

# Designing Shuttle Services for Niche Markets

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## INTRODUCTION

Increasingly non-traditional transit connections between existing transit systems and specific destinations are being sought, for example a connection between a train station and a corporate park. This paper focuses on designing shuttle services for these niche markets that can include: employer shuttles from transit stations, business campus shuttles, and commuter shuttles to transit stations. Other niche markets can include medical and educational campuses or a shuttle connecting a residential development to a train station.

Our experience has shown that there are very specific characteristics about the market for these services that needs to be clearly understood, and with the right background work and planning that very successful niche services can be established. The other interesting feature about these services is that they are most often being initiated or developed by entities that have little or no background in providing transit services. This creates unique challenges when transit agencies are part of the process. Because of the unique characteristics of these services and the non-traditional sponsors of these services, transit agencies must take a different approach from their traditional planning if they are to be a part of the solution to these niche services. Typically the sponsors / funders that are responsible for implementing the shuttle service have little familiarity with transit and how it works.

Our work has shown that creating an effective shuttle service requires much more than drawing a line connecting two or more points. Market research plays a critical role in the design of these services. The markets

and their unique characteristics must be understood to provide the most effective shuttle service. Once the unique characteristics of the market are identified, the service can be designed.

With this type of service, funding often comes through a partnership or sponsorship by the end user, whether it is a corporate campus, a business park, or a housing development. The amount of funding is often known at the outset.

This paper will discuss the steps required to design effective shuttle services for niche markets along some funding strategies. These steps include:

- Market research
- Service design

Two case studies from the Chicago area will be discussed included: a new shuttle operating from two new residential developments to a commuter rail station and the redesign of a campus shuttle service funded by a major Chicago area employer. Some background from previous work on feeder buses to Metra commuter trains is also included.

## STEP 1: MARKET RESEARCH

Market research plays a critical role in the design of these services. Understanding the needs of users is essential in designing a shuttle service that people in these non-traditional settings are willing to use.

## **Market Research Tools**

The two most common methods of market research to determine the needs of a niche market are surveys or focus groups. Since the potential users of the service have been identified, it is fairly easy to distribute surveys or assemble focus groups.

### **Surveys**

While it is important that each potential user of the shuttle service has the opportunity to respond to a survey, conducting a survey does not have to be expensive. Web surveys make conducting market research easier and less costly than before, especially with websites such as Survey Monkey that allow the research to be done for free or a low cost compared to the costs of printing, mailing, and entering the data when using paper surveys. Web surveys are particularly effective for reaching potential users of employer shuttles. The employer can send an e-mail to all its employees with a link to the survey. Also, it is likely that most employees will have access to a computer at work. It is important to have high-level management support behind the survey. Without this support, distribution may not be consistent and response rates may not be as high.

For some employers, paper surveys will be a better way to reach employees. This is often the case with light manufacturing and warehouse type employers. Involvement of the employer for distribution is very important in this case.

Other markets may require a direct mail survey. This is true when distributing surveys to potential users of commuter shuttles. A survey mailed to their home presents the best opportunity for a high response rate. Obtaining a list of address targeted residential development is necessary. The city or developer is often able to provide the addresses.

When designing shuttles to transit stations, developing lists from parking lots where a fee or permit is required is possible. Addresses for a direct mail survey can be obtained from monthly parking permit databases. If this is not possible a notice asking people to complete a survey can be left on cars or handed-out. In some instances, the transit agency may have a database that can be used as another source.

### **Survey Design**

When designing a survey, it should be targeted to the key things you need to know for service design. Avoid

designing a survey that is too long, which can frustrate the respondent and have a low response rate. We have designed surveys with as few as seven questions. The following categories of questions are recommended:

- Time of travel
- Places that need to be connected (for example office buildings)
- Reason for travel
- Willingness / likelihood to use the shuttle
- Preferences (for example: vehicles, frequency, length of wait, etc.)

### **Focus Groups**

Focus groups are another tool that can be used to understand the users' needs. Focus groups allow people to provide extended answers or an opportunity for the moderator to ask more in-depth questions. A formal focus group service does not need to be used. A focus group script containing the same question categories can be designed to guide the person conducting an hour to hour and half long focus group session.

