Carsharing at Ball State University: Transportation Redefined

An Honors Thesis (HONRS 499)

by

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ABSTRACT

Carsharing is a progressive model of transportation that allows members to obtain benefits of private vehicle ownership without the inclusion of fixed costs and responsibilities typically associated with ownership. Carsharing provides users with a fleet of shared vehicles that can be rented for periods of time, charging users on a needs-basis. Carsharing is appealing to individuals whose need for a private vehicle is limited, and the carsharing industry is aided by factors such as: density, educational attainment, intermodal transit, and age.

Across the nation, carsharing is growing at an exponential rate in dense metropolitan areas such as college campuses. By instituting a carsharing program, Ball State University would effectively reduce costs at the University level and ultimately for state taxpayers. Carsharing will enhance Ball State University campus services and amenities, along with strengthening the University's commitment to protect the environment.
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I. INTRODUCTION

Carsharing is an innovative transportation model that originated in Zürich, Germany in 1948. The concept of carsharing is simple—numerous individuals obtain a membership to use shared vehicles owned by a third party on a needs-basis. The outcome is a model where members pay only for the hours that the vehicle is used. The industry of carsharing had economically-inspired origins, allowing members of a housing cooperative who could not afford a car to share one instead. Beginning in the 1960s, cities in France and the Netherlands explored the idea of using carsharing as a means to improve mobility on a citywide scale. Innovative companies pitched the ideas to their respective governments, citing that the shared cars would reduce traffic, promote environmentally conscious habits, and improve economic development opportunities while providing more individuals with access to an automobile.

Today's carsharing programs cater their services toward occasional drivers, advertising the ability for shared vehicles to eliminate costs of private vehicle ownership while reducing environmental impact and promoting sustainable travel habits. Recent research found that the average American uses their car very little per day; among national metropolitan regions, more than 90 percent of work trips and 58 percent of non-work trips were made by vehicles with only one occupant. Further, the researchers found that the average vehicle in a metropolitan area sits unused for 23 hours each day during the week.

The main difference between carsharing and rental cars, taxicabs, or mass transit is the duration and simplicity of rentals; carsharing members can rent vehicles by the hour at any hour of the day, as opposed to the daily rentals offered by rental companies. Carsharing members are provided with many of the benefits of private vehicle ownership without the fixed costs and responsibilities typically associated with vehicle ownership. Drivers can experience reduced costs of vehicle travel depending on the frequency and purpose of their travel. Carsharing members shed almost all fixed costs of vehicle ownership, and their payments for operating a vehicle are closely related to their actual vehicle usage. In 2008, the University of Berkeley found that the average American saved $154 to $435 in monthly transportation costs after switching to carsharing.

The carsharing industry has grown exponentially in America since its introduction in Portland, Oregon in 1998. In the last decade, more than 50 carsharing ventures have been started
in the United States. The most successful sites have been dense metropolitan areas and college campuses around the nation. A diverse range of business models has emerged nationwide, ranging from privately held for-profit companies to tax-exempt, city owned, non-profit organizations. Acquiring a membership to a carsharing program often requires an online registration where the user’s driving record and credit card information will validate their eligibility. After acquiring a membership, the user can begin making reservations.

Carsharing is the missing link in the chain of alternatives to private automobiles. Nationally, there are well-established industries for public transit, rental cars, taxis, and bicycles, which can accommodate most transportation needs. There are certain circumstances that still exist for which a private car is required. Carsharing can function as an option for trips where other transportation alternatives are unfavorable, embracing intermodal transit instead of acting as an outright replacement. Since the schedules and billing structure differ between these different types of transportation, the time, length, and duration of any trip is important in determining which method of transportation is most efficient overall.

Carsharing provides its members with innumerable benefits. Carsharing members have reported that increased mobility, a reduction in travel costs, reduced environmental impact, and driving comfort are all factors that bring members to the industry. Additionally, carsharing can benefit non-members, reducing the amount of traffic on the roads.

Studies performed by the Transportation Research Board of the National Academies have identified trends among carsharing users and markets, aiming to categorize the industry’s market segmentation. The studies found that most carsharing operations occurred in dense regions where intermodal transportation was available. The average users were under the age of 40, possessed a Bachelor’s Degree or higher, and were not high-mileage drivers. These findings coincide with the visible presence of carsharing in dense cities and college campuses.

