided by bus type. The locations for the staging operations are indicated with a yellow bus for traditional terminal buses, blue for corporate curbside buses, and red for the Chinatown buses (all within one mile of each other, and well served by public transit). The map of residences by ZIP Code includes 80 Chinatown bus respondents, 73 corporate curbside respondents, and 41 traditional terminal bus respondents.

The maps show that the different bus types appear to draw passengers from different catchment areas. Corporate curbside buses draw from a smaller catchment area. The average distance from corporate curbside bus respondent's residential zip code centroid to the corporate curbside bus staging area was 2.5 miles. A large share of passengers living in West Philadelphia (the location of two large universities, University of Pennsylvania and Drexel University), Center City and Northwest Philadelphia. The concentration of passengers on corporate curbside buses from near the universities is not surprising given corporate curbside buses attempts to lure college and university students, yet the survey did not show that these buses are attracting significantly more student passengers. Passengers on traditional terminal buses were more evenly distributed, with many residents living in Center City, West and Southwest Philadelphia and North Philadelphia. The average distance from traditional terminal bus passengers' residential zip code to the bus terminal was 3.6 miles. Although Chinatown bus passengers appear to live in a broader range of areas in Philadelphia, their average distance to the Chinatown bus staging area was 3.6 miles (the same as traditional bus passengers).

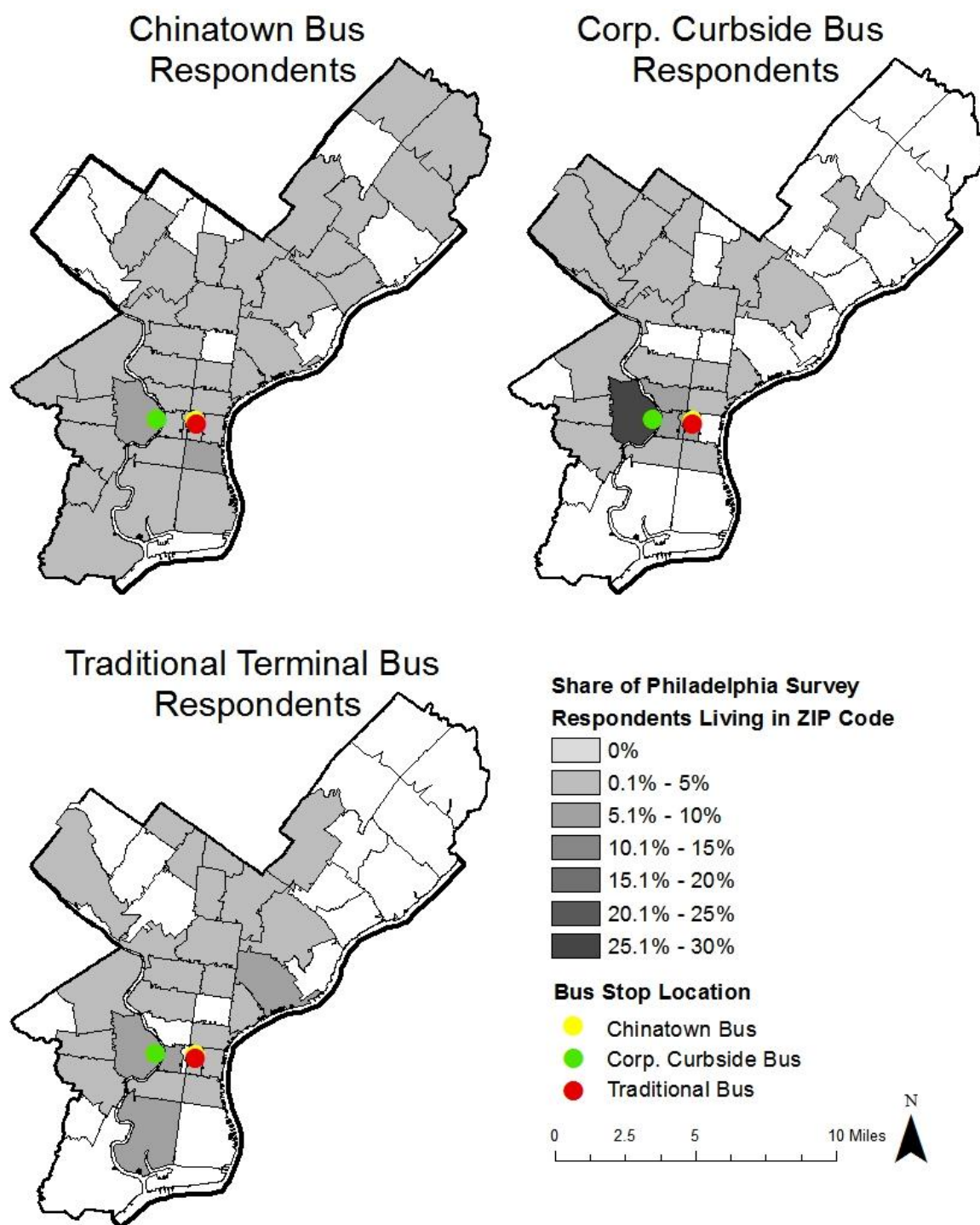


Figure 7 Residential locations in Philadelphia by ZIP Code and bus type

I also analyzed similar maps for New York City (Figure 8) but there was not a clear pattern of concentration in particular parts of the city. The lack of a pattern may be due to the smaller number of respondents (147 compared with 194) and larger number of ZIP Codes (200 compared with 49). The distance from residential zip codes to the bus staging areas was very similar for the three bus types (averaging from 5.2 to 5.4 miles).

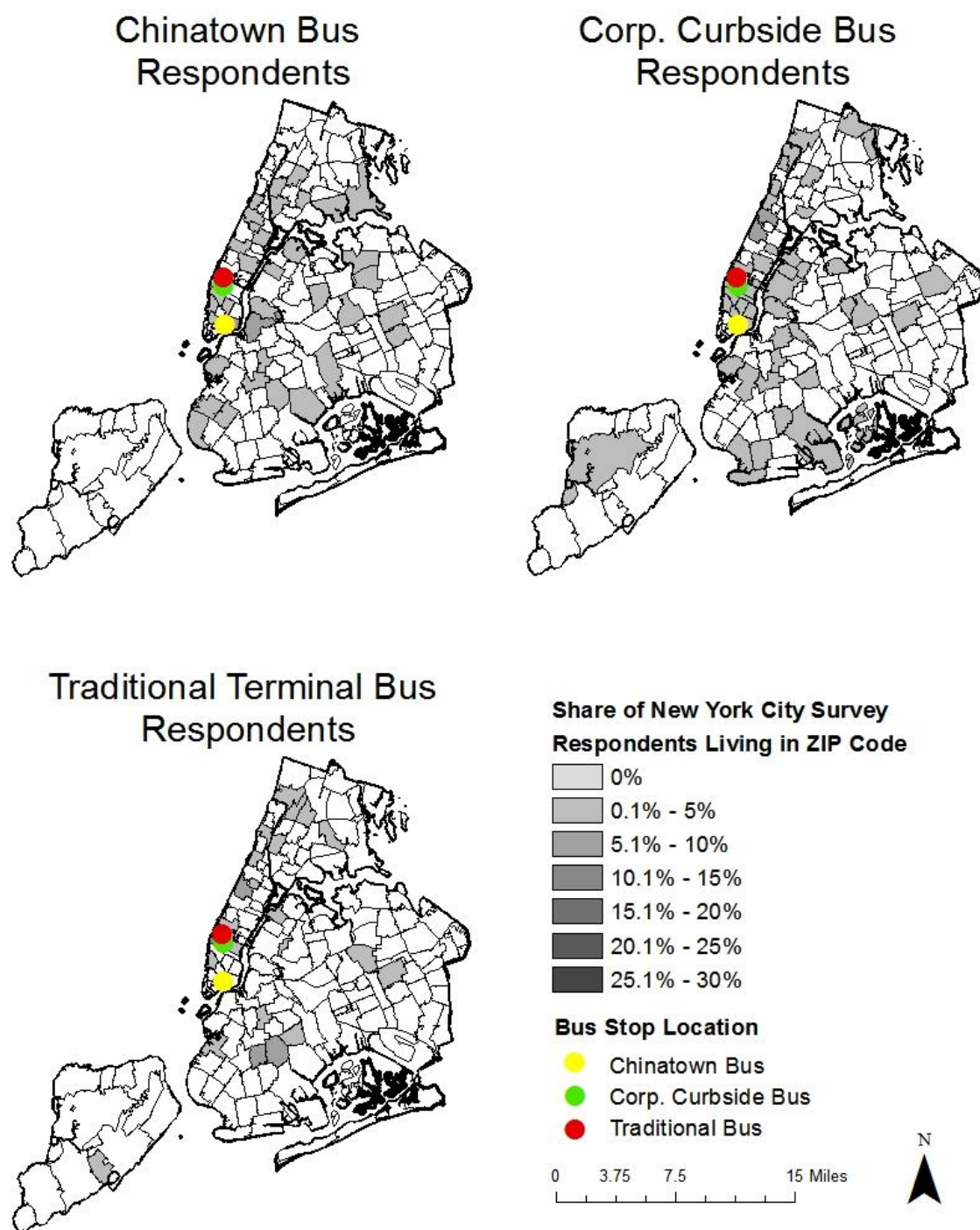


Figure 8 Residential locations in New York City by ZIP Code and bus type

Changes in Travel Behavior over Time

Given that curbside bus ridership is growing, what is the effect on competing intercity modes? Curbside buses may attract riders who previously drove or traveled on trains to take similar trips. To assess mode change, the survey asked curbside bus passengers whether they were more or less likely to use other intercity travel modes since they started traveling by curbside bus. Figure 9 shows the survey question (see Appendix B for the complete intercept survey). For traditional terminal bus passengers, the survey asked about their use of other intercity modes since they started using traditional terminal buses. Respondents chose from the following responses: much less likely, less likely, no change, more likely and much more likely. The following presents participant's reported responses and analyzes the reported changes in behavior and ordered logit model.

6. When was the first time you took a Chinatown Bus, Megabus, or BoltBus?

<input type="checkbox"/> Before 1998	<input type="checkbox"/> 2002	<input type="checkbox"/> 2005	<input type="checkbox"/> 2008
<input type="checkbox"/> 1998-2000	<input type="checkbox"/> 2003	<input type="checkbox"/> 2006	<input type="checkbox"/> 2009
<input type="checkbox"/> 2001	<input type="checkbox"/> 2004	<input type="checkbox"/> 2007	<input type="checkbox"/> 2010

7. Since that year, are you more or less likely to travel along the Northeast Corridor by the following:

	Much less likely	Less likely	No change	More Likely	Much More Likely
Driving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airplane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Greyhound / Peter Pan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other Bus (Megabus, BoltBus, Chinatown Bus)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amtrak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SEPTA / NJ Transit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 9 Excerpt from the survey

I did not ask about respondents' likelihood to travel by plane. During the focus groups with intercity bus passengers, only one of the 39 participants talked about traveling by plane between cities on the Northeast Corridor. The small number of respondents who traveled by plane is supported by Schwieterman and Fischer (2012)

who found that only six percent of curbside bus passengers on the East Coast would have flown had their bus not been an option for their trip.

The following presents an analysis of the participants reported changes in travel behavior after using curbside buses. I analyze reported changes in likelihood to use Amtrak, likelihood to drive and likelihood to use commuter rail (SEPTA / NJ Transit). For each of the changes in behavior, I first summarize participants' survey responses and then use a regression model to control for various factors (auto-ownership, income, age, etc.) which effect participants' likelihood to use various modes.

The model I used is an ordered logit model of likelihood to use each mode (ordered probit models produced similar results). The ordinal dependent variable is coded such that ranking of the responses are ordered in increasing likelihood to use the mode of interest (from 1 to 5 from least to most likely). Following Long (1997), the ordered logit model takes the following form,

$$y^* = X\hat{\beta} + \varepsilon,$$

where y^* is a latent continuous variable mapped onto the observed dependent ordinal variable y , and can be interpreted as the likelihood of using a specific mode since the participant started using curbside or traditional intercity buses. X is the vector of independent variables and $\hat{\beta}$ is the vector of estimated coefficients for each of these independent variables. ε is the error term which is distributed normally and uncorrelated with X .

The specific values of the dependent variable are defined by a series of cut-points, τ_m , which link the latent variable y^* to the observed variable y ,

$$y_i = m \text{ if } \tau_{m-1} \leq y_i^* \leq \tau_m \text{ for } m = 1 \text{ to } J$$

The observed variable y relates to y^* as follows:

$$y_i = \begin{cases} 1 \rightarrow \text{Much Less Likely} & \text{if } \tau_0 = -\infty \leq y_i^* \leq \tau_1 \\ 2 \rightarrow \text{Less Likely} & \text{if } \tau_0 = \tau_1 \leq y_i^* \leq \tau_2 \\ 3 \rightarrow \text{No Change} & \text{if } \tau_0 = \tau_2 \leq y_i^* \leq \tau_3 \\ 4 \rightarrow \text{More Likely} & \text{if } \tau_0 = \tau_3 \leq y_i^* \leq \tau_4 \\ 5 \rightarrow \text{Much More Likely} & \text{if } \tau_0 = \tau_5 \leq y_i^* \leq \infty \end{cases}$$

The predicted probability of y_i is modeled using a maximum-likelihood equation which takes the following form:

$$\Pr(y_i = m | \chi_i, \beta, \tau) = F(\tau_m - \chi_i \beta) - F(\tau_{m-1} - \chi_i \beta)$$

The independent variables include the key variables of interest indicating whether the respondent was on a curbside bus (either corporate or a Chinatown bus), where the reference category is traditional terminal bus. The model also includes the respondent's age, sex, household size, household income, whether the respondent lives in New York City or Philadelphia an auto ownership and a dummy variable indicating whether the survey respondent reported that s/he could have easily made this trip by automobile.

In another set of models, I included various measures of the straight-line distance measures from the centroid of each survey respondents' home zip code to the nearest Amtrak station, commuter rail station and intercity bus staging areas for the three types of buses. To calculate the distance to Amtrak stations, I only included the primary stations in Boston, New York, Philadelphia, Baltimore and Washington. Because the relevant Amtrak stations are centrally located (e.g. Penn Station in Midtown Manhattan or Union Station in Washington DC). Notably, the distance measures to Amtrak stations were highly correlated with corporate curbside bus staging areas in New York, Philadelphia,

Boston and Washington DC, since curbside buses staged operations outside of or nearby these Amtrak stations. I tested several versions of the distance to Amtrak stations in the model. I included continuous distance measures and measures for several distance bands (e.g. under two miles from a station, two to five miles, etc.). In all cases, the results overall were similar to the model that excluded distance to Amtrak station. In addition, including distance measures decreases the sample size because roughly 20 percent of respondents did not report their ZIP code. Tests including measures of distance to commuter rail stations did not appreciably change the results. Finally, I chose not to include the distance to bus staging areas in the models below because these measures were also highly correlated with each other.

In the discussion of model results below, I present the results for the three model formulations. First, I present the ordered logit model where the dependent variable represents the full range of options from much less likely to much more likely. I sequentially added variables to the regression model. The first model includes just one independent variable indicating whether the respondent was boarding a curbside bus (the reference category is traditional terminal bus). The second model replaces the single variable indicating curbside bus with two dummy variables indicating whether the respondent was boarding a Chinatown bus or a corporate curbside bus (the reference category is still traditional terminal bus). The third model adds variables indicating age, sex, household size and income, race and ethnicity variables (the reference category for these is white/Caucasian) and dummy variables indicating that the respondent lives in Philadelphia or New York City. The fourth model adds the first measure of auto

availability, a dummy variable indicating that the respondent reported that s/he could have made the same trip by car either “easily” or “with a little effort.” The fifth model replaces this measure of auto availability with a dummy variable indicating whether the household owns one or more vehicles.

Effect on likelihood to use Amtrak

The survey suggests that since they began using curbside buses, both Chinatown bus and corporate curbside bus respondents are much less likely to use Amtrak compared with traditional terminal bus passengers. Figure 10 graphs respondents’ responses to the survey question about their likelihood to use Amtrak after taking a corporate curbside bus, Chinatown bus or traditional terminal bus.

At higher rates, corporate curbside bus passengers indicated that they were “much less likely” or “less likely” to use Amtrak compared with Chinatown bus passengers or traditional terminal bus passengers. And Chinatown bus passengers indicated that they were “much less likely” or “less likely” to use Amtrak than traditional terminal bus passengers. About half (47.3 percent) of Chinatown bus passengers reported “no change” in their likelihood to use Amtrak after using a Chinatown bus, suggesting many of these passengers may not view the two modes as substitutes. Interestingly, the share of traditional terminal bus passengers who were “more likely” or “much more likely” to use Amtrak after using a traditional terminal bus was much higher than for the curbside bus modes, indicating that perhaps traditional terminal bus passengers were not satisfied with these buses.