Focus groups are best used as a way to deepen understanding obtained from surveys, but can be used as a standalone market research tool. As with surveys, targeted recruitment is essential. Ten to fifteen participants can be recruited through management, a developer, or homeowners association.

## **STEP 2: SERVICE CHARACTERISTICS & DESIGN**

### **Service Characteristics**

Once the market and its unique characteristics are understood, designing the service can begin. Through the process of conducting several niche service studies and implementations, we have observed a set of requirements for the service to be successful.

The following factors summarize essential components of shuttle service – characteristics that translate directly to the success of shuttle service. *All* of these elements must be met for customers to use shuttles. The absence of *any* of these factors will negatively affect the performance of the service.

- Flexibility – service levels, number of trips offered, number of train meets
- Information – schedule information, signage, real-time information, marketing

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- Reliability – train connections, schedule adherence
- Travel time – service design, the fastest and most direct routings
- Comfort – bus shelters, vehicle type
- Cost – competitive pricing, bus vs. other options
- Image – a good option for a choice rider

### **Service Design**

The service designer must be open to as many service delivery approaches as possible to find one that works – meeting user needs and funder needs. When designing shuttles, there are two types of service designs that can be tailored to meet those needs: fixed-route and demand response.

Fixed-route service is when the vehicle follows a predetermined path between established stops and operates on a published schedule. Fixed-route service is most appropriate where there are large numbers of people traveling at the same time. This is often the case for shuttle service to and from transit stations where service is coordinated with the transit schedule. When designing fixed-route service, the following elements must be considered:

- *Routing* – a route that has as few deviations as possible to provide passengers with the fastest possible trip. This, of course, has to be balanced by the need to be responsive to rider's needs for convenience when boarding the shuttle.
- *Schedules* – This includes determining service span, frequency and days of service. Frequency is dictated by the need to make timed connections to transit. Which trains to connect with, days of service and span of service is best determined by the market research into when people need to travel.

Demand response service is where a rider (employee or resident) reserves a trip in advance. A vehicle then shows up at an arranged time to pick-up the employee. The vehicle may pick-up or drop-off other employees as it takes the employee to his/her destination. Demand response is most appropriate for business campuses where the shuttle service must be competitive with the convenience of the automobile. This is often where employees must travel between buildings for meetings. When designing demand service, the following elements must be considered:

- *Reservations policy* – How will riders make reservations for their trip – by phone or online? How far in advance does a rider have to make a reservation? A shorter timeframe is more desirable to the rider, but this must be balanced with the system's capacity.
- *Pick-up timeframe window* - Demand response service typically provides a window around the pickup time for when the vehicle will actually arrive, for example five minutes before or after the scheduled time. The smaller this window is, the less time employees have to wait and the more competitive the service is to automobile. The larger the window, the easier the service is to schedule.

### **Other Considerations**

Other areas that should be considered when designing the shuttle service include operations, passenger amenities, and marketing.

### **Management & Operations**

There are several management and operations options for shuttle service. These options include:

- Direct operation and management by the funding entity
- Contract management / operations / maintenance to private contractor
- In-house management / contract operations and / or maintenance
- Contract management / operations / maintenance to the local transit agency

The appropriate arrangement is dependent upon the transportation expertise that the sponsoring entity of the shuttle service has. If it is a business that has extensive experience in contracting transportation for other aspects of its business, they may be able to directly manage the service. If the entity has limited experience with transportation issues and operation, they may wish to outsource management and operation to private contractor.

Many times the implementer of a shuttle service does not have experience with designing service and often enters the process with a viewpoint that providing service is simpler than the actual realities of transportation service. As a result, implementation planning often includes a process of creating a shared understanding of what is entailed in providing transit services. Our experience is that the stage in the process where

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management and operations decisions are made is the critical time to make sure there is a shared expectation of the practical aspects associated with providing services.