Ball State University would cut costs from its transportation budget while also providing campus amenities in providing carsharing to University faculty, staff, students, and visitors. Implementing a fleet of shared vehicles and other vehicles available on campus would emulate the carsharing efforts of other universities in Indiana. Ball State University would follow the lead of other universities across the nation, who struck partnerships with carsharing programs to ensure a
mutualistic relationship between the entities. Instituting a well-organized partnership that mirrors other institutional programs would maximize the benefits and chances for success for both the University and carsharing program. When Ball State University institutes a carsharing program, it will simultaneously reduce costs for the University and state taxpayers, enhance campus services and amenities, and strengthen the University’s commitment to protect the environment.
II. HISTORY OF THE INDUSTRIES

Rental Cars

The first documented instance of organized car renting dates back to 1916, just sixteen years after the introduction of the automobile in the United States and just nine years after taxicabs were implemented in New York City. The man responsible for this idea was Joe Saunders, a Nebraska entrepreneur who recognized that visiting businessmen had neither effective nor affordable means of transportation when displaced from home. Saunders elected to rent his personal automobile to the businessmen, charging a fixed rate per mile. Making a profit from his personal automobile caused Saunders to realize that rental cars could be expanded into a more widespread business. Just nine years later, Saunders's car renting business had developed to offer rentals in twenty-one states, and his fleet was worth nearly one million dollars at the time.

Saunders's rent-a-car business model caught the attention of other innovative entrepreneurs of the time, and a man by the name of Walter Jacobs also entered the rental business. Jacobs's business was reporting more than one million dollars of annual sales by 1923, and eventually gained the attention of John Hertz, another successful transportation mogul. Hertz had become a well-established entrepreneur after starting the Yellow Cab Company in 1915 and consulted Jacobs after becoming interested in the car renting business. Hertz eventually bought Jacobs's business in 1924, naming it "Hertz Driv-Ur-Self Corporation," a business he sold to General Motors in 1926. Today, The Hertz Corporation is one of the largest car rental companies in the nation.

After the Second World War, several factors contributed to the rapid growth of the car rental industry. Firstly, the advancement of the national rail system served as a boon, as it was common for railways to work with rental agencies to provide rental booths at railroad stations. The rising popularity of the telephone made it possible for passengers to reserve cars in advance at another destination, further enhancing the practicality and ease of renting a car. Airline travel was also on the rise. As the number of airline passengers grew following the war, so too did the need for more rental vehicles. Like the railways, similar partnerships began to emerge between airports and car rental companies. Hertz is credited as the first franchise to offer airport car rentals, but this industry rapidly expanded in 1946, when Warren Avis created the Avis Airlines Rent A Car System.
in Detroit. Avis was considered a pioneer to the industry because of his company’s focus on building airport franchises; his competitors had spent most of their attention on downtown rental locations.

Avis worked with airlines to promote the company and attract clients, a business model that has become commonplace for rental car companies today. Avis capitalized on producing an intermodal transportation network, allowing users to have access to multiple types of transportation to travel most efficiently. This idea was also revolutionary; intermodal transportation is commonplace today.

**Carsharing**

*Initial Efforts*

The idea of carsharing originated in the late 1940s in Zürich, Germany, though it would take almost sixty years before the industry became an established business practice in America, ultimately beginning in Portland, Oregon in 1998. The Zürich system had economically inspired origins, allowing individuals who could not afford to purchase a car to share one instead. Early carsharing ideas were the result of a combined effort by entrepreneurs, industrialists, and municipalities to develop high-technology transportation and used a computerized database to manage operations.

The idea of a large-scale, citywide carsharing business did not become popular until the 1960s. ProcoTip in France and Witkar in the Netherlands were some of the first examples of citywide carsharing efforts and were created to expand on the demonstrated success of rentable bicycles. Both companies pitched ideas to their respective governments, citing that sharing cars would reduce traffic, promote environmental responsibility, and provide all members with access to an automobile. Unlike earlier small-scale carsharing programs, governments expressed no interest in funding large citywide efforts, primarily because doing so would result in increased taxes. The companies were left to acquire their own funding.