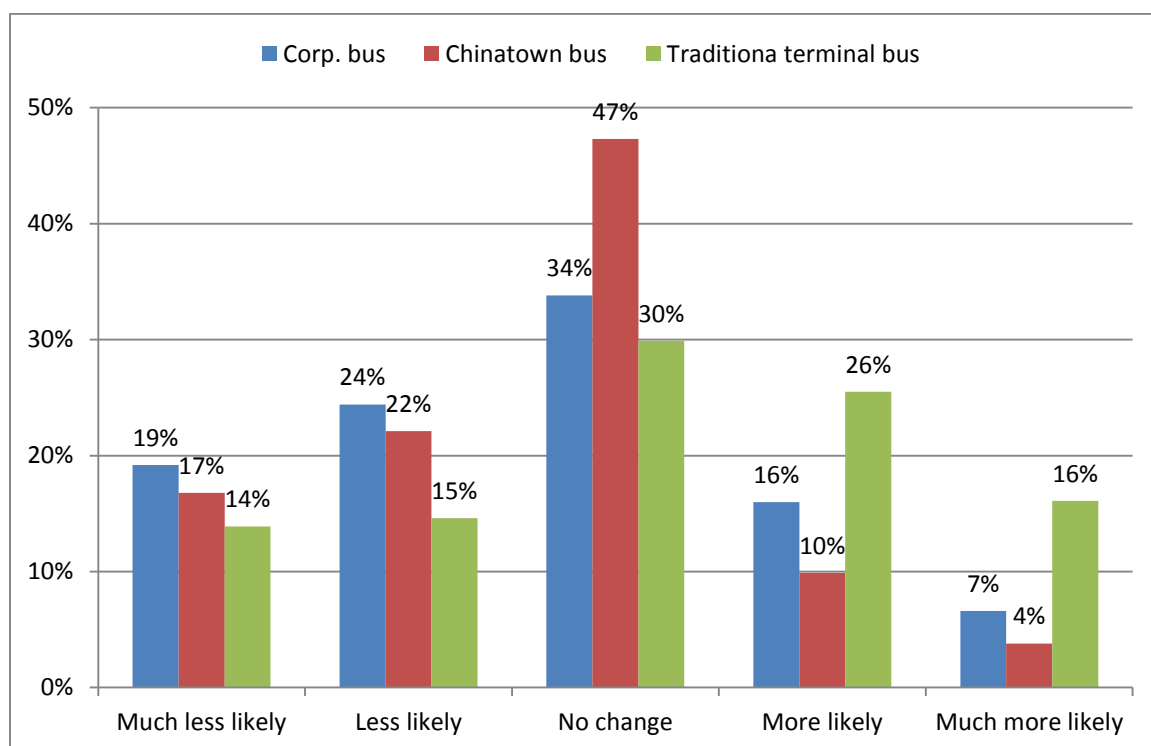


Figure 10 Likelihood to use Amtrak since they started using curbside bus or traditional terminal buses.

The regression analysis confirms that both corporate curbside bus and Chinatown bus passengers are less likely to use Amtrak since they began using curbside buses. The following describes the ordered logit model analysis.

Table 7 presents the models where the dependent variable is the full range of options. The table lists the incident risk ratio for each model coefficient along with the p-value. Model 1 includes only the variable indicating whether the survey respondent boarded a curbside bus. The odds ratio for this variable is 0.44 and it is statistically significant ($p < 0.01$). These results suggest that the odds of being less likely to use Amtrak for intercity trips on the Northeast Corridor are 2.3 (this is the inverse of the odds

ratio, $2.3 = 1/0.44$) times higher for curbside bus passengers than for traditional terminal bus passengers.

To examine whether corporate curbside bus and Chinatown bus passengers behave differently, I replace the curbside bus variable with variables indicating whether the survey respondent was a corporate curbside bus or Chinatown bus passenger in model 2. In this model, the odds ratios for both these variables are significant and quite similar, 0.43 for Chinatown bus passengers and 0.44 for curbside bus passengers. This suggests little difference between corporate curbside bus and Chinatown bus passengers in their likelihood to use Amtrak after using curbside buses.

Models 3 through 5 add socio-demographic characteristics of survey respondents and two different measures of automobile access. The two curbside bus variables change little compared with the previous models, suggesting that auto-access and socioeconomic differences of the survey participants explain few of the differences between curbside bus respondents and traditional terminal bus respondents in their likelihood to use Amtrak. However, two of the newly added variables are significant: the indicators for survey respondents who are African-American/Black and Hispanic/Latino, indicating that Black and Latino survey respondents both have higher odds of being less likely to use Amtrak compared with the reference groups, white/Caucasian and non-Latino, holding all else equal. Additionally, the model variables for corporate curbside bus passenger or Chinatown bus passenger are not significantly different from each other in models 2 through 5.

In addition to the model presented here, I tested a variety of other model

formulations which all produced similar results. This included a model with a simplified dependent variable with five categories rather than three (less likely, no change and more likely) and a binary logit model (with outcome variables 0 if the respondent stated that they are “much less likely” or “less likely” to use Amtrak since they began riding curbside buses or traditional terminal buses and 1 if they report “no change,” “more likely” or “much more likely.”). Together, the logit and ordered logit models suggest that, compared with traditional terminal bus passengers, survey respondents who use corporate curbside buses and Chinatown buses are significantly less likely to use Amtrak since they began using corporate curbside buses and Chinatown buses, even after controlling for age, sex, income, race, ethnicity and auto-availability.

Table 7 Likelihood of Using Amtrak (ordered logit 5 levels)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	or	p	or	p	or	p	or	p	or	p
Curbside Bus	0.44***	0.00								
Traditional Bus (ref. cat.)										
Chinatown Bus			0.43***	0.00	0.42***	0.00	0.41***	0.00	0.42***	0.00
Corp. Curbside Bus			0.44***	0.00	0.42***	0.00	0.42***	0.00	0.44***	0.00
Age 18 to 35 years old (ref. cat.)										
Age 36 to 50 years old					1.22	0.48	1.22	0.48	1.29	0.36
Over 50 years old					1.57	0.22	1.56	0.22	1.64	0.18
Female					0.96	0.80	0.95	0.75	0.97	0.85
Household Size					1.00	1.00	1.01	0.90	0.98	0.74
Household Income under \$40,000 (ref. cat.)					-	-	-	-	-	-
Household Income \$40,001 to \$80,000					0.97	0.86	0.97	0.88	0.92	0.67
Household Income above \$80,000					0.87	0.54	0.89	0.60	0.80	0.33
African-American / Black					0.54**	0.01	0.55*	0.01	0.53**	0.01
Asian / Pacific Islander					0.77	0.27	0.75	0.24	0.78	0.31
Hispanic / Latino					0.47**	0.01	0.46**	0.01	0.47**	0.01
NYC Resident					1.21	0.42	1.20	0.43	1.25	0.36
Philadelphia Resident					1.28	0.22	1.29	0.21	1.34	0.16
Auto Access							0.93	0.69		
Auto Owner									1.24	0.28
Number of observations	481		481		467		465		458	
LR chi2(df)	19.5		19.54		34.68		34.61		33.91	
Prob > chi2	<0.01		<0.01		<0.01		<0.01		<0.01	

Note: + p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Effect on likelihood to drive

Corporate curbside bus passengers are less likely to drive after using a curbside bus. For Chinatown bus passengers, using curbside buses appear no more or less likely to drive than traditional terminal bus passengers.

Figure 11 shows the survey respondents' reported likelihood to drive since they began using curbside buses or traditional terminal buses. The responses for the "much less likely" category are fairly similar for the three respondent groups. The biggest difference among the respondent groups is in the "less likely" category. A much larger share of corporate curbside bus passengers (31.7 percent) reported that they were less likely to drive compared with 20.4 percent of Chinatown bus passengers and only 14.4 percent of traditional terminal bus passengers.

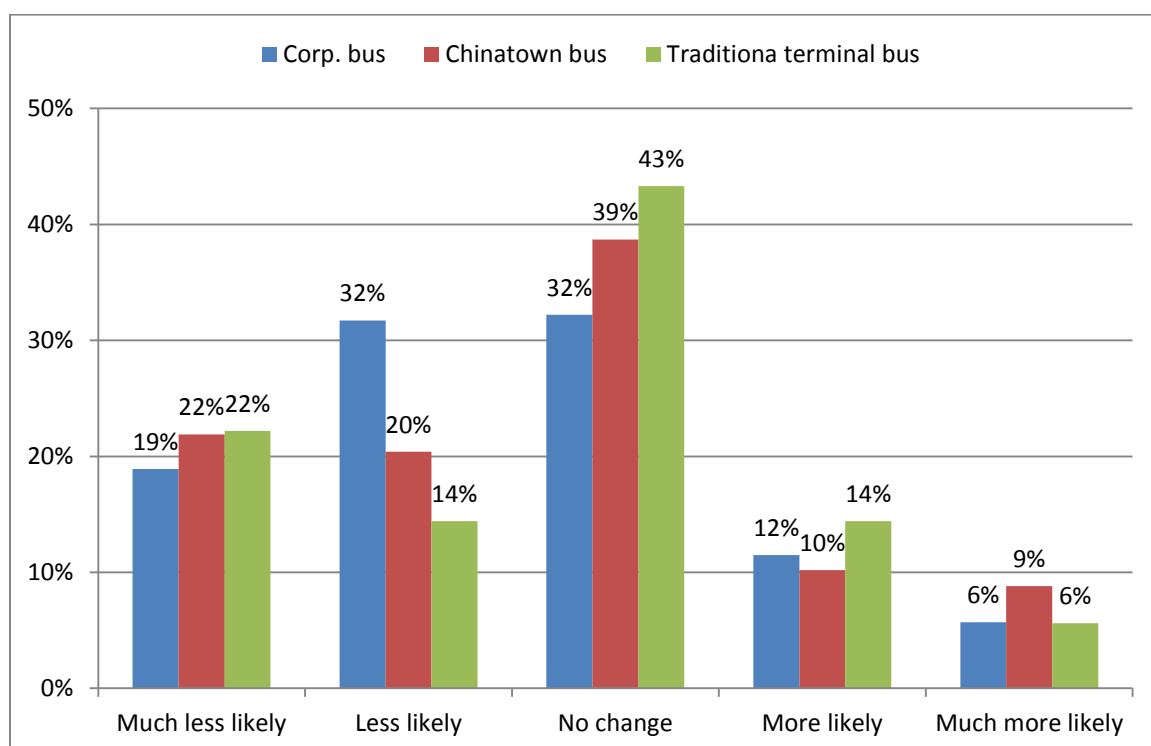


Figure 11 Likelihood to drive since they started using curbside bus or traditional terminal buses

The regression models indicate that corporate curbside bus passengers are less likely to drive after using a curbside bus, compared with traditional terminal bus passengers, though the model coefficients are not as consistent as the model of likelihood to use Amtrak. The best fit model is the logit model, where the dependent variable is 0 if the respondent stated that they are “much less likely” or “less likely” to drive since they began riding curbside buses or traditional terminal buses and 1 if they report “no change,” “more likely” or “much more likely.” The chi-squared statistic of the likelihood ration was most strongly significant in the logit model.

Table 8 summarizes the ordered logit models where the dependent variable represents the full Likert Scale for the likelihood to drive for intercity trips on the

Northeast Corridor after using an intercity bus. In models 1 through 3, none of the variables of interest are statistically significant. Models 4 and 5 add the two variables measuring auto availability. In model 4, which adds the variable indicating that the respondent could have easily or with a little effort made the same trip by auto, there are two notable differences compared with the earlier model. First, one of the variables of interest, indicating that the respondent was a corporate curbside bus passenger is significant at the $p < 0.10$ level. The odds ratio is 0.65, implying that the odds of being less likely to drive for intercity trips on the Northeast Corridor are 1.5 times higher for corporate curbside bus passengers compared with traditional terminal bus passengers, holding all else equal. The other variable that is significant is the indicator for auto access. The odds ratio is 1.53 suggesting, as expected, that the odds of being more likely to drive for intercity trips on the Northeast Corridor are 1.5 times higher for respondents who could have made this trip by auto than for those who would have had a harder time making the trip by auto. In model 5, the corporate curbside bus variable is no longer significant at the $p < 0.10$ level. The auto ownership variable is significant and similar to the auto access variable in the previous model. The remaining results are similar to model 4.

Table 9 summarizes the model results for the ordered logit with the simplified dependent variable where there are only three outcome variables: less likely, no change and more likely to drive. There are a few notable differences compared with the model using the full set of dependent variables. In models 2 through 5, the corporate curbside bus variable is significant. In model 2, the variable is significant at the $p < 0.10$ level, but

is significant at the $p < 0.05$ level in subsequent models. In models 3 through 5, the odds ratio ranges from 0.58 to 0.61, suggesting that the odds of being less likely to drive for intercity trips on the Northeast Corridor are 1.6 to 1.7 times higher for corporate curbside bus passengers compared with traditional terminal bus passengers, holding all else equal.

Table 10 summarizes the results of the logit model. The results of these models are generally consistent with the ordered logit models though the overall model fit is better in this model than the ordered logit models. The curbside bus variable is significant in model 1. In models 3 through 5, the odds ratio for the corporate curbside bus variable ranges from 0.48 to 0.52 suggesting that the odds of being less likely to drive for intercity trips on the Northeast Corridor are 1.9 to 2.1 times higher for corporate curbside bus passengers compared with traditional terminal bus passengers. The remaining results are roughly similar to the ordered logit model with the simplified dependent variable though the indicator for African-American/Black is significant.

Taken together, the three models of likelihood to drive since taking an intercity bus suggest that corporate curbside buses may be leading passengers to switch from driving to using corporate curbside buses. These results suggest that using a Chinatown bus does not affect the likelihood of driving for the same travel purpose.

Table 8 Likelihood of Driving (ordered logit 5 levels)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	or	p	or	p	or	p	or	p	or	p
Curbside Bus	0.81	0.32								
Traditional Bus (ref. cat.)										
Chinatown Bus			0.90	0.67	0.90	0.69	0.90	0.70	0.94	0.82
Corp. Curbside Bus			0.76	0.22	0.69	0.11	0.65+	0.07	0.70	0.13
Age 18 to 35 years old (ref. cat.)										
Age 36 to 50 years old					0.58+	0.06	0.55*	0.03	0.60+	0.07
Over 50 years old					1.19	0.65	1.16	0.70	1.18	0.66
Female					1.20	0.29	1.14	0.44	1.16	0.41
Household Size					1.03	0.64	1.03	0.65	0.99	0.93
Household Income under \$40,000 (ref. cat.)										
Household Income \$40,001 to \$80,000					1.03	0.88	0.98	0.91	0.99	0.94
Household Income above \$80,000					0.53**	0.01	0.47**	0.00	0.48**	0.00
African-American / Black					0.64+	0.07	0.63+	0.06	0.60*	0.04
Asian / Pacific Islander					0.72	0.18	0.78	0.31	0.74	0.22
Hispanic / Latino					1.49	0.19	1.58	0.13	1.40	0.27
NYC Resident					0.91	0.69	0.95	0.82	1.02	0.94
Philadelphia Resident					0.73	0.13	0.72	0.11	0.72	0.11
Auto Access							1.53*	0.02		
Auto Owner									1.49+	0.06
Number of observations	454		454		441		438		433	
LR chi2(df)	0.99		1.72		26.98		33.21		30.05	
Prob > chi2	0.32		0.42		<0.01		<0.01		<0.05	

Note: + p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 9 Likelihood of Driving (ordered logit 3 levels)

	Model 1		Model 2		Model 3		Model 4		Model 5	
Curbside Bus	0.71	0.11								
Traditional Bus (ref. cat.)										
Chinatown Bus			0.84	0.49	0.91	0.73	0.90	0.71	0.95	0.84
Corp. Curbside Bus			0.64+	0.05	0.60*	0.03	0.58*	0.02	0.61*	0.04
Age 18 to 35 years old (ref. cat.)										
Age 36 to 50 years old					0.53*	0.04	0.51*	0.03	0.54*	0.05
Over 50 years old					1.25	0.59	1.24	0.60	1.25	0.59
Female					1.25	0.22	1.21	0.30	1.22	0.29
Household Size					1.03	0.63	1.03	0.66	1.01	0.88
Household Income under \$40,000 (ref. cat.)										
Household Income \$40,001 to \$80,000					1.10	0.64	1.06	0.78	1.08	0.71
Household Income above \$80,000					0.56*	0.02	0.51**	0.01	0.52*	0.01
African-American / Black					0.68	0.14	0.68	0.14	0.66	0.11
Asian / Pacific Islander					0.63+	0.08	0.67	0.12	0.65	0.11
Hispanic / Latino					1.41	0.28	1.47	0.22	1.34	0.35
NYC Resident					0.93	0.76	0.96	0.87	0.98	0.95
Philadelphia Resident					0.63*	0.03	0.62*	0.03	0.61*	0.03
Auto Access							1.33	0.13		
Auto Owner									1.27	0.29
Number of observations	454		454		441		438		433	
LR chi2(df)	2.49		4.36		29.1		32.07		30	
Prob > chi2	0.11		0.11		<0.05		<0.01		<0.05	

Note: + p<0.10, * p<0.05, ** p<0.01, *** p<0.001

Table 10 Likelihood of Driving (logit model)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	or	p	or	p	or	p	or	p	or	p
Curbside Bus	0.64+	0.07								
Traditional Bus (ref. cat.)										
Chinatown Bus			0.79	0.39	0.87	0.64	0.84	0.58	0.93	0.81
Corp. Curbside Bus			0.56*	0.03	0.51*	0.01	0.48**	0.01	0.52*	0.02
Age 18 to 35 years old (ref. cat.)										
Age 36 to 50 years old					0.48*	0.02	0.48*	0.02	0.49*	0.03
Over 50 years old					1.77	0.24	1.79	0.23	1.85	0.21
Female					1.29	0.21	1.27	0.24	1.27	0.25
Household Size					0.95	0.48	0.95	0.43	0.96	0.55
Household Income under \$40,000 (ref. cat.)										
Household Income \$40,001 to \$80,000					1.04	0.86	1.01	0.95	1.05	0.83
Household Income above \$80,000					0.46**	0.00	0.43**	0.00	0.44**	0.00
African-American / Black					0.54*	0.02	0.55*	0.03	0.54*	0.03
Asian / Pacific Islander					0.60+	0.08	0.62	0.10	0.63	0.11
Hispanic / Latino					1.07	0.86	1.09	0.81	1.05	0.88
NYC Resident					0.82	0.46	0.84	0.52	0.80	0.42
Philadelphia Resident					0.53**	0.01	0.54*	0.01	0.50**	0.01
Auto Access							1.09	0.68		
Auto Owner									1.01	0.98
Constant	1.73*	0.01	1.73*	0.01	3.62**	0.00	3.66**	0.00	3.50**	0.00
Number of observations	454		454		441		438		433	
LR chi2(df)	3.48		5.86		37.36		38.28		37.95	
Prob > chi2	0.06		0.05		0.00		0.00		0.00	

Effect on likelihood to use commuter rail

When asked about their likelihood to travel by commuter rail after using their current bus mode, only corporate curbside bus passengers indicated that they might be less likely to travel by commuter rail since they began using curbside buses or traditional terminal buses. This option, however, is only available between Philadelphia and New York City via Southeastern Pennsylvania Transportation Authority and New Jersey Transit (transferring in Trenton, New Jersey).

Figure 12 includes graphs of the responses to this question for the three groups of respondents living in Philadelphia or New York City. The graph clearly shows that a higher share of corporate curbside bus respondents report that they were “much less likely” or “less likely” to travel by commuter rail compared with Chinatown bus passenger and traditional terminal bus passengers.