Transit agencies sometimes have difficulty competing for this type of service since they have to follow the funder's rules. For example, the funder may not want the general public able to ride the service since their campus is closed to the public. In order for transit agencies to be able to be part of the implementation of these shuttle or niche services, they need to be able to be flexible and find ways, consistent with their internal rules and guidelines, to also meet the goals and needs of the sponsoring group. If that cannot be done, transit agencies will have a difficult time being a provider of these services.

### *Passenger amenities*

Passenger amenities are also an important consideration. Shelters that fit the characteristic of the area and are comfortable and clean for passengers to wait should be designed. Information panels that contain details on the shuttle service should be installed at stops. If possible real-time information should be provided.

The vehicle for the service is another important amenity. The vehicle should be thought of as extension of their home or office and provide a comfortable surrounding for the rider. While they are often inexpensive, school buses should be avoided since they can be very uncomfortable. School buses are bumpy, noisy and often lack air conditioning.

There are several factors that must be considered when choosing the appropriate vehicle for shuttle use, including:

- Proper size and style – there are several newer, stylistic vehicles available today
- Rider's needs – bicycle racks, comfortable seating and room for briefcases, backpacks, etc.
- Noise and climate control characteristics

### *Marketing*

The purpose of marketing is to get information about the shuttle out to potential riders. The tools used to distribute this information will need to be tailored depending on the situation. Given the nature of the potential riders it can be fairly easy to reach out in a targeted way (train riders alighting at a particular stop, employees of a company or business park, residents in a particular neighborhood, etc.). It is important to maintain on-going with users of the service as well as potential

users with communications that are designed to provide information, remind people of the service and providing messages that motivate people to try the service.

## **CASE STUDIES**

### **Station Boulevard Shuttle**

This commuter shuttle is located in Aurora, Illinois, a western suburb of Chicago. It is designed to connect three residential developments along Station Boulevard to the Route 59 Metra Station. The Route 59 Metra Station has the highest ridership along the Metra/BNSF line. Average daily ridership at this station is approximately 6,000. The station has 4,200 parking spaces that are often filled by 7:00am, creating a significant parking shortage that provides incentives for people to access the station by a non-auto mode. The developments are located approximately 1.5 miles south of the station. A shuttle to the Route 59 Metra Station is a highly desired amenity to the residents of these developments. Shuttle service is expected to commence operation in the summer of 2009.

### *Market Research*

In order to gauge interest in the shuttle service to Route 59 Metra Station, two surveys were designed to provide current residents of two of the developments the opportunity to express their thoughts and expectations. (The third development has yet to start construction.) The first survey was a short, seven-question direct mail survey. This survey directed respondents to a second, more detailed online survey that was placed on the City's website.

The surveys included questions about how they plan to ride Metra on weekdays and weekends, shuttle attributes, and service to a mall located just south of the residential developments. The direct mail survey only asked 1 or 2 questions for each category, while the online asked several.

The short surveys were mailed to approximately 350 households in two developments. Some respondents only utilized the direct mail survey, others only the online survey and others responded to both. There were responses from 97 unique addresses for a high response rate of approximately 28 percent.

A summary of the market research findings include:

- There is a strong market for service to Route 59 Metra Station with a projected ridership of approximately 120 people.

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- The survey results indicated that service should be concentrated in the morning and evening rush hours.
- Initial service levels should be closely aligned with express trains.
- The type of vehicle is unimportant to the survey respondents.
- The market for service to the mall is weak and there was little clarity on desired times and days for service to the mall.

### Service Design

The routing for this shuttle is essentially the most direct path between the two existing developments and the Route 59 Metra Station as shown in Figure 1. This routing was chosen for two reasons. One, it is the most direct and provides passengers with the fastest trip to the train station. Second, a longer routing would have increased running time requiring additional vehicles to connect to the same number of trains.

**Figure 1: Station Boulevard Route**



Based on input received from the resident survey data, initial service levels were structured to connect with express trains. Connections with eight express trains departing Route 59 Station between 5:57am and 8:16 and seven trains arriving at the station between 4:41pm and 7:33pm were initially recommended. The homeowners' association will contract the management, operations, vehicle ownership, and maintenance to a private provider. The association will be provided with an operating plan that will guide their oversight of the service.