With a loan of $250,000 from private investors, Witkar initiated a popularly supported demonstration phase in Amsterdam. Members were offered many innovative technologies for the time, including small electric vehicles, electronic reservations and returns, and access to many
stations throughout the city where vehicles could be picked up or dropped off. While ProcoTip lasted for only two years before business was shut down, Witkar serviced more than four thousand users daily and experienced more than a decade of success. Unfortunately, the program’s electric vehicles required long recharging times, and traffic flow left some stations full and others empty (Transit Cooperative Research Program [TCRP], 2005). These miscues led to the eventual failure of Witkar’s demonstration phase, and the program was officially abandoned in 1986. For the next few years, the newly established carsharing industry would remain stagnant across the globe, but the efforts and brief successes of ProcoTip and Witkar did not go unnoticed.

Even though municipalities did not financially support ProcoTip and Witkar, these ventures gained enough ridership support to inspire other similar private and non-profit carsharing systems across Europe and eventually the United States. In the late 1980s, carsharing began to get a foothold in the European transportation market as small companies experienced continued slow growth over the course of a decade. Among these companies were small non-profit organizations in Switzerland and Germany, as well as publicly subsidized companies in Sweden and the Netherlands. Almost all of the initial attempts to catalyze the carsharing industry in Europe had failed shortly after being launched. According to Harms and Truffer (1998), the reasons for failure included:

- Inadequate planning, marketing, and financial management
- The small size of the service area or membership base
- Lack of support from local governments
- Overly ambitious efforts given the available technology

Later Examples

Two pioneers of modern day carsharing are Mobility Car-Sharing Switzerland and the Germany-based StattAuto Berlin. These companies were founded in 1987 and 1988, respectively, and each venture matured uniquely and independently. Mobility Car-Sharing Switzerland evolved from a common desire among townspeople to provide Swiss neighborhoods and transit stations with shared vehicles, whereas StattAuto Berlin was created as part of university research to demonstrate the viability of carsharing as a transportation alternative in Germany. StattAuto employed a well-structured business model and experienced widespread growth and ridership.
These companies are credited with leading the way for other carsharing programs to spawn in Europe and the United States in the following years.

The first examples of carsharing in America were two separate small-scale experiments: Mobility Enterprise and the Short-Term Auto Rental (STAR) demonstration. Mobility Enterprise was a research program conducted by Purdue University, Indiana that operated between 1983 and 1986 that encouraged participants to use smaller, fuel-efficient cars and attempted to reduce the need to own additional vehicles. Those who participated in the study were provided with a small “minimum attribute vehicle” for daily trips, but had access to a communal fleet of special purpose vehicles, such as pickup trucks, for specialized trips. The STAR demonstration occurred in San Francisco, California between 1983 and 1985 and operated a small fleet of vehicles that served residents of a large apartment complex near San Francisco State University. An independent study evaluated the STAR program and identified factors that led to its collapse. STAR was successful from a consumer perspective, improving mobility of residents and reducing their dependency on automobiles. However, unreliable vehicles, an unprofitable pricing structure, and members who were delinquent on payments led to financial failure, and eventually the demise of the program (Cambridge Systematics, 1986).

Logistics of Modern Carsharing Companies

There is currently an expanding carsharing market in America. Boston-based Zipcar, founded in 2000, has continually expanded since its introduction to serve more than 670,000 members, accounting for 80 percent of carsharing members in the United States and over half of all car sharers in the world. Zipsters, as the members of Zipcar are commonly referred, have access to more than 9,400 vehicles that are present in 28 states, 19 major cities, and over 250 college campuses. The company became public in April of 2011 and raised more than $174 million in its initial public offering.

Company Organization

The emergence of the carsharing industry in the United States is credited to Carshare Portland, founded in 1998 by Portland, Oregon resident Dave Brook. In 2000, Brook started another carsharing venture called Flexcar in Seattle, Washington, and Zipcar emerged separately
in Boston, Massachusetts from founders Robin Chase and Antje Danielson. These companies marked the emergence of carsharing as a mainstream idea, much different than the smaller demonstrations and experiments that were commonplace when carsharing was in its infancy. Predictably, as the industry became mainstream, investors required fewer demonstration phases before funding expansion into new markets. As carsharing has grown and evolved in Canada and the United States, companies have adopted one of three main commercial organizations:

- **For-profit** – Privately held companies that are popular in North America
  - Example: Zipcar
- **Non-profit** – Companies incorporated as tax-exempt organizations, commonly for municipalities
  - Examples: City CarShare (San Francisco, CA) eGO CarShare (Boulder, CO), and PhillyCarShare (Philadelphia, PA)
- **Cooperative** - Members join by purchasing a “share” in the organization
  - Example: Cooperative Auto Network (Vancouver, BC)

The main difference between these organizational methods is their source of capital and funding. For-profit companies commonly utilize venture capital, angel investors, or other sources of private startup capital, whereas nonprofit organizations are more likely to receive government funding or subsidies and can obtain foundation grants because of their tax-exempt standing. Organizations that are classified as cooperatives partially use funding from their members to provide capital for the company.

The sources of a carsharing program’s funding have been shown to influence the way that the program operates and expands. For example, non-profit and cooperative companies intentionally organize their rate structures to discourage unnecessary car use by charging per mile instead of charging by the hours of use. For these same reasons, for-profit companies usually do not achieve as impressive environmental goals compared to other forms of organization. Non-profit companies may also be easier to support with regards for parking, since their status as taxpayers can often reduce community objections toward privatizing street space for their shared vehicles.

*Operational Model*

The modern carsharing industry has produced two main types of shared vehicle programs: neighborhood carsharing and station carsharing. Neighborhood carsharing is the most popular
business model in the industry today and focuses on both commercial and residential markets. This type of program provides vehicles at popular nodes, where users can rent a vehicle for a variety of personal trips. The station carsharing model targets daily commuters who combine multiple forms of transportation to travel most efficiently. The vehicles in a station carsharing program provide users with a way to travel from home to a transit station, where the vehicle is parked. The commuter then travels via transit to his or her workplace. Using shared vehicles to connect a commuter with public transit embraces intermodal transit and enhances the appeal of public transit. It is important for carsharing programs to correctly forecast the demand of a market to operate efficiently, as business suffers when vehicles are not available in the right quantities or locations.

The main differences between neighborhood and station carsharing are the types of users and the nature of the automobile trips. Neighborhood carsharing is aimed at serving the occasional local trips of a large member base and is usually billed on an hourly basis. Station carsharing targets daily commuters and charges them a monthly subscription. Each day, the station cars have a steady and consistent user base, but rely on equal but opposite volumes of commuter traffic to keep stations evenly stocked with vehicles. On the contrast, vehicles in neighborhood carsharing are used by a much wider member base, which can enable neighborhood carsharing companies to earn enough revenue to operate with minimal or no subsidies.

When the practice of carsharing started to mature in the United States, station cars were the most popular business models. In recent years, however, the number of station car programs has decreased, though not completely. Today, station cars are used in programs that operate similarly to transit, shuttling employees to popular employment sites in dense metropolitan areas.
III. WHY CARSHARING?

In 1998, it was reported that the average American uses their car very little per day; among national metropolitan regions, more than 90 percent of work trips and 58 percent of non-work trips were made by vehicles with only one occupant. Further, the average vehicle in a metropolitan area sits unused for 23 hours each day during the week (Shaheen, Sperling, & Wagner). Figures 3.1 and 3.2 illustrate these statistics. For residents with monthly automobile payments, the convenience of owning a vehicle amounts to a sizable amount of money for a relatively small amount of uses. It is for reasons like these that public or shared vehicles are desirable. By looking at patterns of consumption, it is easy to see that many residents value private vehicle ownership. This is true even in countries with high gasoline prices, successful public transit, and dense land development. Carsharing is not appropriate in all markets, and it does not aim to get rid of private vehicle ownership outright. However, there are many benefits that make carsharing a promising alternative to private ownership.

Carsharing will potentially reduce the costs of vehicle travel for individuals depending on how frequently and for what purpose a vehicle is used. Once a private vehicle is purchased, there are variable costs, but a large portion of the overall cost of private ownership lies in the fixed costs associated with the vehicle. Among the fixed costs are license plate, registration, and monthly car and insurance payments, which are paid regardless of how much the vehicle is used. Fuel and
occasional maintenance are also costs incurred by private owners, but vary depending on how much the vehicle is used. These variable costs are relatively low compared to the fixed costs, and thus create an incentive for the driver to drive more than what is economically rational. Carsharing members shed almost all fixed costs, and their payments for operating a vehicle are closely related to their actual vehicle usage. A recent University of California, Berkeley study found that the average American saved $154 to $435 in monthly transportation costs after switching to carsharing (Shaheen, Cohen, & Chung, 2008).