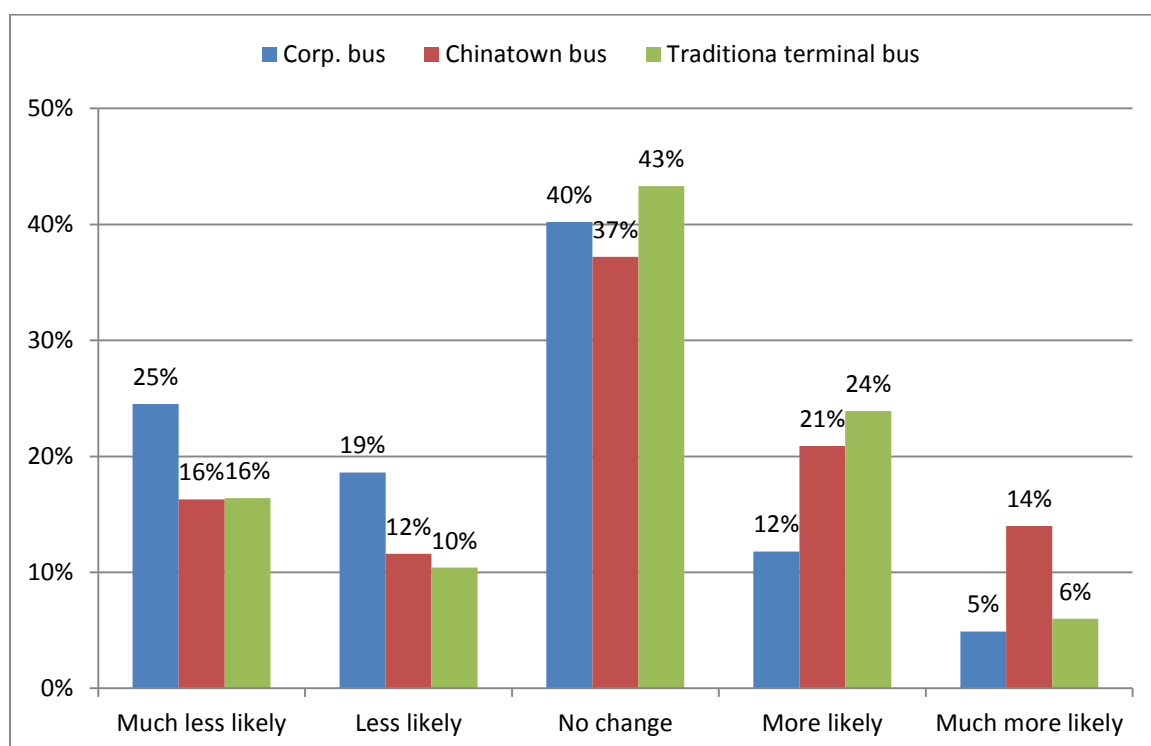


Figure 12 Likelihood to use commuter rail since they started using curbside bus or traditional terminal buses.

Table 11 summarizes the ordered logit model for the the likelihood of using commuter rail to travel between New York and Philadelphia (. Models 2 through 5 are fairly consistent with regard to the variables of interest. In these models, the corporate curbside bus variable is significant but the Chinatown bus variable is not. The odds ratio for this variable ranges from 0.56 to 0.59, suggesting that the odds of being less likely to use commuter rail for intercity trips on the Northeast Corridor are 1.6 to 1.7 times higher for corporate curbside bus passengers compared with traditional terminal bus passengers.

Additionally, the variables indicating that the respondent is female and in the higher income groups are significant. The odds of being more likely to use commuter rail for intercity trips on the Northeast Corridor are 1.4 times higher for female respondents

than for males. The odds of being less likely to use commuter rail for intercity trips on the Northeast Corridor are 1.7 times higher for the highest income group compared with the lowest income group and 1.6 times higher for the middle income group compared with the lowest income group.

The models results for the simplified ordered logit model and the logit model are similar to the model presented here. The three sets of models of likelihood to use commuter rail all suggest that after using corporate curbside buses, survey respondents are less likely to use commuter rail. However, using Chinatown buses seems to have no effect on the likelihood to use commuter rail. This result echoes the findings from the model of likelihood to drive and raises the question of what factors lead to these differences.

Table 11 Likelihood of Using Commuter Rail (ordered logit 5 levels)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	or	p	or	p	or	p	or	p	or	p
Curbside Bus	0.76	0.14								
Traditional Bus (ref. cat.)										
Chinatown Bus			1.16	0.51	1.21	0.41	1.22	0.40	1.27	0.31
Corp. Curbside Bus			0.58**	0.01	0.56**	0.01	0.58**	0.01	0.59*	0.01
Age 18 to 35 years old (ref. cat.)										
Age 36 to 50 years old					1.09	0.76	1.11	0.70	1.12	0.68
Over 50 years old					0.59	0.15	0.57	0.14	0.61	0.19
Female					1.42*	0.04	1.48*	0.03	1.43*	0.04
Household Size					0.94	0.29	0.94	0.29	0.93	0.27
Household Income under \$40,000 (ref. cat.)										
Household Income \$40,001 to \$80,000					0.75	0.14	0.76	0.18	0.71+	0.10
Household Income above \$80,000					0.62*	0.04	0.67+	0.09	0.60*	0.03
African-American / Black					0.81	0.39	0.81	0.38	0.84	0.49
Asian / Pacific Islander					0.96	0.87	0.91	0.71	1.07	0.79
Hispanic / Latino					0.60+	0.09	0.58+	0.07	0.61	0.11
NYC Resident					0.86	0.53	0.82	0.41	0.77	0.29
Philadelphia Resident					0.74	0.16	0.74	0.15	0.73	0.14
Auto Access							0.76	0.12		
Auto Owner									0.95	0.79
Number of observations	479.00		479.00		465.00		462.00		456.00	
LR chi2(df)	2.20		13.47		33.46		34.81		34.38	
Prob > chi2	0.14		<0.01		<0.01		<0.01		<0.01	

Note: + p<0.10, * p<0.05, ** p<0.01, *** p<0.001

I tested the sensitivity of the model results by varying the model form. In the first alternative, I simplified the dependent variable by collapsing some of the categories. I combined the “much less likely” and “less likely” categories into a “less likely category” and combined the “much more likely” and “more likely” categories into a “more likely category.” In this simplified variable, the observed variable y relates to y^* as follows:

$$y_i = \begin{cases} 1 \rightarrow \begin{pmatrix} \text{Much Less Likely} \\ \text{Less Likely} \end{pmatrix} & \text{if } \tau_0 = -\infty \leq y_i^* \leq \tau_1 \\ 2 \rightarrow \text{No Change} & \text{if } \tau_0 = \tau_1 \leq y_i^* \leq \tau_2 \\ 3 \rightarrow \begin{pmatrix} \text{More Likely} \\ \text{Much More Likely} \end{pmatrix} & \text{if } \tau_0 = \tau_2 \leq y_i^* \leq \infty \end{cases}$$

Second, I further simplified the model into a logit model. In this formulation, I combined the “much less likely” and “less likely” categories into a “less likely category.” The other category combines the “no change,” “much more likely” and “more likely” categories together. The model takes the form,

$$y^* = \alpha + X\hat{\beta} + \varepsilon_1$$

Where, the observed variable y relates to y^* as follows

$$y_i = \begin{cases} 0 \rightarrow \begin{pmatrix} \text{Much Less Likely} \\ \text{Less Likely} \end{pmatrix} & \text{if } y_i^* > 0 \\ 1 \rightarrow \begin{pmatrix} \text{No Change} \\ \text{More Likely} \\ \text{Much More Likely} \end{pmatrix} & \text{if } y_i^* \leq 0 \end{cases}$$

I also tested the same model using a probit function rather than a logit model and the results were consistent.

Finally, I tested the sensitivity of the model results by including or excluding specific variables or altering the construction of the independent variables. For example, the model results below indicate household income using three categories: household

income under \$40,000, income between \$40,001 and \$80,000 and income above \$80,000 (the reference category is household income under \$40,000). I tested the model using an ordinal measure of the household income. I converted survey responses indicating a household income in the range to the midpoint. For example, \$60,000 to \$80,000 became \$70,000. In addition, I tested the model using age as an ordinal value rather than three age categories. In all cases, the model results were similar regardless of which measure I used.

Safety and reliability

Along with the rapid expansion of curbside buses and the surge in ridership growth have been concerns about the safety of these buses and their impacts on local neighborhoods. Recent research has examined crash statistics (Cheung & Braver, 2012) and conducted focus groups with bus inspectors and drivers (Braver et al., 2012), but information from passengers has been largely absent.

This survey asks passengers about the frequency with which participants observed events related to four topic areas: safety, inadequate maintenance or investment, problems associated with competition, and accountability. These questions were limited to respondents who had previously taken an intercity trip with the bus company where the intercept survey was collected. As a result, this survey may not truly represent the negative experiences that intercity bus passengers had, because passengers who had negative experiences with a bus company might not have used the same bus company

again.

Table 12 summarizes the survey responses to these questions. The first set of survey questions addressed the topic of safety both on the bus and waiting for the bus. Respondents said that bus drivers on the Chinatown buses used cell phones, and drove recklessly or aggressively much more frequently than either the corporate or traditional terminal bus drivers. At the time of the survey, there were no federal regulations concerning cell phone use for bus operators. Very few respondents were on buses that had been in accidents (those that had may not have made additional trips onboard these buses and thus may not be included in this survey. As a result, this analysis may be undercount of these types of incidents). Both traditional terminal buses and Chinatown bus passengers more frequently reported feeling that their personal safety was threatened (either while waiting at the bus stop or on board the bus) than corporate curbside bus passengers did.

Another survey question was about the frequency of problems which might imply inadequate maintenance or investment in buses or operations. Passengers on traditional terminal buses and Chinatown buses reported more mechanical problems, unclean buses, and an insufficient capacity. The lower rate of mechanical problems on corporate curbside buses is likely due to the fact that these companies have newer fleets than the other companies (Klein, 2009). Similarly, capacity problems are less frequent on corporate curbside buses because passengers purchase tickets in advance online. Participants reported late or no-show buses with all bus types, but most frequently for traditional terminal buses.

Two survey questions attempted to assess whether competition for passengers results in conflicts among bus companies, and between bus companies and other parties. Respondents on the Chinatown bus were more likely to observe these types of confrontations and arguments.

Finally, the survey asked respondents whether they reported any of the above incidents to the bus companies. This question gauged whether passengers felt that the bus companies were accountable (though this could also indicate that certain types of passengers, say those who are less likely to complain, are more likely to select a particular bus operator). Passengers on traditional terminal buses were much more likely to report an incident to the bus company than passengers on curbside buses. Chinatown bus passengers, who observed more problems than either of the other bus passengers, were the least likely to report any of the problems.

Table 12 Frequency of reported problems by bus type

		Never or Rarely	Sometimes	Very Often or Always
Safety and regulation				
Bus driver talking on the cell phone or sending text messages	Chinatown Bus	58.5%	22.0%	19.5%
	Corporate Bus	85.1%	11.9%	3.0%
	Trad. Term. Bus	82.5%	17.5%	0.0%
Bus driver speeding or driving in an aggressive or reckless manner	Chinatown Bus	62.6%	22.7%	14.7%
	Corporate Bus	86.8%	11.8%	1.5%
	Trad. Term. Bus	89.2%	9.2%	1.7%
Bus that was involved in an accident	Chinatown Bus	94.4%	5.6%	0.0%
	Corporate Bus	99.0%	1.0%	0.0%
	Trad. Term. Bus	95.8%	4.2%	0.0%
Felt unsafe or threatened while waiting at the bus stop or onboard a bus	Chinatown Bus	84.5%	11.2%	4.3%
	Corporate Bus	96.1%	3.0%	1.0%
	Trad. Term. Bus	85.8%	12.5%	1.7%
Maintenance and investment				
Bus that broke down or had other mechanical problems	Chinatown Bus	81.5%	16.0%	2.5%
	Corporate Bus	93.6%	5.9%	0.5%
	Trad. Term. Bus	83.6%	14.8%	1.6%
Bus that was in poor condition or was not clean	Chinatown Bus	46.9%	33.3%	19.8%
	Corporate Bus	91.1%	7.4%	1.5%
	Trad. Term. Bus	60.5%	24.4%	15.1%
Bus was late or did not show up at all	Chinatown Bus	65.6%	23.9%	10.4%
	Corporate Bus	66.5%	28.1%	5.4%
	Trad. Term. Bus	44.5%	41.2%	14.3%
Too many people trying to get onto one bus	Chinatown Bus	36.0%	29.3%	34.8%
	Corporate Bus	68.1%	22.5%	9.3%
	Trad. Term. Bus	42.9%	35.3%	21.8%

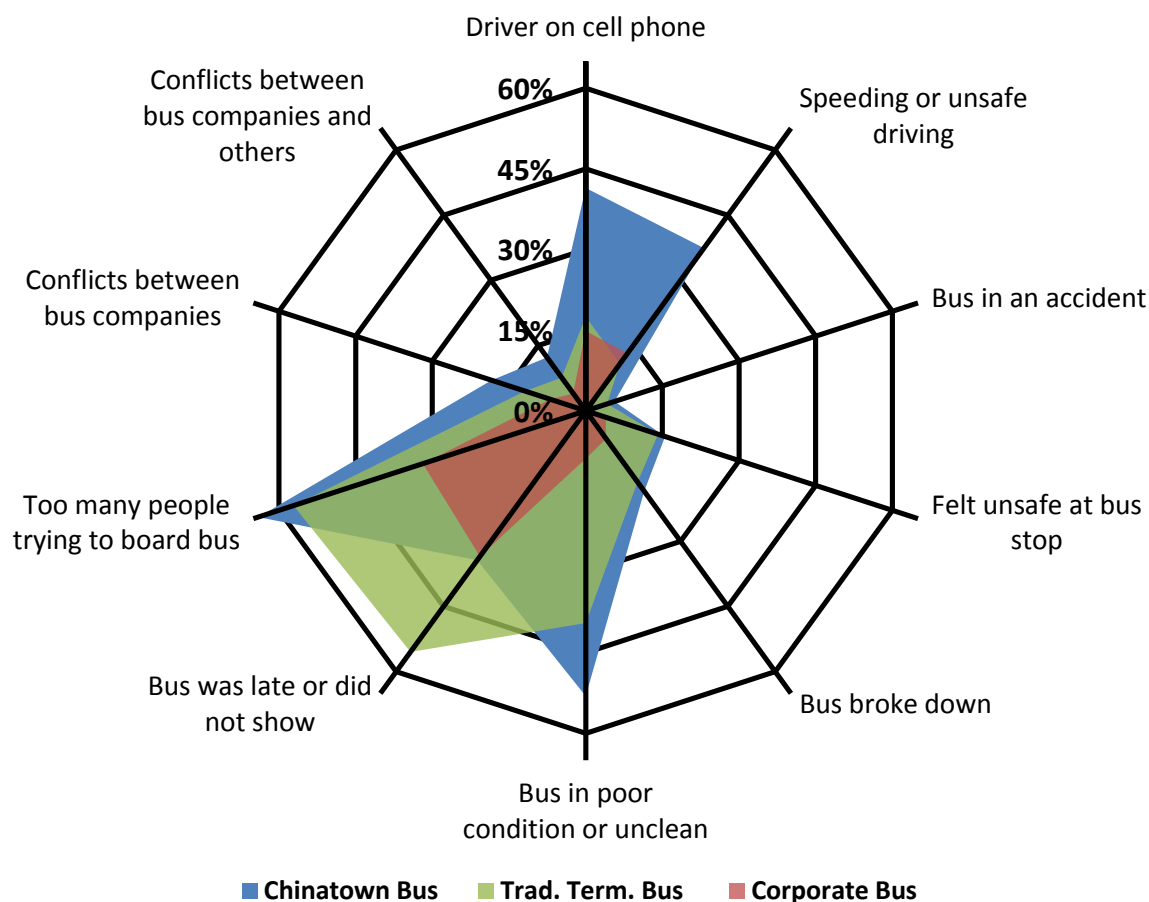


Figure 13 Percentage of respondents who reported incidents occurring “sometimes,” “very often” or “always” for each bus type.

Discussion and conclusions

The intercity bus industry has experienced a remarkable transformation in the quality and quantity of intercity bus travel. Ridership has steadily grown in the past fifteen years, and this increase has resulted in significant market segmentation. The bus companies and the passengers have upended the notion that intercity bus travel is a mode of last resort, viable only for the poor, young, very old, women, and minorities. This survey shows that corporate curbside buses attract a clientele which is more affluent and

whiter, while the Chinatown buses attract Asian passengers who are often male. In addition, contemporary intercity bus passengers appear to be different from intercity bus passengers in the 1990s. Compared with passengers from before the dawn of curbside buses, today's intercity bus passengers on the Northeast Corridor are younger, more racially diverse and more affluent.

Curbside buses also appear to have changed travel habits on the Northeast Corridor. Survey respondents who used corporate curbside buses and Chinatown buses appear less likely to use Amtrak after using a curbside bus. This suggests that the continued expansion of low-cost, high-frequency intercity bus services throughout the US may be a cause for concern to Amtrak and the development of high speed rail. Yet, evidence from the Northeast Corridor suggests that expensive high quality rail service can coexist with buses as a mode. Over the past ten years, while curbside buses have been steadily gaining riders, Amtrak ridership has also steadily increased (Puentes, Tomer, & Kane, 2013). Perhaps while some passengers switch from trains to bus, others switch from air travel to trains?