### Funding

Funding for this service involves a unique arrangement that the City of Aurora put into the development documents. The developers of the properties were required to collect an assessment for the express purpose of funding a shuttle to connect the development to the nearby train station. Revenues from a homeowner association assessment are being collected to fund the shuttle. Currently, each homeowner pays a \$20 monthly assessment. However, a long-term analysis has shown that the shuttle service would run at a deficit if the assessment to remain at \$20 per month.

### Large Employer Shuttle Service

*Note: Due to a confidentiality agreement the name of the large employer cannot be stated.*

This large employer is located in the north suburbs of Chicago. They have approximately 14,000 employees that are located on two campuses and some off-campus offices. They have operated three types of shuttles for several years:

- Service to and from surrounding Metra commuter rail stations.
- Intra-campus shuttle service at the employer's two campuses.
- Inter-campus shuttle service between the two campuses that also serves offices located off-campus.

In 2007, the major employer conducted a study to determine ways to improve usage, more appropriately match service with demand and to improve the 'carbon footprint' of the shuttle service.

### Market Research

The employer designed and administered an on-line survey. Nine hundred and sixty (960) responses were received for a response rate of approximately seven percent (7%) of employees. There was no mass notification of the survey to the employees. Instead they were notified during lunchtimes, on shuttles, and by some managers that were aware of the survey. This is an example where lack of upper management support for the service resulted in a poor response rate.

The survey included questions about how often employees used the shuttle, which type of shuttle they used, where they needed to travel, and reasons they needed they didn't use the shuttle.

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A summary of the market research findings include:

- Metra shuttle service works well and is broadly appreciated by staff.
- Inter-campus and intra-campus service is underutilized and difficult to figure out how to use.
- An analysis of origins and destinations of shuttle riders revealed key connections that need to be maintained or strengthened.

### *Service Design*

The market research told how employees travel and a review of existing service showed how they were actually traveling. The revised shuttle service was designed on these inputs. The service design created shorter intra-campus shuttles that operate more frequently and changed the inter-campus shuttle to demand response. The changes to intra-campus shuttles included more frequent and quicker service that operated on “clockface” headways. These changes to the intra-campus service makes the campus shuttles more travel time competitive with an auto trip, but came at the cost of eliminating service to some buildings.

The employer had experience in providing transportation to its employees, however an area it did poorly was outreach to employees. One recommendation was to improve the available transportation information, including:

- Consistent color coding / naming of the routes.
- Creating a system map.
- Marking the stops. Currently there are no physical indicators that a shuttle stops at a building. The employer could install shuttle stop signs that would have color bands indicating which shuttle(s) stop at that building.
- Publicizing the shuttle service website. Anecdotal evidence and survey responses revealed that the website is very hard to find. Steps should be taken with the employer’s communication group to better market the website. Some possibilities include a more straight forward link, newsletter articles, pamphlets, and including the website on all shuttle related printed material.
- Redesigning the schedules to make them easier to read. Information should be organized by station.

The types of vehicles used for the intra and inter campus shuttles were switched from cutaways to Dodge Sprinters. The Sprinters projected the image the employer desired: a modern, less polluting vehicle.

### *Funding*

The shuttle service is funded by the employer. with each building on the campus being charged a portion of the overall cost. It was important when designing revised shuttle service that as many building as possible continue to receive service, so that the overall level of funding did not decrease.

## **CONCLUSION**

Planning shuttle services for niche markets requires that the unique needs of the market be understood. This can only be accomplished through market research which is relatively simple to accomplish because of the targeted nature of potential users. Assembling a thorough distribution list of potential users and management support is necessary for a strong response.

When designing the shuttle service it must meet the service characteristics learned from the market research. Some of the important characteristics we have found include:

- Timed connections to transit service
- Quick, direct travel to the user’s destination
- Reliable and comfortable service
- Good information about the service

Typically, the amount of available funding is known at the start of the project. The service must be designed to meet the amount of funding or identify the amount of additional funding required to provide successful service.