Carsharing is the missing link in the chain of alternatives to private automobiles. Nationally, there are well-established industries for public transit, rental cars, taxis, and bicycles, which can accommodate most transportation needs. There are certain circumstances that still exist for which a private car is required. Carsharing can function as an option for trips where these alternatives are unfavorable, embracing intermodal transit instead of acting as an outright replacement. Since the schedules and billing structure differ between different types of transportation, the time, length, purpose, and duration of each trip is important in determining which method of transportation is most efficient overall.

**Relationship To Other Modes of Transportation**

Consumers naturally choose the product that best suits their need. Understanding how carsharing relates to other transportation industries is important to determine which markets would foster successful shared vehicle operations. The three closest competitors to carsharing are rental cars, public transit, and taxicabs. The following analysis focuses on the unique and desirable components of each mode of transportation.

*Rental Cars*

Carsharing differs from rental car agencies in five main ways: length of rental, access to vehicles, services provided, one-way trips, and duration of service.

*Length of Rental*
Carsharing vehicles are rented and billed by the hour, usually for short trips. This rental structure appeals to local residents who make occasional, intermediate trips. On the contrast, rental cars often have a minimum rental increment of one full day and are meant to accommodate business travelers and visitors. The length of the rental and the location of the stations make rental cars appeal to people who need a replacement vehicle rather than a vehicle used on a needs basis.

Access to Vehicles

Carsharing vehicles operate as local amenities and are thus centered around residential or business hubs, depending on their target market. The cars are available for rental days or just minutes in advance, and require only a phone call or Internet connection to make a reservation. Conversely, rental cars operate out of centralized facilities, such as downtown centers and airports, and require a staff member to validate the rental. As a result, rental agencies can only check vehicles out during their hours of operation, which limits the availability of rental cars when compared with carsharing.

Services Provided

Carsharing differs from rental cars with regard to what is included in the pricing of the rental. Carsharing rates, though billed by the hour, are inclusive of gas and insurance costs, which are not covered by rental car pricing. However, carsharing requires a membership fee, which sometimes does not allow for immediate access to the fleet. Rental cars require no such premium and are available immediately upon request, though the insurance coverage offered by rental car companies is lucrative and seldom used by the renter. Providing a rental car with insurance coverage comparable to what is included in a carsharing rental would add additional costs to the rental.

One-Way Trips

Most carsharing programs rent vehicles that must be returned to the location from which they were rented, whereas rental cars can be returned to any company location. This makes carsharing less feasible than rental cars for extended, one-way trips. It should be noted that Zipcar, as well as other carsharing programs, are exploring the possibility of being able to return shared cars to locations different than the original location. (Zipcar, 2012).
Duration of Service

By charging an upfront application fee and annual membership fee, carsharing deters infrequent users from joining the program. The result is a membership base of habitual users who use the vehicles frequently and recurrently for short or intermediate trips. Carsharing programs target permanent residents who use the vehicles frequently over the course of months or years. Rental cars appeal to visitors or travellers, who use the vehicles for long rental periods, but only on special occasions.

Adaptive Services

There is a bridge in the gap between the services offered by rental cars, public transit, and taxicabs. Carsharing succeeds by bridging the gap between the transportation services offered by its alternatives by effectively competing with some industries, while embracing multimodal transportation with others. There have been some cooperative efforts between the carsharing and rental cars despite their relationship as competitors. Carsharing members in San Francisco are encouraged by the carsharing organization to reserve rental cars for longer trips and receive discounts when doing so from specific rental companies (TCRP, 2005). Similarly, carsharing exists almost exclusively in areas with an established public transit system, creating a multimodal transit network to best serve a variety of travellers.