Traveling on corporate curbside buses and Chinatown buses appears to have different effects on survey respondents' likelihood to use other modes. As shown above, after using corporate curbside buses, survey respondents are less likely to use commuter rail (to travel between Philadelphia and New York) and may be less likely to drive. But using a Chinatown bus had no effect on participants' likelihood to use these same modes. There are several reasons why traveling on these two types of buses has different effects on future travel. First, as the demographic analysis of the survey suggests, corporate

curbside bus and Chinatown bus passengers are different populations. While both groups have similar access to autos and rates of auto-ownership, the former are more affluent than the latter, suggesting that the corporate curbside bus passengers may have a greater set of choices. Beyond these quantitative differences, the focus groups also suggest some possible qualitative differences in the experience of using the different buses. In the focus group discussions, participants described the Chinatown buses and the corporate curbside buses in very different ways. For many participants, taking the Chinatown bus was more than just a utilitarian activity; it became an adventure for participants, a way to experience an immigrant culture (even if it is ephemeral and experienced only on a surface level) (Klein & Zitcer, 2012). At the same time, participants catalogued their concerns that buses are unsafe (echoed by the survey findings presented in this chapter). A number of participants talked about transitioning from primarily using Chinatown buses to relying on corporate curbside buses. In comparison, corporate curbside bus use was more utilitarian. Participants described corporate curbside buses as professionally operated and inspiring rider confidence.

The intercity bus industry is still changing rapidly and the landscape may look very different in a few years. The survey also suggests a reason why passengers may avoid traditional terminal buses. Passengers reported operational and maintenance problems with these buses at similar, or higher, rates than the Chinatown buses and at rates much higher than for the corporate curbside buses. For example, survey respondents reported late or no-show buses most frequently with traditional terminal buses. These types of problems could contribute to passengers abandoning or avoiding traditional

terminal operators.

CHAPTER 4: REPONSES TO CURBSIDE BUSES

Chapters 2 and 3 focused on curbside bus passengers, in this chapter, I turn to curbside bus companies and city planners. This chapter addresses how curbside buses are changing the intercity bus industry and how city planners have responded to the problems associated with an influx of these buses on city streets. To understand these changes, I interviewed bus managers, local transportation planners, neighbors and other stakeholders. The interviews provide an in-depth understanding of the changing industry and the response by local planners.

Twenty some years after the deregulation of intercity bus travel in the US, the industry has experienced increased competition, ridership and service and innovations, as well as declines in fares, in the form of curbside buses, however, critics of deregulation also predicted some negative consequence, which have come true; these include: threats to public safety and negative neighborhood impacts.

The stakeholder interviews suggest that deregulation has led to a flourishing intercity bus industry and devolution of intercity bus policy to the local level. By moving out of the terminal and onto the street, some of the problems formerly associated with intercity buses have shifted from the bus terminal to the city. Crowds of travelers hoping to board departing buses are visible on the sidewalks where they block the way of pedestrians, leave trash, go to the bathroom, and hop into and out of double-parked private vehicles and cabs. City planners have responded to the influx of a large number of buses on city streets by developing permitting programs to regulate the use of curb space or by

pushing curbside intercity buses back into bus terminals. However, these tools are limited in Cities throughout the US face similar challenges when local private transit services, casino buses, mobile or web-based taxi-hailing services and mobile food vendors proliferate on city streets. Understanding how cities have responded to curbside buses may offer lessons for planners managing the proliferation of private transportation services.

Intercity buses and regulation

In the 1920 and 1930s, shortly after the first intercity buses appeared on city streets, states and then the federal government began regulating the growing intercity bus industry. In the 1920s, state after state began to regulate intercity bus industry working to protect the public from unreasonable fares, limit competition, ensure minimum service levels and requirements of a level of financial stability from companies (Walsh, 1987). Regulations differed slightly from state to state, but they generally set standards for safety and instituted oversights to protect against exorbitant fares, inadequate capacity, infrequent off-peak service and poorly maintained vehicles (Jones, 1985; A. E. Kahn, 1990; Walsh, 1987). Soon after, in 1925, the Supreme Court nullified these state regulations for violating the Interstate Commerce Clause of the Constitution. It took ten years for the US Congress to pass *The Motor Carrier Act* of 1935, which regulated interstate bus travel and addressed issues similar to the older state-based regulations (Walsh, 1987). The 1935 regulation was support by a broad spectrum of constituents supported including the heavily regulated railroad industry concerned with competition

from buses; a public concerned with passenger safety; and dominant players within the bus industry itself, concerned with internal competition (Walsh, 1987). In the years following the 1935 The Motor Carrier Act, intercity bus ridership increased, service improved and the industry consolidated into several large bus companies (Walsh, 2000).

In the 1930s, bus companies built centralized terminals to provide comfortable places to purchase tickets, wait for a bus, eat, and shop (Walsh, 2003b). Following World War II, bus companies reinvested and modernized centrally located bus terminals (Walsh, 2003b). Because each company built their own structures, it was not uncommon for cities to have multiple bus terminals. In New York City in the 1940s, there were eight intercity bus terminals in Midtown Manhattan (Doig, 2001). Traffic engineers working for the city and for the Port Authority grew concerned about the increasing number of buses traveling from the newly opened Lincoln Tunnel “to eight separate bus stations, with street stops en route, blocking traffic and adding to the general congestion” (Doig, 2001, p. 315). Therefore, New York (along with other cities) began to build consolidated bus terminals. After several studies by city and Port Authority planners, the Port Authority proposed to build a bus terminal between 8th and 9th avenues between 41st and 42nd streets, with bus ramps extending to the Lincoln tunnel; they estimated that getting the buses off the streets and into the terminal “would reduce traffic congestion equal to adding two or three additional crosstown thoroughfares” (Doig, 2001, p. 317). To ensure that all the bus companies would move into the new terminal, the city banned bus companies from building new terminals elsewhere in Manhattan. By 1963, all intercity buses used the Port Authority Bus Terminal (PABT).

After World War II, intercity bus mode share rapidly declined. During this time, bus terminals transitioned from being “modern and efficient” transportation spaces to inefficient burdens for the bus companies, located in dangerous inner city neighborhoods far from the suburbanizing population, and increasingly viewed as potentially dangerous for passengers and visitors (Walsh, 2003b).

In the early 1980s, amid years of declining economic health, the federal government deregulated the intercity bus industry. Bus companies experienced increasing debt due to high inflation and rising labor costs; at the same time ridership, and thus revenue, fell due to increasing auto ownership, a newly deregulated airline industry, and competition from the newly formed Amtrak (Button, 1987). To maintain intercity bus service, which largely served small towns and low-income passengers, the government had to choose whether to subsidize intercity bus companies or deregulate the intercity bus industry (Button, 1987; Walsh, 2000). Following the prevailing economic logic of the time, Congress passed the 1982 *Bus Regulatory Reform Act* which deregulated the intercity bus industry removing controls on pricing, operations (scheduling) and entry and exit from the market while retaining regulations on safety and environmental impacts (Berechman, 1993; J. Kahn, 1990).

The promise of deregulation is that increased competition, or the threat of competition, will force operators to be more efficient and provide better service to the public. Transportation economists argued that the decline in ridership on bus and rail carriers and the financial problems of intercity travel in general (including airlines) were a direct result of government regulation (Meyer et al., 1959). The absence of competition

removed incentives for efficiencies or innovation, and regulations required companies to serve unprofitable routes (Gómez-Ibáñez & Meyer, 1990; Morrison & Winston, 2000).

Critics of deregulation argued that the absence of regulation would lead to a number of problems. Deregulation could reduce passenger safety due to inadequate operator training; removing controls on fares could allow bus companies to increase fares and while limiting scheduled service and reducing quality; and bus companies might reduce wages, benefits and job protection for workers (Gwilliam, Nash, & Mackie, 1985a, 1985b; Vuchic, 2005). Critics of deregulation also argued that it makes coordinating services, particularly multimodal planning, more difficult for planners (Gwilliam et al., 1985a; Vuchic, 2005).

Evaluations of deregulation in the 1980s and 1990s generally found that deregulation did not lead to either the promised benefits or the feared harms. A number of small bus operators entered the market and new airport and casino bus services were introduced, but intercity bus companies continued to cut service and lose market share to other long distance modes, as had been the case prior to deregulation (Berechman, 1993; Button, 1987; Oster & Zorn, 1986; Talley, 1989). Despite the predictions of deregulation proponents, bus fares did not fall in this period, even on the heavily traveled routes, and even though bus companies reduced labor costs via “lowering wages, laying off personnel and renegotiating work rules,” their financial position continued to decline (Berechman, 1993, p. 268; Button, 1987; Dempsey, 2003). Writing about these early evaluations of deregulation, Button (1987) cautioned that “the effects of any reform measure take time to become fully apparent and this is particularly so with regard to an

industry that has been severely regulated for nearly 50 years” (p 155).

Beginning in the late 1990s, competition in the intercity bus industry began to emerge. With the rise of curbside buses, regulators and transportation planners faced two major issues: concerns about the safety of buses and questions about how to accommodate a large number of buses on city streets. Overall, these problems match some but not all of those predicted by critics of deregulation and scholars of informal transit: decreased safety, problems associated with vigorous competition, declining labor conditions and uncoordinated service (Cervero, 1997; Cervero & Golub, 2007; Vuchic, 2005). Safety concerns proved valid as curbside bus crashes resulting in almost 30 deaths and injuring over 150 passengers (between 2004 and 2013) led to the shutdown of virtually all the Chinatown buses in 2012 and 2013 (Fanelli, 2010; Gelbart, 2007; Hill, 2003; Norton & Marsh, 2011; Slack & Daniel, 2005).. At the local level, city transportation officials struggle to address the influx of bus staging operations on city streets. Informal bus depots have purportedly increased congestion, decreased pedestrian safety and brought complaints from neighboring businesses and residents (New York City Department of City Planning 2009).

Data Collection

From 2009 to 2013, I interviewed with 18 stakeholders in the intercity bus industry. The interviewees included management and staff of intercity bus companies, city transportation planners, academics, and residents near bus stops. The bus operator interviews included both traditional terminal operators and corporate curbside bus

operators, but not operators of the Chinatown buses. Chinatown bus operators either ignored or refused my numerous requests for an interview, so the discussion of the Chinatown buses included in this chapter is drawn from the observations of city planners, industry experts and other stakeholders and observers.

I recruited many of the participants by directly contacting bus companies and city departments of transportation. I recruited several other participants at a meeting of the National Association of City Transportation Officials (November 2011) on the curbside bus industry. Finally, in a handful of cases, interviewees recommended other interviewees to me.

For the interviews, I prepared a topic guide (see Appendix C) which address the participants' current job; their initial awareness of the curbside intercity bus industry and how this awareness has changed over time; their observations about changes in the industry; their perspective on the current challenges and benefits facing the intercity bus industry; and their thoughts on the current regulatory and enforcement environment as well as how this should be altered.

In most cases, I conducted the interviews over the phone, though I interviewed a few participants in person. In each case, I recorded the conversation and prepared a transcript of the conversation. In a few cases, I interviewed participants a second time to address changes in the intercity bus industry or followed up with emails to address these changes or clarify statements they made during the interviews.

To analyze the interviews, I coded the transcripts using qualitative analysis software. I used the same approach here as I did with the focus groups (see Chapter 2).

Using the software, I tagged specific sections of the transcripts with codes representing themes, concepts and topics of interest such as outdated regulation, terminal costs, or tensions. After completing the coding process, I analyzed the coded segments and codes themselves to develop broader themes which are described below with supporting quotations, where relevant (Corbin & Strauss, 2008).

In the following sections, I changed participants' names to protect their confidentiality.

Response within the intercity bus industry

The advent of curbside buses has brought about massive changes in the intercity bus industry. This section describes how traditional terminal bus companies were slow to respond to the emergence of the Chinatown buses but eventually incorporated or co-opted aspects of this service. The second section describes how the operational model of corporate curbside bus companies differs from traditional terminal bus companies and how the traditional bus companies are beginning to adopt some of the practices of the corporate curbside bus companies.

The Chinatown bus companies

The Chinatown buses started as a single bus company, Fung Wah, serving the New York to Boston corridor; they “didn't intend to become a competitor to Greyhound” (Stuart, academic). The initial Chinatown bus service catered exclusively to a Chinese immigrant clientele and used vans, rather than buses.

The Chinese started [with] little van lines and car services and then small van lines to move restaurant workers. Eventually those became popular enough and were serving enough folks that they became bus lines. Those bus lines went mainstream as people gradually found out about them, college students and backpackers. (Stuart, academic)

At the time, the management at traditional terminal bus companies did not pay the Chinatown buses much heed. The legacy carriers were aware of the Chinatown buses but assumed they would be out of business shortly and could not imagine that a low-price no-frills service would attract a significant ridership.

Well, initially it was a non-factor. You heard about it and they're just running vans. They're running vans between New York and Philadelphia as an example or Boston, these 15-passenger vans and you say, "Who the hell would want to ride that far with no bathroom, no real place for luggage and no professional driver? They're not going to be around long." Next thing you know, they were minibuses. And the next thing you know, it was motor coaches." (Terry, traditional terminal bus manager)

For the first roughly ten or twelve years we ignored [the Chinatown buses], never took these guys seriously, always assumed that the business model was fly-by-night. ... [People at Greyhound] always made the joke that, "Oh, they'll be out of business next year" or "Are their buses dragging their bumpers yet?" or just some snide, snide comment. The braver of us would say, "Well no, they had 20 buses last year. They have 30 buses this year. They're doing quite well" and it still didn't change. [Greyhound] didn't really believe in the model: Low prices and just driving high volume is the Wal-Mart model... But then they're driving full buses. ... When you put a pencil to it they made money. (Tim, corp. curbside bus manager)

Traditional carriers also could not imagine that large numbers of passengers would be willing to stand outside in the elements rather than in a terminal. One representative from a traditional terminal bus company assumed that passengers who used his company's bus would not ride on Chinatown buses that were "rarely clean -- dirty wheels, dirty buses. You would think, 'Our customers wouldn't want to ride on a bus like that'" (Terry, traditional terminal bus manager). Another described his shock one

Thanksgiving when he came to New York to take stock of the Chinatown buses:

I came [to New York] for Thanksgiving of '07. ... We went out and we just would like grab a sandwich and we would wander around the city. I will tell you, I was just stunned... You're standing there, it's cold, and it was like 35 degrees and drizzling. It's miserable. I'm sitting here watching 300-400 people load for [curbside bus company] around Thanksgiving. It was like a Tuesday or a Thursday. It wasn't even Wednesday, the big day. I was just stunned, just shocked beyond belief. (Tim, corp. curbside bus manager)

Eventually, traditional terminal bus companies began to take the Chinatown bus companies seriously. In 2007, Greyhound conducted a market study and found out that the Chinatown bus companies had captured the majority of the market for intercity bus passengers traveling to and from Boston, New York, Philadelphia and Washington DC. “We thought it was [going to be split] 60/40 our way. It ended up being 60/40 the other way” (Tim, corp. curbside bus manager).

For the legacy carriers, the Chinatown buses prompted them to begin developing their own curbside bus company. Greyhound and Peter Pan began to jointly develop BoltBus as a way to offer point-to-point curbside service.

The big guys finally realized that it's time to join these guys because there is a market out there. Maybe it was inevitable but it's great that some of the big guys have finally gotten into it and the consumer has an option about how they want to go about this thing for still relatively reasonable rates. (Howard, local transportation planner)

I think they realized that in order to remain competitive and in order expand their market of people taking buses that they too have to adjust and learn from them what works. (Daniel, corp. curbside bus manager)

Then, a series of deadly crashes led to a fundamental restructuring of the industry.

The Federal Motor Carrier Safety Administration (FMCSA) shut down almost 30

Chinatown bus companies in 2012 and 2013 following the crashes. As of late 2013, there

were no Chinatown buses operating from New York to Boston or New York to Philadelphia. A niche curbside bus carrier still operates to Northeast Philadelphia (but not Center City Philadelphia), and one of two carriers that operate the New York to Washington DC route is still operating. In response to that event, Greyhound and Peter Pan quickly set up curbside intercity bus service from Chinatown in New York to Philadelphia (and more recently between Boston and New York). “The moment that those 26 Chinatown operators were shut down, Peter Pan was immediately in the Chinatown market with a branded bus [Yo! Bus]” (Megan, local transportation planner). According to interviewees involved with planning Yo! Bus, the new service is trying to attract passengers who formerly took the Chinatown buses. Yo! Bus also has hired English, Mandarin and Fuzhounese speakers to hand out fliers publicizing the new bus service.

We know that there are people that rode the Asian carriers because of convenience. [Passengers] don't have to get off at 42nd and then ride back downtown. They leave from Lower Manhattan, easy access to Brooklyn, easy access to Queens without having to go to the Port Authority and then hop on the subway all the way back down. ... [And] our marketing folks got together and just kicked around and said, “How about if we came up with something that seemed that we would brand it for the Chinese population in both cities ... but keeping in mind it is not our goal to bleed our normal service between New York and Philly on to the Yo! Bus. What we want to do is bring in new riders. That is our goal. (Terry, traditional terminal bus manager)

Reflecting on the demise of the Chinatown buses, one planner mused that the Chinatown buses spurred traditional carriers to change their operations and provide the types of services that appeal to travelers.

What it spawned was the old behemoths and the slow to respond who weren't listening to their customers – it got them off their ass and into the market. ...

There has been an outcome that's beneficial for society, it got these slow moving transportation costumers to provide a service that their customers wanted. The companies didn't know that they [customers] wanted them and they didn't care. Now we'll see what'll happen two years from now. We'll see if the ticket costs one hundred bucks or whatever. But it'll be interesting. (Howard, local transportation planner)

Overall, the effect on the neighborhoods where these shuttered buses used to operate is clear. One interviewee reported that while the number of buses operating intercity service in New York's Chinatown as declined, the number of bus companies traveling to and from casinos has increased. The interviewee did not know whether the increase in the casino buses was coincidental to the demise of the intercity Chinatown bus industry.

Corporate curbside bus companies

At first glance, the main differences between traditional terminal buses and curbside buses appear to be the fact that the legacy carriers continue to operate out of a bus terminal and curbside carriers operate on the street. But interviews with bus managers suggested that differences behind the scene are more important. Interviewees stressed that curbside bus companies, particularly corporate curbside bus companies, have developed much more efficient operations compared with traditional terminal bus companies.

Corporate curbside bus interviewees were indifferent about operating on the street. The representative went on to add: "we're not in any way wedded to being a curbside operator" (Marjorie, corp. curbside bus manager). In fact, most of Megabus' service in the UK operates out of terminals, which the company representatives felt are

much better than the facilities in the US.

There's been more investment over the years in decent size terminals. So we don't have the kind of issues like we've got in New York [where] there's just no space within the Port Authority for anyone else to go in. Also, the terminals tend to be nicer because they're more heavily used. ... There are good shops and the like in there, so you have an easier time from a facilities and locations point of view, and probably a bigger market to tap into. [But in the US], the terminals in the cities are either in horrible areas, where our customers just wouldn't want to go to anyway, or there simply isn't the capacity within the terminals, so we're forced to be curbside in many areas (Marjorie, corp. curbside bus manager).

Operating on the curb provides some cost savings, but according to corporate curbside bus operators, these savings are small compared to the savings from a more efficient ticketing and operation model:

The primary cost differences between Bolt and Greyhound traditional is really not the terminal or the curb. Being on the curb does save you some money but it's just not a lot. The real big differences are the operating efficiency. Bolt's just a more efficient model [than Greyhound]. (Tim, corp. curbside bus manager)

The first operational difference between traditional terminal bus companies and curbside bus companies has to do with the nature of their bus routes. Corporate curbside bus companies focus on operating express point-to-point service, while many traditional terminal bus company routes require several stops along the way. As one interview noted, "People don't necessarily want to take a seven-hour journey from New York to Washington with seven stops along the way" (Daniel, corp. curbside bus manager). Interviewees suggested the higher demand and greater efficiencies of point-to-point service offset the lost passengers wanting to travel to interim stops.

When planning routes, corporate curbside bus companies look for areas where they can develop a hub of destinations which have a large concentration of young people, particularly colleges and universities, and a strong transit network within a reasonable

distance from the hub.

We're just looking for the right [mix of] (a) college kids, (b) ties into the transit system. ... About a third of our ridership is either the in school or post grad or grad. We're going to be looking for that type but we also look for a strong transit network. ... A lot of the high-speed rail markets would be wonderful markets [for curbside bus] ... Where we've got good density like the Ohio valley with the three C's, Cleveland, Columbus, Cincinnati. There's no reason why a [curbside carrier] couldn't do well in those types of markets. (Tim, corp. curbside bus manager)

We're very keen on getting into universities. Our highest demographic is age 18 to 35, so we can stop at major university sites and we know we'll be able to tap in to good market there. So we tend to look where the larger cities are and make sure that everywhere there are trips that we could get to within reasonable driving time, so three to four hours, up to a maximum of eight hours really to be sure the driver's going to be safe. When you look at Denver, there's a long way to get to anywhere that big. ... We look at areas where we can plunk a whole network and then build that up and get the revenues going through there, and then we'll look for other suitable areas somewhat further down the line. (Marjorie, corp. curbside bus manager)

The second differences between traditional terminal bus companies and corporate curbside bus companies has to do with ticketing for specific trips. As one interviewee put it, Greyhound's "operating model doesn't work!" (Daniel, corp. curbside bus manager). The model used by Greyhound and other legacy carriers is a "Capacity Flexible Model" which does not limit the number of tickets that these companies will sell. If more passengers show up for a specific departure than a bus can hold, the company will either dispatch another bus or make the excess passengers wait. Interviewees explained how the unpredictable demand leads to inefficiencies:

With the legacy Greyhound model, there's a lack of knowledge [for the dispatchers and operators] of what that sales channel is bringing you which is the first problem. Are you going to get 50 people or 100 people out of this sales channel? If one bus fills up, technically, you fill up another one. With that model, which we call that Capacity Flexible Model, there are lots of unknowns with that and that's a real hard model to run. It's a traditional bus model but it's a very hard model because you might run two buses down to D.C. and only one back. So

obviously, you're out of whack, right? You're either going to have to deadhead that bus deck from D.C. or from somewhere else to maintain a balance. We were constantly fighting to forecast what was going to happen and then position ourselves and then react to what actually happened. (A) You might over forecast and you might position more than you need, so that's wasteful, right? Or (B) it happens and then you have to react and reposition back. (Tim, corp. curbside bus manager)

I show up at the terminal [in Washington] an hour in advance and there is a 100 people in line, I might not get on the 5 o'clock block bus. So what Greyhound might do is send another bus to Washington to pick up those other people. But since you sent another bus, it may not have a job to do to bring those other people back. So you either send the driver down there for a one-way and send the bus down for a one-way and you don't utilize the bus or the driver going the other direction, so you lose out on the revenue that you made by serving the whole load of customers. So they serve an unbalanced demand of customers. (Daniel, corp. curbside bus manager)

Greyhound's policy of allowing passengers to use a ticket purchased any time (not limited to the time printed on the ticket) compounds this issue. The policy gives passengers greater flexibility and choice but may undermine reliability if bus companies are unable to meet the demand and passengers are unable to board the chosen bus. However, if the bus operator is unable to provide sufficient capacity to meet the demand, this flexibility may be undermined by a lack of certainty that the passenger will be able to get on the preferred bus.

In contrast, the model used by corporate curbside buses is a "Reservation Fixed Capacity Model." The company sells only as many tickets as there are seats for a scheduled bus trip and limits passengers to using the ticket on that scheduled service. Within this model, corporate curbside bus companies may add buses to their schedule to accommodate increased demand; however, they will only do this when they know there will be sufficient demand for the bus's return trip.

Labor costs represent another difference between traditional terminal bus companies and curbside carriers. The differences in labor costs appear to be fewer workers rather than cheaper workers, because corporate curbside carriers largely use unionized bus drivers. (Of course, this may not be the case for all curbside companies, and it may not extend to other support staff working for curbside carriers). Comparing the labor needs of curbside buses and traditional carriers, one representative from a corporate curbside carrier noted, “I’ve got three employees in Boston and Greyhound has roughly 30 to run basically the same amount of business” (Tim, corp. curbside bus manager).

While corporate curbside bus companies are “not in any way wedded” to either the curb or the terminal, traditional terminal bus companies like Greyhound or Trailways may not be able to give up on bus terminals very easily. According to traditional terminal bus operators, Greyhound’s immense networked operation requires terminals:

Part of the Greyhound model requires a terminal. When you're not doing point-to-point, you obviously need that transfer point just like you need the Penn Station as a transfer point among the subway lines, right? But Greyhound does packages, they do baggage, they do the whole nine yards. In some respects, their model requires a terminal. (Tim, corp. curbside bus manager)

A business model built on an extensive network requiring transfers, stops at numerous small towns and package and baggage service may indeed require terminals. But traditional terminal bus operators may not continue to do all those things in the future.

Traditional terminal bus companies are increasingly adopting the more cost-effective practices of curbside carriers. First, Greyhound recently transitioned from capacity flexibility to reservation fixed capacity service. Greyhound Express mimics many features of the corporate curbside buses: reservations, express service, wireless

internet, power outlets and refurbished or new buses with distinctive branding. This service is currently a small fraction of Greyhound's total operations, but a traditional terminal bus operator suggested that "by the next five, ten, fifteen years, all seats will be reserved" (i.e. reservation fixed capacity) (Terry, traditional terminal bus manager). Second, traditional terminal bus companies have developed their own curbside bus companies which operate as reservation fixed capacity express service. Greyhound and Peter Pan jointly own the most notable of these companies, BoltBus, which began on the East Coast in 2008 and now has a second hub in the Pacific Northwest (based in Seattle). They also jointly own the newer Yo! Bus, serving Chinatowns primarily on the Northeast Corridor.

Response by city planners to curbside buses

This section describes how planners have reacted to curbside buses. First, I describe planners' notions about the benefits and burdens of curbside buses. Next, I describe how outdated regulations limited their early ability to respond to the problems associated with curbside bus service. Finally, I describe the two main tools planners have used to address these problems: developing permitting programs for the use of curb space, and pushing intercity buses back into terminals.

The benefits and burdens of curbside buses

Many of the problems and complaints associated with curbside buses have to do with an increased numbers of buses on city streets, adding to competition for the curb,

congestion and pollution.

[Megabus] located right in front of [the train] Station, which is our Amtrak terminal as well as our commuter rail station. So a perfect location for them, exactly where they would like to be, but a highly congested area. The curb space there, there's a lot of competition for its use. Private automobiles like to pull over and drop people off for Amtrak or pick people up. The cabs, of course, want to use that spot. (Grady, city transportation planner)

The bigger issue is always you know how you accommodate them on the street [and] we have extremely limited on-street availability everywhere, particularly in Chinatown because the streets are so narrow and there's only so many streets that the buses can traverse. So it becomes an issue of you know how many there are and where they're hanging out. (Megan, local transportation planner)

[The] significant increase in volume in buses [en] route ... from the highway to the stop can create localized congestion impacts and localized different air quality impacts and other kind of travel delay impacts. (Erick, city transportation planner)

Additionally, local businesses frequently complained about the problems

associated with large number of bus passengers standing on the sidewalk waiting to board or disembarking from buses (of course the passengers that these buses bring may also stimulate business for some local businesses).

Commercial retail stores have a problem with all these customers standing, blocking the front of their stores and standing with suitcases and luggage. What are you going to do with the people? Bathrooms, we hear those complaints; you're standing waiting for the bus, you're waiting, then you need the bathroom and there's no bathroom. You can go in some restaurants and buy something; they'll let you use them. Those are all things on the part of the street corner operation that you hear -- people urinating in front of a store and trash! (Terry, traditional terminal bus manager)

Many businesses, I think, view them as a nuisance. So yes, on the one hand you're dropping off 50 or 80 customers, you know, 80 potential customers at a batch, but at the same time you're creating sidewalk congestion. You're diverting pedestrian traffic that may be destined for your store. You could be creating litter problems, you know, all sorts of things. So [planners need to think about] finding locations where adjacent and established business owners are not going to be negatively impacted by the bus operations. (Erick, city transportation planner)

The complaints heard by local departments of transportation (DOTs) were not limited to local residents and business. Bus companies also complained about receiving parking tickets:

[The buses] were operating in places that might be metered or alike so from time to time the carriers would get tickets and [we at the local DOT would] hear about it from the carriers – ‘Hey, we’re just trying to provide a service here and we’re being harassed by enforcement.’ (Shawn, local transportation planner)

One planner noted that “whenever I go to the community board or whenever I’m dealing with people is ‘what are you guys are doing about the buses?’” because the buses have a “major impact on the quality of life for folks” (Megan, local transportation planner). Another described how he used to hear frequent complaints about curbside buses before they moved their pick-up and drop-off sites, “I can’t tell you how many complaints we used to get from the community where these guys were operating” (Shawn, local transportation planner).

Yet, the planners I spoke with were clear that they want curbside intercity buses to serve their cities. They see the buses as contributing to the local economy, noting that curbside buses have become “important economic drivers for the community in terms of getting people there for jobs and you know wherever else” (Megan, local transportation planner). Another planner echoed the importance of providing “mobility options that really run the spectrum” (Erick). From their perspective, local planners believe that curbside buses complement and expand intercity travel options:

It’s important to us that people be able to fly to Philadelphia non-stop from any point on the globe. It’s important to us that high speed rail continue in the Northeast Corridor and travel times are cut between Washington and New York from Philadelphia. And it’s important to us that college students and retirees and

tourists can affordably get to our city from major hubs along the corridor and from other locations around the country, so all of that is very good for Philadelphia. (Erick, city transportation planner)

The same planners credited curbside bus companies with providing service from Philadelphia to destinations that were previously underserved, inconvenient or expensive:

[Curbside buses have added] services to, what [I think] the market indicates are underserved markets, primarily places that had very high air fares, not good rail service, not good bus service and where it was a long and not good drive. So if you think about the addition of service to Hampton, Virginia or Toronto or Syracuse, you know, those are places where from Philly it's expensive to fly, there's not good rail service and even if you have a car it's not good to drive by yourself. (Erick, city transportation planner)

Planners recognize that the introduction of a large number of buses to the city streets brings with it a tension between the benefits of increased transportation options and the burden of negative consequences due to a large number of buses staging operations on street corners and curbs. Both planners and bus managers recognized this challenge:

It's kind of a tug-of-war between this type of transportation that's really popular and growing. ... [but] how do we grow it and not totally disrupt the flow and heartbeats of the city. So that's a major issue now. (Tim, corp. curbside bus manager)

We deduced that they were providing a service to the community that we'd like them to continue to provide. But at the same time, we knew that it was going to open up a whole can of worms if we didn't address this thing. And we had to address some complaints from citizen constituency in that neighborhood. (Howard, local transportation planner)

Outdated regulations

The Federal Motor Carrier Safety Administration (FMCSA) regulates and

oversees the licensing and operations of intercity buses but not entry or exit from the market. Further, the FMCSA does not regulate where within cities intercity buses operate. But when intercity buses began proliferating on East Coast streets, local planners often felt that they had a “minimal amount of regulatory authority ... we can’t involve ourselves too much with the business operation obviously particularly with the intercity buses” (Megan, local transportation planner).

The appearance of intercity buses on city streets took many planners by surprise. One planner reported that, “We were never formally notified. Just one day they started showing up and parking in front of Union Station in an area that was designated as a bus stop” (Grady, city transportation planner). Another interviewee learned about the buses after hearing complaints from residents or business owners in Chinatown.

What happened in the Chinatown section is that there were constituents from the Chinatown community that started to complain about the operations and how they were impeding on their use of the curb space either directly or indirectly (Howard, local transportation planner).

This lack of awareness at the local level of a new transportation service is a direct result of the deregulation with the *Bus Regulatory Reform Act of 1982*. Prior to deregulation, new entrants to the market or existing bus companies had to seek approval from the Interstate Commerce Commission (ICC) for any changes to their operations, including their schedule and fares. Deregulation removed these controls, while retaining regulations on safety and environmental impacts (J. Kahn, 1990). Of course, when the industry was deregulated, curbside buses did not exist and almost all buses operated out of bus terminals.

Beyond not knowing what intercity buses were operating within the city limits,

local planners were often surprised to learn that their existing regulations and laws were not adequate to deal with the problems associated with these buses. One planner described learning that intercity buses were using the local public transit agency bus stops and then his surprise when realizing that the city regulations did not specify which buses could use a bus stop:

I was getting calls from people, especially the [local transit agency], because [Megabus] were stopping in a [transit name omitted] bus stop. Our first thought was, “You know, that’s a sign for a bus stop. It must be only for [transit] buses.” But then we checked the law and no! It said nothing about what buses could stop there, just that’s where buses should stop. ... We never realized that those bus stops were [available for any bus]. The city ordinance was very vague. Basically, it said that “This area is reserved for buses.” But they never said that they were for [transit name omitted] buses and that obviously was the intent when we put out all these bus stops and bus shelters. ... So technically, Megabus was doing the right thing. They were following the law and stopping in the designated bus stop (Grady, city transportation planner)

The problem from the planners’ perspective was that intercity buses unloading and loading passengers could tie up the bus stop, unloading and loading of 55 and 85 passenger, thereby preventing the local transit agency bus from using the stop. As one planner noted, “Megabus pulls up and parks for half hour or 45 minutes longer and the [transit name omitted] buses come, pull over for 30 seconds, and then keep going” (Grady, city transportation planner).

Others noted that local regulations did not designate where intercity buses could stage operations or how they traveled through the city to get to the staging areas:

We cannot control where they pick up and drop off. We cannot control anything about how they operate. We cannot control their routing. We can’t control any of this. ... The only thing we can provide is you know places where they can lay over and we can put up our little lollipop signs that say “Yes, you can pick up and

drop off here but you know you can really pick up and drop off wherever you want.” (Megan, local transportation planner)

Local transportation planners complained that the lack of regulations meant that intercity bus companies were not required to inform nearby residents or business that a new intercity bus service was going to stage operations nearby. “We didn’t require the carrier to be more of a good neighbor and inform the community” (Shawn, local transportation planner). Though it is not clear exactly how the local planners would ensure that the bus companies act as a good neighbor.

Permitting

In the past few years, most cities with large numbers of intercity curbside buses have developed or adapted permitting processes as a way to deal with their effects.

In the early years of the Chinatown buses, planners in New York and DC sought to address the problems of curbside buses by moving the bus stops off the street and into parking lots. Between 2005 and 2009, New York City Department of Transportation (NYCOTD) developed plans to move buses to two staging areas. However, neither plan moved forward. The first plan failed because both the bus companies and local residents fought the proposal to move the buses further from the subway connections and further from the center of Chinatown. Residents near the proposed site did not want the buses near them, either. A second proposal to move the buses to a parking lot failed because a local Business Improvement District leased the lot and the city (hoped) to eventually use the lot to develop affordable housing. Amid an increasing proliferation of bus stops

throughout the city, planners for the Washington DC Department of Transportation (DDOT) tried to move all the curbside intercity buses to L'Enfant Plaza in 2008 (Baribeau, 2008). Planners abandoned the proposal in response to complaints from bus companies and riders about the move.

After these failures, planners in DC and New York began to develop new laws and regulations to manage the use of curb space by intercity buses. Essentially, these new regulations give these cities the power, which they did not previously have, to restrict the use of curbs, approve locations and charge fees. In most cases, the new permits also require that bus companies pay a fee to the city. Some are flat fees to cover the administrative costs associated with the permit program. Others include a usage fee based on the number of arrivals and departures and, in some cases, the reduction in revenues from parking meters if they had to be removed.

The DC permit program requires input on proposed bus stops from the local community and other stakeholders (such as the local transit agency). The permit program requires that bus companies “show the fact that [they have] engaged the community” and if “everyone buys in and everyone is okay with the location then they deem it as a benefit to the community” (Shawn, local transportation planner). Additionally, bus companies are required to pay a fee to use the metered spaces. Because the permit system focuses on curb space, bus companies in DC operate in parking lots that are exempt from the permitting program. “If they are not operating on public space, they are not subject to the permitting process” (Shawn, local transportation planner). Two Chinatown bus companies continue to stage their operations in parking lots and according to DDOT,

“quite frankly, we haven’t heard a lot of complaints recently about their operations which is a good thing” (Shawn, local transportation planner). Since adopting the permit procedure, planners at DDOT claim that complaints from both bus companies about police enforcement and complaints from the community about the buses have “pretty much gone down to zero, almost” (Shawn, local transportation planner).