In an effort to blur the line between carsharing and rental agencies, each industry is experimenting with the possibility of including services for both long and short-term rentals. Enterprise and U-Haul, among others, have started renting cars by the hour with billing structures that resemble those of carsharing programs (Shaheen, Cohen, & Chung, 2008). As car rental agencies implement strategies like unstaffed rentals and demand-based pricing systems, they begin to embrace policies that resemble a carsharing models. Similarly, carsharing companies have explored the idea of offering daily and weekly rates for their vehicles to compete with rental cars.
Public Transit

The carsharing industry both as partners and competes with public transit programs, similar to its relationship with car rentals. Whether bus or train, carsharing differs from mass transit in its schedule and hours of operation, availability and range, social stigmas and perception of safety, cargo capacity, and adaptability for multiple trips.

Schedule and Hours of Operation

One of the main proponents of private vehicle ownership is immediate access to services. Public transit operates on a fixed, reliable schedule, but only during its predetermined hours of operation. This may limit the feasibility for trips made during odd hours, or trips made in between scheduled pickup times. Carsharing can provide near-immediate access, depending on the distance to a vehicle’s location and its availability to be rented. Because transit operates on a fixed route with scheduled stops, a rider who is unfamiliar with the route may also be reluctant to use the service because of uncertainties about the locations of stops. Individuals with personal rented vehicles do not incur this problem.

Availability and Range

The infrastructure required for mass transit can be expensive and daunting to a municipality. For these reasons, mass transit is not available in all metropolitan areas around the nation. Regions without diverse and extensive networks are less appealing to carsharing companies, who thrive in part due to multimodal transportation. However, the absence of transit options can also make carsharing attractive to residents who are trying to avoid the burdens of private vehicle ownership. Methods of transportation that follow permanent routes also limit the user to trips that fall within their regional service areas.

Social Stigmas and Perceptions of Safety

There is an inherent stigma that many residents hold against persons who ride public transit. The negative perceptions of safety towards transit riders prevent many potential riders from using public transit, even when it is the most efficient way to travel. This belief makes private vehicles attractive.
Cargo Capacity

A rented car or service vehicle provides its user with ample room to fit most cargo, and this space is evident before the renter makes a reservation. This differs from the availability of cargo space when riding a bus or train, which is reliant upon the crowdedness of the vehicle. Trips that require the transportation of large cargo would be best served with a personal vehicle equipped to handle the payload.

Adaptability for Multiple Trips

Access to a personal vehicle, whether rented or owned, allows the user to coordinate trips with multiple destinations. Several short trips could be combined into one outing with a private vehicle, whereas the fixed schedules and routes of transit are not tailored towards those with a multitude of short-duration jaunts.

Taxicabs

The similarities between taxi service and carsharing have been noted since the introduction of carsharing, with shared vehicles earning the nickname of "self-drive taxis." Taxicabs differ from shared vehicles in their prices and responsibilities; carsharing is generally less expensive per mile, but requires a membership fee. Like carsharing, taxis function as part of a niche market and are meant to operate in conjunction with other modes of transportation. Within this multimodal transportation network, taxicabs provide certain advantages over their competitors, such as: one-way trips, out of town trips, short distance/long duration trips, and service to a wider audience.

One-Way Trips

Carsharing vehicles must be returned to the location from which they were rented, making taxis desirable for shorter, one-way trips. Carsharing companies are exploring the option of one-way trips, which would nullify this advantage.

Out-Of-Town Trips

Carsharing companies operate out of a limited range; a membership to carsharing in one city may not grant access to carsharing in a foreign city. Drivers who are unfamiliar with the local...
layout of a city may prefer someone else, such as a taxi driver, to navigate. For these reasons, taxicabs may be preferable to out-of-town visitors depending on the duration of their stay. Zipcar, who has an 80 percent market share of carsharing operations in the United States, operates out of cities across the nation and requires only one membership, making carsharing a possibility for travellers (Zipcar, 2012). It is also common for nonprofit carsharing operations to have cross-usage agreements to accommodate travellers.

**Short Distance, Long Duration Trips**

Once a member’s credit card is registered with the carsharing operator, shared vehicles are billed by the hour. This pricing scheme signifies that the duration of the trip is more important than the distance travelled. Conversely, taxicabs are billed by the number of miles driven regardless of the time spent in the vehicle, attracting riders who are engaging in short distance, long duration trips. Examples of these trips include: concerts, movies, or trips during heavy traffic.