The New York DOT established a permitting program in the summer of 2013 (New York City Department of Transportation, 2013). The permitting system restricts intercity buses (including regularly scheduled services, casino and tour buses) from loading or unloading anywhere but designated stops. It requires intercity buses to submit applications for staging areas, and it includes the New York City Department of Transportation (NYCDOT), the Metropolitan Transportation Authority, Port Authority and community boards in the decision making process. The system enables NYCDOT to charge a fee and “grandfathers in” existing stops for up to three years (New York City Department of Transportation, 2013). NYCDOT described the purpose narrowly: to manage the traffic and parking problems brought on by curbside buses. However, a NYCDOT planner described the purpose more broadly:

One [reason for the permit program] is to understand the world of the buses. Who is actually operating? Two, it’s basically about curbside management. And three, to give the PD, [Police Department], an enforcement tool. Before, it was really difficult for PD to enforce because the rules were really vague and not very clear. So now the new rules are pretty clear and now the PD should have a better idea about how they should go about enforcing [the new rules about where intercity buses can stage operations] (Megan, local transportation planner).

The fees associated with the intercity bus permitting programs are small compared to the costs of using the Port Authority Bus Terminal, despite what the

managers of intercity bus companies say. In New York City, NYCDOT levies an annual fee of \$30 for each weekly scheduled pick-up or drop-off. Thus, a bus company with 50 total pick-ups and drop-offs per week would pay only \$1,500 ($\30×50) for the entire year. The fee to operate the same service inside the Port Authority Bus Terminal in New York would be roughly \$130,000 to \$140,000 depending on the location inside the bus terminal (according to conversations with Port Authority staff).

Intercity curbside bus permitting fees in other cities are higher, while the terminal fees in these cities are presumably lower. In Washington DC, the fees associated with the permitting program are based on the equivalent rates for parking meters. The fee for intercity buses is \$0.50 per hour per car space (each bus requires five car spaces so for each bus it is \$2.50 per hour). Compared with the New York example, if each of the 50 total weekly pick-up and drop-offs took 30 minutes, the cost for a permit in Washington DC would be \$3,250 ($\$2.50 \times 50 \text{ weekly departures} \times 0.50 \text{ hours} \times 52 \text{ weeks}$), more than double the cost in New York City. In Philadelphia, the cost of a permit is a flat fee of \$5,000 per year for an exclusive bus space, or \$2,500 per year for a shared bus space.

Revival of terminals

In addition to developing permitting programs for intercity bus use of curb space, some cities encourage or push intercity buses back into terminals. Boston was the first major city to get curbside buses off their streets and into a terminal. According to one planner, it was simply “the luck of geography” (Howard, local transportation planner).

We probably would have the same problems as other cities [if South Station, which is adjacent to Chinatown, was not an option]... I don't know how many

years it would have taken ... I imagine we'd have to do something like craft a regulation and it would have to involve multiple departments (Howard, local transportation planner).

In 2003, the only curbside bus operators in Boston were located in Chinatown.

Corporate curbside bus operators had not yet entered the US market. Amid growing complaints from Chinatown constituents, Boston planners thought that they could address many of the complaints about the Chinatown buses by moving them off the curb and into the newly redeveloped South Station terminal bus depot, which was located only three blocks from where the Chinatown buses staged operations and was operating well below capacity.

Boston planners encouraged the bus companies to relocate into the terminal by heavily ticketing the bus companies, which they had the power to do.

We tried to scare them down there and to explain to them “whether you know it, this is your future. Whether it changes your competitive strategy is immaterial in this situation.” There is a bus station two or three blocks from where you are operating right now. My recollection is that it didn't take long to get them in there. (Howard, local transportation planner)

When BoltBus and Megabus began operating on the East Coast several years later, they also moved into South Station, at which point South Station was at capacity.

Requiring the buses to operate in South Station may have limited new entry into the market and competition by putting caps on capacity. First, the number of departures each bus company could offer was limited because of the fixed number of bus bays at South Station. Combined with the heavy demand for bus trips, each bus company was able to get a piece of the pie. Second, requiring all the buses to use the terminal removed accessibility advantages of operating in different areas of the city (at least on the Boston

end of the trip). Similarly, placing all the buses in the same facility reduced many of the contextual differences in the staging areas, such as the difference between traveling to board a bus in Chinatown and the bus terminal. This was something that a number of focus group participants discussed in reference to the appeal of Chinatown and their dislike of bus terminals (see Chapter 2).

To date, the only other East Coast city that has moved a large number of buses into a terminal is Washington DC. In addition to the permit process for curbs, DDOT converted a parking level in a garage attached to Union Station into an intercity bus staging area. Most intercity buses now use this garage deck as their staging area. Even Greyhound, which until recently had a bus terminal two blocks from Union Station, moved their entire Washington DC intercity bus operations into the garage (Commercial real estate developers are redeveloping the former site of the Washington DC bus terminal into a mixed-use residential and commercial development). Much like in Boston, the ability to move the buses into a garage was somewhat fortuitous:

The reason why for us it made sense is the fact that you had a facility that really wasn't operating as an intermodal center; it was just operating as storage. So I think the timing worked well. For other cities ... change may not be as easily achieved as we had it. (Shawn, local transportation planner)

The Chinatown bus companies, however, did not move into the Union Station garage. As of 2013, both of the Chinatown bus companies that still operated in Washington staged their operations in small parking lots in Chinatown. Additionally, two smaller independent intercity bus carriers pick-up and drop-off both on the curb (in DuPont Circle) and in the Union Station garage.

In addition to requiring permits to operate in the garage, Washington DDOT also

requires carriers to submit monthly reports on their service levels and passenger counts, something they never before had to do. Much like the permitting program, collecting this information will give local planners a much needed understanding of the intercity bus industry and help DDOT plan for the future.

Of course, not every city has the option to push curbside buses back into bus terminals. According to interviewees, the Port Authority Bus Terminal in New York is currently operating at capacity. While there is another bus terminal in New York, the George Washington Bridge bus station, it is located at the northern tip of Manhattan and may not be an appealing option for curbside bus carriers. Philadelphia also has an impending bus terminal quandary, because its Greyhound Bus Terminal may not be around for long:

[The] lease is up in a couple of years, if I recall it's up in 2016. The land is already owned by a developer ... I don't know where else they would operate out of ... You know I don't think we would be able to accommodate that kind of volume [operating on the curb and] people taking those longer trips, when the station is serving as a connection point and as kind of a hub, I think it requires having some kind of facility. (Erick, city transportation planner)

Discussion

Competition in the intercity bus industry took 15 to 20 years to develop, but once it did, it brought with it many of the predicted benefits: lower fares, innovation and increased ridership. Competition effected innovation in the operations of bus companies with the emergence of the reservation fixed capacity model, which increases the efficiency of operations. Legacy carriers are beginning to incorporate these models into their operations (e.g. Greyhound Express). Curbside bus companies have also improved

service by focusing on regional hubs with non-stop point-to-point service, rather than large-scale networks that require many stops and transfers for trips. Additionally, curbside buses have lowered costs and in many cases identified underserved markets for intercity bus travel. The industry is rapidly expanding throughout the country and new competitors have introduced technical innovations in services.

However, much of what critics of deregulation predicted has also come true. The deadly accidents in 2012 and 2013 suggest that safety had decreased, at least in one sector of the industry. According to interviewees, some of the shuttered Chinatown bus companies are petitioning to re-open, though it is not clear if and when that will occur.

Corporate curbside buses may take the place of the Chinatown buses. No longer a phenomenon peculiar to the Northeast, corporate curbside bus companies are rapidly expanding throughout the country. If these trends continue and traditional terminal bus companies focus on express services rather than local service, the dense bus network of today may give way to numerous smaller networks more focused on express routes. As a result, service to smaller cities and towns may decline. But while curbside buses may hasten this transition, it is certainly not new. Intercity bus service to smaller cities and towns has been declining since well before deregulation (Oster & Zorn, 1986). For policy-makers and planners, this decline in service would mean that if smaller communities want to retain intercity bus service, they will have to subsidize it.

As curbside buses expand their service to new cities, local planners have to confront the mix of benefits and burdens brought about by the buses. Because curbside buses stage operations on public rights-of-way, the negative aspects associated with these

buses, congestion, crowded sidewalks, little, lack of bathrooms, etc., also occur in public places. In contrast, the crowds boarding a bus in a terminal primarily affect the operators of the terminal (they also may affect other transportation planners who work on related issues). By moving buses out of the terminal and onto the street, ownership of problems transfers from the bus terminal operator to the city and to the bus passengers.

In the case of intercity buses, deregulation has shifted the domain and emphasis of regulation. Prior to the deregulation of the intercity bus industry in 1982, the federal Interstate Commerce Commission (ICC) regulated intercity buses. The ICC placed controls on entry and exit into the market, fares and schedules, and issues of safety. Today, another federal agency (the FMCSA) still grants licenses for companies to operate as interstate carriers, but its focus is exclusively on safety. Local governments have confronted the rise of intercity buses and the associated problems with new local regulations focused on the staging locations for intercity buses. Planners in the Northeast use two tools: permitting programs that regulate the use of curb space by intercity buses or by pushing curbside buses back into terminals via fines or tickets. In practice, this means that local governments are regulating entry into the market. Thus, while deregulation has removed some regulatory controls at the federal level, it has also led to the introduction of new regulatory controls at the local level.

Policy implications

The responses of both the intercity bus industry and city planners to the rise of curbside buses have important policy ramifications. First, curbside buses are one of several new forms or uses of transportation that present challenges for planners due to the

lack of existing regulations to address new services. Other services that are challenging city planners include the proliferation of mobile food vendors, mobile or web-based technological innovations and local private transit services. As these new services grow in scale, the problems associated with them will present challenges for local planners who want to enable the new services and the benefits that come with them.

It is incumbent on cities to adapt to new transportation phenomenon [sic]. So whether that's bike lanes or intercity bus or whether it's a new increase in cycling and increase in intercity buses or new technology platform for dispatching taxi cabs. (Erick, city transportation planner).

The process of developing a regulatory response to manage intercity curbside buses may have helped cities prepare for a wide range of uses for curb space. As one planner noted,

We started with intercity buses and we are doing the same thing with [food trucks, shuttles and sightseeing buses] to have the regulation that is attached to a permit so we approve or disprove [sic] locations. Because part of the issue with these guys [is that] they could just come into the city and start operating. And they could get away with it because there was no permit [program]. (Shawn, local transportation planner)

The second major policy implication has to do with the future of bus terminals in large American cities. The interviews with bus operators suggest that corporate curbside bus companies are not particularly committed to operating on the street. According to interviewees, they operate on the street because bus terminals in the US lack capacity charm and desirable locations. Bus passengers in the focus group analysis presented in Chapter 2 certainly agreed that they did not like bus terminals. The corporate curbside bus companies also claim that the cost differences from operating on the curb compared to operating in a terminal are small compared to the cost savings they achieve from their

ticketing and operational models (in contrast to traditional terminal bus companies) – though given the low fees for street permits, the cost differences between a terminal and curbside operation are substantial.

Traditional terminal bus companies also seem of two minds when it comes to operating out of terminals. On the one hand, the services they offer (a large networked service that relies on transfers as well as baggage and package shipping services) benefit from the use of a terminal. Yet, these companies have initiated new express services, which do not serve interim stops and transfers, and have also introduced their own curbside bus companies (e.g. BoltBus and Yo! Bus).

In the face of this ambivalence, what should city planners do? One option is to do nothing. Planners can wait and see what happens. The supposed problems associated with congestion, crowding and litter from curbside buses and their passengers might not need to be addressed by city planners.

Secondly, planners could continue to use permitting programs as many cities have begun to do. These programs require bus companies to apply to operate within the city limits, designate where they can stage operations and, in most cases charge usage fees. However, these current programs do not address many of the negative spillover effects associated with the operation of a large number of buses on city streets. City planners could improve on these permitting programs by requiring that bus companies address these negative impacts that are occurring in these neighborhoods and manage their crowds and litter.

Cities could also look further into the past for inspiration. Before the Port

Authority of New York and New Jersey constructed the massive Port Authority Bus Terminal in Manhattan, individual bus companies each owned and operated their own, smaller, bus terminals. In the 1940s, there were eight different bus terminals in Midtown Manhattan. Cities could look to this model and require that curbside bus companies provide space for their own passengers. Cities could require that curbside bus companies build storefronts, at the very least, where passengers can buy tickets, wait in a protected space, and use the bathroom. At the same time, cities can use the same types of permitting programs already developed to regulate the use of curbs to control the environment just outside these storefronts. This type of policy would force bus companies to confront many of the negative spillover effects currently imposed on cities.

Finally, city planners could reinvest in large-scale terminals. Cities and transportation agencies could invest large sums to add capacity, build new bus terminals, and improve the experience of bus terminals. This is an expensive proposition and would require either centralizing bus operations in one part of the city (reducing the accessibility advantages from having multiple staging areas throughout the city) or building multiple smaller terminals.

CHAPTER 5: CONCLUSION

In this dissertation I examined the rapidly growing curbside intercity bus industry. In fifteen years, this industry grew from nothing to become the dominant provider of intercity travel in the Northeast Corridor. This dissertation contributes to the question of how federal and local governments should regulate intercity buses by providing a foundation of knowledge about the nature of these buses and their impacts. At the outset, I posed four broad research questions: First, what are the aspects of curbside buses that attract large numbers of passengers? Second, who uses curbside buses? Third, what is the impact of this rapidly growing transportation segment on competing modes? Fourth, how are curbside intercity buses changing the intercity bus industry and how are local planners responding to the challenges posed by these buses? The following sections summarize the findings as they relate to these questions. I then present some avenues for future research.

What attracts passengers to curbside buses?

During the six focus group discussions, participants were eager to share their experiences of taking curbside buses. Participants relished the opportunity to discuss the pros and cons of the various travel options, their travel decision-making process and to describe both outlandish and scary experiences they had on board these buses. Beyond the wild tales are insights into how travelers make decisions about intercity travel. As expected, participants stressed the importance of price. Curbside buses are cheap and this

appears to be an important determining factor in their growth. In addition, participants talked about how schedule reliability, frequency, flexibility and travel-time were important in their decisions. Onboard amenities, wireless internet and power outlets were less important. Safety concerns played a role, though more so for some people than others. But participants also made it clear that their perceptions of the different buses influenced their travel behavior. Most avoided traditional terminal buses because they perceived them as undesirable, associated riding the Chinatown bus with a form of cultural tourism and saw the corporate curbside buses as professional.

Who uses curbside buses?

There are significant differences among passengers riding corporate curbside buses, Chinatown buses and traditional terminal buses on the Northeast Corridor. Corporate curbside buses have attracted a clientele which is more affluent and whiter and the Chinatown buses attracted more Asian passengers and more male passengers. In addition, contemporary intercity bus passengers appear to be different from intercity bus passengers in the 1990s. Compared with passengers from before the dawn of curbside buses, today's intercity bus passengers are younger, more racially diverse and more affluent.

Curbside buses also appear to draw bus passengers from rail modes and possibly from driving. Survey respondents reported that they were less likely to use rail or to drive for the same trips after taking a curbside bus. After using Chinatown buses, survey respondents were less likely use Amtrak, but taking a Chinatown bus had no effect on

their likelihood to drive.

The survey data also support the notion that the Chinatown buses may have been less safe. Passengers on the Chinatown buses more frequently observed inattentive drivers and unsafe driving at much higher rates than on other buses. Additionally, passengers also felt that these buses were in much worse condition than other corporate curbside buses. The survey also suggests an additional reason why passengers may avoid traditional terminal buses. Passengers reported operational and maintenance problems with these buses at similar, or higher, rates than for the Chinatown buses and much higher rates than the corporate curbside buses. For example, survey respondents reported late or no-show buses most frequently with traditional terminal buses. These types of problems could contribute to passengers abandoning or avoiding traditional terminal operators.

Changes in the intercity bus industry and local regulation

Thirty years after deregulation, there is new competition in the intercity bus market. With competition have come innovation with new curbside services, increased amenities, and more efficient operations. In response to new competition, traditional terminal carriers have begun to adopt many of the innovations introduced by curbside bus companies.

As curbside buses expand their service to new cities, local planners have to confront the mix of benefits and burdens these buses bring. Local planners reported that when curbside buses arrived, existing regulations were mute on where, when and how

intercity buses could operate on their streets and curbs. Intercity buses could pull into a local public transit stop to drop off and pick up passengers; often, local planners could do little about it. In response to both the negative problems associated with intercity buses operating on their streets and the lack of local regulation, cities planners developed permitting programs for staging operations on city streets, and/or pushed curbside intercity buses back into bus terminals.

These developments suggest that the deregulation of the intercity bus industry has become de facto *devolution* of regulation. Some aspects of regulation remain at the federal level, namely safety requirements. But where the federal government no longer regulates entry into specific markets, local regulations have stepped up in the form of permitting programs for curb space. For an intercity bus company, this means dealing with at least three different regulators: the federal government and local permit administrators in both origin and destination cities.

Future research

There are several areas for future research about the changes in intercity travel. As of November 2013, there are no Chinatown bus companies operating between New York and Boston or Philadelphia. One of two companies remaining serves the route from New York to Washington. What happened to all the passengers who formerly used these buses? It is possible that some of them switched to other carriers. Yo! Bus (jointly owned by Greyhound and Peter Pan) is an explicit attempt by these companies to retain the

former Chinatown bus patrons traveling between New York and Philadelphia and Boston.

Yo! Bus, which operates in Chinatown (in New York), has hired English, Mandarin and Fuzhounese speakers to attract Chinese passengers. But Yo! Bus operates on a smaller scale than the companies it replaced; it has fewer buses and fewer daily departures. It is likely that other passengers switched to other bus companies or other modes.

Alternatively, these passengers may just make fewer trips. If so, it is important to understand how these changes have affected the lives of these travelers. The loss of the Chinatown bus may have broader effects on the community as a whole. The Chinatown buses were an important linkage between Chinatowns on the East Coast, so understanding how the loss of these bus connections affects the community could give a window in the changing nature of these immigrant enclaves.

Beyond the Chinatown bus issues, there is little research on the size of intercity bus ridership. On the Northeast Corridor, information on the number of intercity bus passengers is limited. Recent research on the growth of the industry has documented continued growth in scheduled intercity bus service (J. P. Schwieterman et al., 2013; J. P. Schwieterman et al., 2011; J. P. Schwieterman et al., 2007). But this research has focused on the number of scheduled bus departures, not ridership. Similarly, the FMCSA collects information on intercity bus companies about the number of buses they operate and total annual miles that a company operated during the last year. However, this data is not always complete. Large-scale public surveys are also lacking. Both the 2001 and 2009 National Household Travel Surveys record too few intercity bus trips to be useful for

estimating the size of the industry. The last national survey that focused on long-distance travel was conducted in 1995.

The most recent attempt to gauge the size of the industry was in 2007, when Greyhound conducted their own study (Greyhound Bus Lines, 2007), comparing their own records from 1997 to estimates they made of the industry in 2007. They concluded that ridership had grown from 3 million passengers to roughly 7 million annual intercity bus passengers on the Northeast Corridor. Since then, researchers have not attempted to quantify the number of intercity bus passengers in this area. In response to my requests for ridership data, individual bus companies either refused to share their information or shared it with me under conditions of non-disclosure.

Understanding the size and trends within the intercity bus industry is a crucial step for planners as they address the problems associated with this mode. Between 1997 and 2007, ridership doubled on the Northeast Corridor. But we know little about what has happened since then. Has ridership continued to grow or has it leveled off in the past few years? The continued expansion of the curbside bus industry suggests that bus travel has continued to grow, but perhaps this growth is coming at the expense of traditional terminal carriers or other modes.

In addition, why has the rapid growth of curbside buses on the Northeast Corridor seemingly had little effect on Amtrak ridership? Since 2000, while curbside buses have been steadily gaining riders, Amtrak ridership has remained relatively stable and even slightly increased during this time (Puentes et al., 2013). This is particularly surprising given that the research from the focus groups and survey in this dissertation suggest that

many curbside bus passengers might have used Amtrak if curbside buses were not available. Where is the growth in Amtrak trips coming from? It is possible that intercity travel on the Northeast Corridor is increasing overall, so that travel on all modes (rail, bus, driving and flying) is rising. Or perhaps travelers who formerly used Amtrak are switching to bus, while other travelers who formerly flew or drove are now switching to Amtrak.

When this research project began, curbside buses were a phenomenon specific to the Northeast Corridor. Since then, curbside buses have expanded throughout the country. Studying travel behavior changes in the Northeast Corridor was difficult. Because curbside buses have been around for over ten years and many of the passengers are young, few of the focus group participants in 2009 were able to answer what mode they used to take the same intercity trips before the advent of curbside buses (before 1998). Many reported that they had always used curbside buses, had done so since they moved to the area or since they started making their own travel decisions. But in markets where curbside buses have only recently expanded, such as the Pacific Northwest, it would be easier to ask survey respondents how their travel behavior has changed since curbside buses arrived.

The analysis of the focus group discussions with intercity bus passengers revealed that these travelers made decisions about how they travel based on two very different types of information. The first type of information was a set of measures about the operational attributes of each different bus company and other travel modes. This included their assessments of how much each mode costs, travel time, frequency, location

and so on. The second type of information was some sort of perception about the mode itself. These perceptions were most apparent when they talked about the Chinatown bus and traditional terminal buses. Participants perceived traditional terminal buses as undesirable, associated riding the Chinatown bus with a form of cultural tourism and saw the corporate curbside buses as professional. The three distinct perceptions clearly play some role in participants' decision making process, but it is not clear to what degree.

Future research should also examine the role that perceptions about travel modes may play in influencing travel behavior. Because this area is not well studied, qualitative research would be useful to explore the scope of perceptions among the public about travel modes. Only after researchers more clearly understand these perceptions can they examine the effect of perceptions on travel behavior.

Policy recommendations

The increase in curbside buses operating on city streets and the problems that come with such operations raises the question of whether or not cities or other government actors should provide off-street space for intercity buses to stage operations. Historically, bus companies built their own terminals in cities to attract customers, to provide a comfortable waiting room, and to have space for ticketing, transfers, baggage as well as maintenance, refueling and dispatching (Walsh, 2003b). In some cities, governmental or quasi-governmental agencies built municipal bus terminals to reduce traffic congestion or provide multimodal connections (Doig, 2001). Examples of these

municipal bus terminals include the Port Authority Bus Terminal in New York, South Station Bus Terminal in Boston and more recently, the parking deck in DC's Union Station Garage.

But what if no one wants to use these terminals? This research suggests many intercity bus passengers do not want to go to large-scale terminals to take a bus. Traditional terminal bus companies are increasingly adopting the business practices of the low-cost carriers and developing their own curbside bus companies (e.g. BoltBus and Yo! Bus). Meanwhile, curbside bus companies claim that the cost savings they achieve by operating on the street, as opposed to inside the terminal, are not large. Generally, these operators try to avoid bus terminals because in many cities they are not located where the curbside bus companies want to operate. They say their passengers do not want to go to the bus terminals and, in some cases, the terminals are at capacity anyway (e.g. at the Port Authority in New York and South Station in Boston prior to the Chinatown buses being shut down).

Cities are responding to the challenge of curbside buses in two ways, pushing buses back into terminals and developing permitting programs. But pushing buses back into terminals is not an option in cities where the terminals are at capacity, and not every city has or would want to turn a parking garage deck into a bus terminal (as DC has done). While the permitting programs are finally providing cities with tools to regulate where and when curbside buses operate, they are not addressing the spillover effects from large numbers of passengers using sidewalks as a waiting area.

Cities should expand these local efforts to regulate intercity buses in two ways. First, they should require that intercity buses report on their operations so that cities can improve their own planning for these services. In a limited fashion, some cities already do this. As a condition of using the Union Station Garage in Washington DC, intercity buses are required to submit monthly reports documenting their operations. While this is currently limited to intercity bus companies that use the garage, cities could expand the reporting requirements to other cities and integrate it into permitting programs.

Second, cities should look to the past and require that bus companies provide space for their passengers. Cities could require that curbside bus companies provide space off the sidewalk where passengers can buy tickets, wait, and go the bathroom. Such spaces could be a simple storefront waiting room or a more elaborate bus terminal. These policies could work in conjunction with the existing permitting programs, which many cities have developed, to regulate the use of curbs adjacent to these storefronts. Not only would this requirement provide a space for passengers to wait, but also this type of policy would force bus companies to confront the negative effects that they currently have on city sidewalks.

APPENDICIES

Appendix A Focus Group Topic Guide

TOPIC GUIDE THE IMPACT OF LOW-COST BUSES ON THE TRANSIT INDUSTRY

Rutgers University

[Total Project Runtime = 80 minutes against 90 allotted]

INTRODUCTION (10 minutes)

1. Moderator introduces self and identifies Rutgers University as the research facilitators.
2. Our purpose tonight

Today we are going to ask you questions about your experiences traveling between Philadelphia and New York.

We are studying the Chinatown buses, BoltBus, Megabus and similar buses that pick-up and drop-off passengers on street corners unlike Greyhound or Peter Pan. However, we do want to hear about your travel experiences on many different types of transit or while driving – in order to understand how these relatively new buses fit within a larger set of transportation options.

In today's discussion, there are no right or wrong answers. We asked you all to come here because we want to hear from you about your experiences and opinions. We are going to use a "Topic Guide," but it's primarily an open discussion.

The reason we are recording our conversation today is so we do not have to concentrate on taking notes while you are talking. Then tomorrow or the next day – we can listen to the conversation and take notes. What you say here will be confidential – we are not going to tie anything you say to you as a person. If there is something that you want to say which you do not want recorded – we can turn off the device for however long you want.

Because we are recording this – before you make a comment, please say your name or a nickname. You can use a made up nickname if you'd like.

As we are having out conversation – if you want to agree with someone, you can just say, "I agree with what Nick was saying." You do not need to repeat

everything. But you should feel free to disagree or elaborate. Or if you feel like we did not finish a topic – you can always return to it if you did not get to say something.

In addition to hearing about your experiences, we are designing a survey to study this topic and this group will help us to understand which questions to ask.

3. Time Limit

We'll be done within an hour and half so you'll be on your way home by 8:30 or 8:45 pm.

As we discussed before, you will be compensated for your time here. We'll hand that out when we are finished our discussion.

At this time – I need to ask you all to please turn off your cell-phones.

STATEMENT OF CONFIDENTIALITY (5 min)

Before we begin, Rutgers requires that I read the following statement.

First, while we highly value your opinions and experience, your participation in this focus group is completely voluntary. You may choose not to answer any questions you are not comfortable answering and; if at any time during our conversation you wish to stop participating, you are completely free to do so.

Second, this research is confidential. Confidential means that the research records will include some information about you, such as information you provide during the discussion about yourself and your travel behavior. I will keep this information confidential by limiting individual's access to the research data and keeping it in a secure location. The research team, research sponsor and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated.

BASIC INFO (5 min)

To get to know each other a little, please go around the room and tell us all:

1. Your first name or nickname
2. When was the last time you took a bus between Philadelphia and New York?
3. And which bus company did you use?

While we are going around the room – please take one of the pens and write your first name or nickname on the index card in front of you so we can all see each other's names.

CHOOSING LOW-COST BUSES (20 min)

Let's start with a hypothetical situation. Let's imagine that you are talking to a friend who is going to go to New York next week. This friend asks you, "How should I get to New York?"

Let's start by first telling them their various options - What are the different ways they could get to New York?

Follow-up as needed

What about – driving, Greyhound and Peter Pan, SEPTA/NJTransit, Amtrak?

Next – let's talk about the advantages and disadvantages of each of these different options.

Use white-board/easel

How would you help them decide how to get to New York?

What are some tips you might give them?

Would you advise different people in your life different ways to get to New York?

Follow-up

Are there people you would steer towards different transportation options?
If so, why?

Before you started using the Chinatown bus, BoltBus and or Megabus, how did you usually travel to New York – or have you always used these buses?

I am curious about hearing about how you learned about the Chinatown bus, BoltBus and or Megabus? What are some of the things you heard about these buses before you ever tried them out?

Note: if needed, use these follow-up questions:

What made you think you should try it out? Was there someone or something that you can put your finger on which led you to try using one of these buses?

When you travel to New York now – how do you usually travel to New York?

Follow-ups

Ask about percentage, what other modes they use, etc.

When you take the bus – do you usually take the same mode?

How did you decide which one is your preferred method?

What is so great about the Chinatown bus, BoltBus and or Megabus? You could drive, take Greyhound, take SEPTA & New Jersey Transit or Amtrak – why do you take these buses instead?

Follow-up Questions, Topics and Probes – if needed

Have had experiences that help you decide which bus company to use or not to use

Possibly probe this question with everyone? (e.g. Person X – has that happened to you? Or Person Y – do you think that kind of thing would happen on Megabus?)

Why do you think people chose other options – such as driving, Greyhound, take SEPTA & New Jersey Transit or Amtrak?

If the Chinatown buses, BoltBus and Megabus all went out business tomorrow – how would you travel between Philadelphia and New York?

DIFFERENCES (10 min)

Can you tell me the differences between the Chinatown buses, BoltBus and Megabus?

Follow-ups

Which one(s) do you like best and why? What about least?

Can you come up with a few words to describe how it feels to be on the bus?

Use white-board – one sheet for each bus co.

When you say your descriptive words – can you say which bus company it refers to?

There have been some newspaper reports about the safety of these buses – what are your thoughts?

Follow-up

Has anything ever experienced anything that would make you feel like these buses are less safe than other buses or other forms of transit?

How would you categorize or describe the different people you see on these buses?

Follow-up Questions, Topics and Probes – if needed

For example – do you see many people commuting, tourists, college students, families, etc.?

Prodding - “Does everybody agree with that?”

Do you – or do you know others – who use these buses to commute to work?

Follow-up Questions, Topics and Probes – if needed

Are the passengers heading to work, to visit friends and family, to go shopping, etc.?

Customer Satisfaction (10 min)

What are a few words that describe being a customer?

(Use white-board)

When you say your descriptive words – say what you are referring to?

Let's talk a little but about costs. What does it cost to take the bus to New York?

How does this compare to the cost of traveling on other modes to New York?
Is it a good price?

Do things go as expected when taking the bus?

Follow-up

Have you ever experienced breakdowns, unexpected stops, or other unexpected events?

If you could change one thing about these buses, what would you change?

Would you prefer if the buses in New York went to The Port Authority Bus Terminal – or in Philadelphia if they went to bus terminal on Filbert Street?

Why? What is good about where they current go?

TRAVEL BEHAVIOR (15 min)

For those of you who used to use a different mode to go to New York - do you think the Chinatown bus, BoltBus and or Megabus buses have made you or others more likely to travel between New York and Philadelphia?

Why is that? What aspects of the buses make that possible?

WRITTEN POST-SCRIPTS (5 min)

Assistant Moderator: Hand out one large index card to each participant.

The final thing we have to do here is to write-up a quick questionnaire. At the very end is a space for you to write up to three “bullet points” that tell us the most important things you think that were mentioned tonight – or perhaps things we did not mention but we should have talked about.

ADJOURN FOCUS GROUPS

Thank you for participating. Your help and input is extremely valuable to us. Now, please leave the index card at your seat, and move into the next room where we will distribute the incentives. Again, thank you for your help.

Appendix B Passenger Intercept Survey

Survey from Philadelphia curbside bus location:

Rutgers Bus Passenger Survey – Tell us what you think!

The Voorhees Transportation Center at Rutgers University is studying intercity bus travel. Part of this work includes asking people like you about their views of buses and bus stops. This survey should only take a few minutes to complete and is completely voluntary. You are under no obligation to take this survey or even complete it once you have started. The survey is anonymous and no individuals will be identified in any of the work produced from this research. Are you willing to participate?

☐ YES ☐ NO

1. Today I am traveling by bus from _____ city to _____ city.

2. Today, are you
☐ Starting a trip? If so, when do you plan to return home? _____
☐ Returning home? If so, when did you start this trip? _____
☐ Other? Please describe: _____

3. What was the main reason for this trip (select all that apply),
☐ To or From Work ☐ School Related Activity ☐ Entertainment (Theater, Concert, Sports Etc.)
☐ Business (or Work-Related) ☐ Visit Friends Or Relatives ☐ Shopping
☐ Combined Business & Pleasure ☐ Vacation ☐ Other, Specify: _____

4. Could you have made this trip today by car, van or truck instead of by bus?
☐ Yes, easily ☐ No, probably not
☐ Yes, with a little effort ☐ No, definitely not


5. In the past 12 months, about how many round trips (back and forth) have you made on the following transportation modes:

	To/From New York	To/From Washington DC	To/From Boston
Driving			
Chinatown Bus			
Megabus			
BoltBus			
Greyhound / Peter Pan			
Other Bus Company, Specify _____			
Amtrak			
Airplane			
SEPTA / NJ Transit			
Other, Specify _____			

6. When was the first time you took a Chinatown Bus, Megabus, or BoltBus?
☐ Before 1998 ☐ 2002 ☐ 2005 ☐ 2008
☐ 1998-2000 ☐ 2003 ☐ 2006 ☐ 2009
☐ 2001 ☐ 2004 ☐ 2007 ☐ 2010

7. Since that year, are you more or less likely to travel along the Northeast Corridor by the following:

	Much less likely	Less likely	No change	More Likely	Much More Likely
Driving	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Airplane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Greyhound / Peter Pan	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other Bus (Megabus, BoltBus, Chinatown Bus)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Amtrak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SEPTA / NJ Transit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other, specify _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PLEASE TURN OVER 

8. Have you ever taken a bus with this company before?

☐ No – SKIP TO NEXT QUESTION 9

☐ Yes - Have you experienced or observed the following:

	Always	Very Often	Sometimes	Rarely	Never
Bus driver talking on the cell phone or sending text messages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bus driver speeding or driving in an aggressive or reckless manner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bus that broke down or had other mechanical problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bus that was involved in an accident	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bus that was in poor condition or was not clean	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bus was late or did not show up at all	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Felt unsafe or threatened while waiting at the bus stop or onboard a bus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Too many people trying to get onto one bus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Arguments or conflicts between bus companies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Arguments or conflicts between bus companies and neighbors, nearby businesses or motorists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you observed any of the above problems, did you report it to the company?

Always	Very Often	Sometimes	Rarely	Never
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. How old are you? _____ years old

10. Are you: ☐ Male ☐ Female

11. What is the zip code where you live? _____. ☐ I live outside the United States.

12. How many people currently live in your household? _____.

13. How many car, van or trucks are owned by members of your household? ☐ 0 ☐ 1 ☐ 2 ☐ 3 or more

14. During most of last week, were you ...? (Please check one)

- | | | |
|--|---|--|
| <input type="checkbox"/> Working Full-Time | <input type="checkbox"/> A student | <input type="checkbox"/> Retired |
| <input type="checkbox"/> Working Part-time | <input type="checkbox"/> A homemaker | <input type="checkbox"/> Temporarily absent from a job |
| <input type="checkbox"/> Working Multiple Jobs | <input type="checkbox"/> Looking for work | <input type="checkbox"/> Other: _____ |

15. If you worked or were in school last week, how did you usually travel to work?

(If you used multiple modes, choose the one you used for the longest part of your trip)

- | | | |
|---|--|---|
| <input type="checkbox"/> Worked from home | <input type="checkbox"/> An intercity bus | <input type="checkbox"/> Walk or Bicycle |
| <input type="checkbox"/> Drove or carpooled | <input type="checkbox"/> Local train or subway | <input type="checkbox"/> Other, specify _____ |
| <input type="checkbox"/> Local bus | <input type="checkbox"/> Amtrak train | <input type="checkbox"/> Did not work. |

16. About how much is your yearly household income?

- | | | |
|---|---|---|
| <input type="checkbox"/> Less than \$20,000 | <input type="checkbox"/> \$60,000 to \$80,000 | <input type="checkbox"/> \$120,000 to \$140,000 |
| <input type="checkbox"/> \$20,000 to \$40,000 | <input type="checkbox"/> \$80,000 to \$100,000 | <input type="checkbox"/> \$140,000 to \$160,000 |
| <input type="checkbox"/> \$40,000 to \$60,000 | <input type="checkbox"/> \$100,000 to \$120,000 | <input type="checkbox"/> \$160,000 or more |

17. What is your background? (Check all that apply)

- | | | |
|---|---|--|
| <input type="checkbox"/> American Indian | <input type="checkbox"/> African-American / Black | <input type="checkbox"/> White / Caucasian |
| <input type="checkbox"/> Asian / Pacific Islander | <input type="checkbox"/> Hispanic / Latino | <input type="checkbox"/> Other: _____ |

If you have any questions, concerns or want to know more information about this study – please contact

Nick Klein, PhD student
nklein@eden.rutgers.edu
732-932-6812 ext 539

PhD Student
Bloustein School of Planning and Public Policy
Rutgers University

Appendix C Passenger Intercept Survey

Interview Protocol for City Planners (45-60 minutes)

I. Introduction

- a. Background statement about the research
- b. Tell me briefly about your current job and what role intercity buses play in your work?

II. Experiences over time

- a. How did you first learn about curbside intercity buses?
- b. Have you ever used one of these buses?
 - i. How was that experience?
- c. Walk me through your involvement with curbside buses over time?
 - i. How has your understanding of these buses changed over time?
- d. What do you personally see as the positive and negative aspects of these buses?

III. Regulation

- a. What issues do these new forms of intercity bus raise for cities?
 - 1. What are the most challenging problems?
- b. What tools or methods can you use to address these problems?
 - 1. Do you use a permitting process?

Interview Protocol for Bus Companies (45-60 minutes)

I. Introduction

- a. Background statement about the research
- b. Tell me briefly about your current job?
 - i. Have you worked other jobs in the same industry?

II. Origins and Innovation

- a. How and why did your organization decide to operate curbside intercity bus service?
 - i. Can you walk me through that decision?
- b. How has this service changed over time?

III. Challenges

- a. What are the primary challenges for these new forms of intercity bus?
 - i. What approaches is your organization taking to address these issues?
- b. What do you see as the potential of these buses?

IV. Changes

- a. How do you think the industry changing in the next five, ten, fifteen years?

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REFERENCES

- Baribeau, Simone. (2008, Saturday, July 5, 2008). Decree for 'Chinatown Buses' Goes Nowhere: D.C. Notice to Operators to Move Stops To L'Enfant Plaza Is Missed Online, *Washington Post*. Retrieved from http://www.washingtonpost.com/wp-dyn/content/article/2008/07/04/AR2008070402360_pf.html
- Beirão, Gabriela, & Sarsfield Cabral, J. A. (2007). Understanding attitudes towards public transport and private car: A qualitative study. *Transport Policy*, 14(6), 478-489. doi: 10.1016/j.tranpol.2007.04.009
- Berechman, Joseph. (1993). *Public transit economics and deregulation policy*. Amsterdam; New York: North-Holland.
- BoltBus. (2013). BoltBus Website. Retrieved December 1, 2013, from www.boltbus.com
- Bowles, Jonathan , & Colton, Tara. (2007). A world of opportunity: Understanding & tapping the economic potential of immigrant entrepreneurs (pp. 60). New York: The Center for an Urban Future.
- Braver, E. R., Dodd, R. S., Cheung, I., & Long, L. O. (2012). Safety challenges and oversight in the motorcoach industry: attitudes and perceptions of drivers, roadside inspectors, and federal investigators. *Annals of Advances in Automotive Medicine*, 56, 57-67.
- Bricka, Stacey. (2001). Variations in long-distance travel. *Transportation Research Circular, E-C026*, 10.
- Button, Kenneth J. (1987). The effects of regulatory reform on the US inter-city bus industry. *Transport Reviews*, 7(2), 145.
- Cameron, Doug. (2008, 16 April 2008). More U.S. Travelers Leave The Driving to Megabus, *The Wall Street Journal*, p. B6C. Retrieved from <http://www.djreprints.com/link/DJRFactiva.html?FACTIVA=wjco20080416000012>

Cervero, R. (1990). Profiling Profitable Bus Routes. *Transportation Quarterly*, 44(2), 183-201.

Cervero, Robert. (1990). Transit pricing research. *Transportation*, 17(2), 117-139.

Cervero, Robert. (1997). *Paratransit in America: Redefining mass transportation*. Westport, Connecticut: Praeger.

Cervero, Robert, & Golub, Aaron. (2007). Informal transport: A global perspective. *Transport Policy*, 14(6), 445-457.

Cheung, I., & Braver, E. R. (2012). Characteristics of interstate motorcoach carriers with elevated rates of crashes and inspection violations. *Annals of Advances in Automotive Medicine*, 56, 47-56.

Clifton, Kelly J., & Handy, Susan L. (2003). Qualitative methods in travel behaviour research. In P. Jones & P. R. Stopher (Eds.), *Transport Survey Quality and Innovation* (pp. 283-302). Amsterdam: Elsevier.

Coffey, Amanda, & Atkinson, Paul. (1996). *Making sense of qualitative data : complementary research strategies*. Thousand Oaks: Sage Publications.

Corbin, Juliet M., & Strauss, Anselm L. (2008). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. London: SAGE.

Dempsey, Paul Stephen (2003). Transportation: A Legal History. *Transportation Law Journal*, 30, 235 - 366.

Doig, Jameson W. (2001). *Empire on the Hudson : entrepreneurial vision and political power at the Port of New York Authority*. New York: Columbia University Press.

Fanelli, James. (2010, September 12, 2010). Upstate bus crash kills 4, *New York Daily News*, p. 16.

Farivar, Cyrus. (2005). *Murder and vice on the Lower East Side: The past, present and future of the 'Chinatown Buses'*. Thesis. Columbia University Graduate School of

Journalism. Retrieved from
<http://cyrusfarivar.com/docs/farivar.chinatownbuses.html>

Felson, Marcus, Belanger, Mathieu E., Bichler, Gisela M., Bruzinski, Chris D., Campbell, Glenna S., Fried, Cheryl L., . . . Williams, LaQuanda M. (1996). redesigning hell: preventing crime and disorder at the Port Authority Bus Terminal. In R. V. Clark (Ed.), *preventing mass transit crime* (pp. 5-92). Monsey, New York: Criminal Justice Press.

Fern, Edward E. (2001). *Advanced focus group research*. Thousand Oaks: Sage.

Fink, Camille. (2012). *More than just the "loser cruiser?": An ethnographic study of the social life on buses*. University of California, Los Angeles, Los Angeles.

Fischer, Lauren A., & Schwieterman, Joseph P. (2011). The Decline and Recovery of Intercity Bus Service in the United States: A Comeback for an Environmentally Friendly Transportation Mode? *Environmental Practice*, 13(01), 7-15.

Gelbart, Marcia. (2007, July 15, 2007). L&I orders bus company to cease operations *Philadelphia Inquirer*.

Gómez-Ibáñez, José A, & Meyer, John R. (1990). Privatizing and deregulating local public services. *Journal of the American Planning Association*, 56(1), 9.

Greyhound Bus Lines (2007). [Northeast Corridor Study (unpublished)].

Grosvenor, Tim. (2000, August 2000). *Qualitative research in the transport sector. Resource paper for the workshop on qualitative/quantitative methods*. Paper presented at the International Conference on Transport Survey Quality and Innovation, Grainau, Germany.

Guest, Kenneth J. (2011). From Mott street to East Broadway: Fuzhounese immigrants and the revitalization of New York's Chinatown. *Journal of Chinese Overseas*, 7(1), 24-44. doi: 10.1163/179325411x565399

Guiver, J. W. (2007). Modal talk: Discourse analysis of how people talk about bus and car travel. *Transportation Research Part A: Policy and Practice*, 41(3), 233-248.

- Gwilliam, K. M., Nash, C. A., & Mackie, P. J. (1985a). Deregulating the bus industry in Britain — (B) the case against. *Transport Reviews: A Transnational Transdisciplinary Journal*, 5(2), 105 - 132.
- Gwilliam, K. M., Nash, C. A., & Mackie, P. J. (1985b). Deregulating the bus industry in Britain: a rejoinder. *Transport Reviews: A Transnational Transdisciplinary Journal*, 5(3), 215 - 222.
- Henderson, Margaret R. (1975). Acquiring Privacy in Public. *Urban Life and Culture*, 3(4), 446-455. doi: 10.1177/089124167500300404
- Hernández-León, Rubén. (2008). *Metropolitan migrants: The migration of urban Mexicans to the United States*. Berkeley and Los Angeles: University of California Press.
- Hill, Miriam. (2003, November 13, 2003). Turf war tainting bus ride - A \$20 round trip from N.Y. to Phila. is a hot ticket in Chinatown. But competition has turned violent, police say., *Philadelphia Inquirer*.
- Jackson, Carlton. (1984). *Hounds of the road: a history of the Greyhound Bus Company*. Bowling Green, OH: Bowling Green University Popular Press; Kendall/Hunt Pub. Co.
- Jones, David W. (1985). *Urban transit policy : an economic and political history*. Englewood Cliffs, N.J.: Prentice-Hall.
- Kahn, Alfred Edward. (1990). *The economics of regulation : principles and institutions*. Cambridge (Mass.); London: the MIT press.
- Kahn, Jeremy. (1990). Stopping by the bus terminal on a dark and stormy night: The U.S. bus industry seven years after deregulation. *Transportation Law Journal*, 20, 255-272.
- Kain, John F., & Liu, Zvi. (1999). Secrets of success: assessing the large increases in transit ridership achieved by Houston and San Diego transit providers. *Transportation Research Part A: Policy and Practice*, 33(7-8), 601-624. doi: Doi: 10.1016/s0965-8564(99)00009-9

- Kim, Esther C. (2012). Nonsocial transient behavior: Social disengagement on the Greyhound Bus. *Symbolic Interaction*, 35(3), 267-283.
- Klein, Nicholas. (2009). Emergent curbside intercity bus industry: Chinatown and beyond. *Transportation Research Record*, 2111, 83-89.
- Klein, Nicholas, & Zitcer, Andrew. (2012). Everything but the Chickens: Cultural Authenticity Onboard the Chinatown Bus. *Urban Geography*, 33(1), 46-63. doi: 10.2747/0272-3638.33.1.46
- Lee, Jennifer 8. (2005, October 2, 2005). Waiters, cooks to go, *The New York Times*.
- Long, J. Scott. (1997). *Regression models for categorical and limited dependent variables*. Thousand Oaks: Sage Publications.
- Loukaitou-sideris, Anastasia. (1999). Hot Spots of Bus Stop Crime. *Journal of the American Planning Association*, 65(4), 395-411. doi: 10.1080/01944369908976070
- Marshall, Catherine, & Rossman, Gretchen B. (2010). *Designing qualitative research*. Los Angeles: SAGE.
- Megabus. (2013). Megabus Website. Retrieved December 1, 2013, from us.megabus.com
- Meier, Albert, & Hoschek, John P. (1975). *Over the Road: A History of Intercity Bus Transportation in the United States*. Upper Montclair NJ: Motor Bus Society Inc.
- Meyer, John Robert, Oster, Clinton V., Gómez-Ibáñez, José A, & Clippinger, Marni. (1987). The other modes: Bus, rail and auto. In J. R. Meyer & C. V. Oster (Eds.), *Deregulation and the future of intercity passenger travel* (pp. 161-182). Cambridge, Mass.: MIT Press.
- Meyer, John Robert, Peck, Merton J., Stenason, John, & Zwick, Charles. (1959). *The economics of competition in the transportation industries*. Cambridge: Harvard University Press.

- Morgan, David L. (1997). *Focus groups as qualitative research*. Thousand Oaks, Calif.: Sage Publications.
- Morrison, Steven A., & Winston, Clifford. (2000). Regulatory reform of U.S. intercity transportation. In J. A. Gómez-Ibáñez & J. R. Meyer (Eds.), *Essays in transportation economics and policy : a handbook in honor of John R. Meyer* (pp. 469-492). Washington, DC: Brookings Institution Press.
- New York City Department of City Planning. (2009). Chinatown bus study (pp. 65). New York: New York City Department of City Planning.
- New York City Department of Transportation. (2013). Notice of Adoption of Rules relating to implementation of the Intercity Bus Permit System Retrieved September 17, 2013, from <http://www.nyc.gov/html/dot/downloads/pdf/2013-07-trafrule-intercity-bus-permits.pdf>
- Norton, Jerry, & Marsh, Wendell. (2011, May 31, 2011). Bus crash in Virginia kills four and injures 54. Retrieved April 1, 2011, from <http://www.reuters.com/article/2011/05/31/us-crash-virginia-idUSTRE74U3AO20110531>
- Oster, Clinton V., & Zorn, C. Kurt. (1986). Impacts of regulatory reform on intercity bus service in the United States. *Transportation Journal*, 25(3), 33-42.
- Puentes, Robert, Tomer, Adie, & Kane, Joseph. (2013). A new alignment: Strengthening America's commitment to passenger rail (pp. 30). Washington, DC: The Brookings Institution.
- Robbins, Derek. (2007). *Competition in the UK express coach market 25 years after deregulation: the arrival of Megabus.com*. Paper presented at the European Transport Conference 2007, The Netherlands. <http://www.etcproceedings.org/paper/competition-in-the-uk-express-coach-market-25-years-after-deregulation-the-arr>
- Schwieterman, Joseph, & Fischer, Lauren. (2012). Competition from the Curb. *Transportation Research Record: Journal of the Transportation Research Board*, 2277(-1), 49-56. doi: 10.3141/2277-06

- Schwieterman, Joseph P., Antolin, Brian, Largent, Page, & Schulz, Marisa. (2013). The motor coach metamorphosis: 2012 year-in-review of intercity bus service in the United States (pp. 18). Chicago, IL: Chaddick Institute for Metropolitan Development, DePaul University.
- Schwieterman, Joseph P., Fischer, Lauren, Field, Steven, Pizzano, Andrew, & Urbanczyk, Susan. (2009). Is portable technology changing how Americans travel? A survey of the use of electronic devices on intercity buses, trains, and planes (pp. 18). Chicago: DePaul University, School of Public Service Policy Study.
- Schwieterman, Joseph P., Fischer, Lauren, Ghoshal, Caitlin, Largent, Paige, Netzel, Nicole, & Schulz, Marisa. (2011). The intercity bus rolls to record expansion: 2011 update on scheduled motor coach service in the United States (pp. 13). Chicago, IL: Chaddick Institute for Metropolitan Development, DePaul University.
- Schwieterman, Joseph P., Fischer, Lauren, & Smith, Sara. (2008). 2008 update on intercity bus service: Summary of annual change (pp. 5). Chicago: DePaul University, School of Public Service Policy Study.
- Schwieterman, Joseph P., Fischer, Lauren, Smith, Sara, & Towles, Christine. (2007). The return of the intercity bus: The decline and recovery of scheduled service to American cities, 1960 - 2007 (pp. 16). Chicago: DePaul University, School of Public Service Policy Study.
- Slack, Donovan, & Daniel, Mac. (2005, September 4, 2005). Ratings signal warning for fast-growing Fung Wah, *Boston Globe*. Retrieved from http://www.boston.com/news/local/massachusetts/articles/2005/09/04/ratings_signal_warning_for_fast_growing_fung_wah/
- Stellin, Susan. (2010, July 25, 2010). The humble bus takes off, *The New York Times*.
- Talley, Wayne K. (1989). Regulatory reform of the US and UK inter-city bus industries. In K. J. Button & D. Swann (Eds.), *The Age of regulatory reform*. Oxford: Clarendon.

- Taylor, Brian D., Miller, Douglas, Iseki, Hiroyuki, & Fink, Camille. (2009). Nature and/or nurture? Analyzing the determinants of transit ridership across US urbanized areas. *Transportation Research Part A: Policy and Practice*, 43(1), 60-77. doi: DOI: 10.1016/j.tra.2008.06.007
- U.S. Department of Transportation. (1998). *Transportation Statistics Annual Report 1998*. Washington, DC: U.S. Department of Transportation (US DOT).
- U.S. Department of Transportation. (2012). U.S. Department of Transportation Shuts Down 26 Bus Operations in Unprecedented Sweep. Retrieved June 1, 2012, from <http://www.fmcsa.dot.gov/about/news/news-releases/2012/I-95-Bus-Release.aspx>
- U.S. Department of Transportation. (2013). FMCSA Shuts Down Fung Wah Bus Transportation. Retrieved March 1, 2013, from <http://www.fmcsa.dot.gov/about/news/news-releases/2013/FMCSA-Shuts-Down-Fung-Wah.aspx>
- Valenzuela, Abel Jr., Schweitzer, Lisa, & Robles, Adriale. (2005). *Camionetas*: Informal travel among immigrants. *Transportation Research A*, 39(10), 895-911.
- Vuchic, Vukan R. (2005). *Urban Transit: Operations, Planning and Economics*. Hoboken, New Jersey: John Wiley & Sons, Inc.
- Wachs, Martin. (1976). Consumer Attitudes Toward Transit Service: An Interpretive Review. *Journal of the American Institute of Planners*, 42(1), 96 - 104.
- Wachs, Martin. (1991). Policy Implications of Recent Behavioral Research in Transportation Demand Management. *Journal of Planning Literature*, 5(4), 333-341. doi: 10.1177/088541229100500402
- Walsh, Margaret. (1987). The Motor Carrier Act of 1935 : the origins and establishment of federal regulations of the inter-state bus industry in the United States. *The Journal of transport history*., 8(1).
- Walsh, Margaret. (2000). *Making Connections: The Long-Distance Bus Industry in the USA*. Aldershot UK: Ashgate.

- Walsh, Margaret. (2003a). The bus industry in the United States. *EH.Net Encyclopedia*. Retrieved April 9, 2011, from <http://eh.net/encyclopedia/article/walsh.bus.industry.us>
- Walsh, Margaret. (2003b). Passenger connections: Views of the intercity bus terminal in the USA. In C. Divall & W. Bond (Eds.), *Suburbanising the masses: Public transport and urban development in historical perspective* (pp. 269-286). England: Ashgate.
- Walsh, Margaret. (2010). Gender on the road in the United States: By motor car or motor coach? *The Journal of Transport History*, 31(2), 210-230.
- White, Peter. (2009). *Public transport: its planning, management and operation* (5th ed.). London: Rutledge.
- White, Peter, & Robbins, Derek. (2012). Long-term development of express coach services in Britain. *Research in Transportation Economics*, 36(1), 30-38. doi: 10.1016/j.retrec.2012.03.012
- Wilson, Dale. (2006). Fuzhou Flower shops of East Broadway: 'Heat and noise' and the fashioning of new traditions. *Journal of Ethnic & Migration Studies*, 32(2), 291-308. doi: 10.1080/13691830500487217