**Service to a Wider Audience**

Taxi services provide a traveller with a licensed, qualified driver. This is a main difference from carsharing, where drivers are required to have appropriate driving records and be of a certain age. Taxi services are not selective about their riders, providing transportation for those who are too young to drive, who physically cannot drive, who are intoxicated, or whose driving records restrict access to carsharing.
IV. MARKET CONDITIONS

An Expanding Industry

Since its proposal as a business idea in 1948, the carsharing industry has grown to contain more than 32,000 vehicles that service 1,300,000 registered members across the world today. Carsharing operations are currently present in 26 countries that span 5 continents around the globe (Shaheen, 2011). Since the introduction of Carshare Portland as a marketable business practice in the United States in 1998, more than 50 different carsharing organizations have been implemented in the United States (Shaheen, Cohen, & Chung, 2008). Figure 4.1 shows the exponential growth that has occurred both in carsharing members and vehicles in the first decade of its existence in Canada the United States. If the carsharing industry hopes to perpetuate the undeniable popularity and admiration that it has been receiving, smart development decisions are necessary to avoid the blunders that plagued many early carsharing programs.

Despite the increasing growth and popularity of carsharing, the industry has the potential to serve a far more significant proportion of the population in the United States. It is estimated that four percent of vehicles in America could be feasibly replaced with shared vehicles (Schuster, 2005). Demographic groups, behavioral characteristics, and geographic conditions have been used to understand the market niches where carsharing is most appealing. Analyzing these conditions helps to better define the market segmentation that is conducive to the growth of
carsharing. This defined identity therefore helps to understand how to further expand the industry.

Criteria that have been evaluated to identify market segmentation include:

- Demographic characteristics – who is most likely to become a carsharing member
- Behavioral characteristics – common attitudes shared among carsharing members
- Geographic characteristics – the geographic factors that determine the most effective locations for vehicles

Identifying patterns among carsharing users and places can be used to develop the industry by expanding operations to regions with similar characteristics to successful carsharing programs. Market segmentation operates under the principle that similar individuals are likely to demonstrate similar purchasing behaviors, allowing the industry to expand into unconquered markets. Segmentation analysis allows a business to provide services to individuals who value and support the service but do not have it, creating a mutualistic condition where both the consumer and producer benefit.

**Demographic Characteristics**

Over the past few decades, there have been several studies that look for patterns in the demographics of the average carsharing member. While no two studies are exactly the same, there are certain criteria that are often evaluated and reported by a variety of agencies. The demographic criteria that were addressed in nearly every survey are: age, gender, income, education, and household characteristics. According to the Transit Cooperative Research Program (2006), the composite analysis of these studies yielded the following general characteristics:

- Age: Carsharing is attractive to a narrow age range, between 25-45 years old
- Gender: Carsharing is more attractive to males
- Income: Median or higher than average income are most attracted to carsharing
- Education: The average carsharing member is well-educated
- Household Characteristics: Small households are the norm among carsharers

These composites are by no means absolute; the following analysis details the findings and sources of the evaluated characteristics.

**Age**

During a 2004 presentation, PhillyCarShare reported that current carsharing members are mostly between the ages of twenty and forty (Lane). Brook's (2004) analysis of Carsharing Portland
reported similar findings in the same year, saying that most members are in their thirties. A study that analyzed data from Germany, the Netherlands, Norway, Scotland, Sweden, and Switzerland identified sustainable traffic systems in established carsharing markets overseas. Results showed that European carsharing members identify themselves as middle aged, young families, usually between the ages of thirty and fifty years old. (Klintman, 1998).

Gender

The studies of gender representation among carsharing members produced differing results. Klintman (1998) found that members are predominantly male. However, American carsharing members were reportedly represented equally with regard to gender (Brook, 2004).

Income

The studies of carsharing participants reported varied results regarding income. Analysis of the American market found that the incomes of carsharers are near the median among all major carsharing organizations (Brook, 2004). This goes against the findings of a Swedish study, which found that Swedish members earned higher than average incomes. (Polk, 2000). A third perspective comes study of German carsharing members. The study found that 20 percent of members belonged to a low-income group, nearly 20 percent belonged to a high-income group, and the remaining members fell somewhere in between (Harms & Truffer, 1998). The opposing analytical results show that there is diversity among the income levels of carsharing members around the world, an assertion that is supported by recent involvement of carsharing programs on university campuses. Despite the fact that average American university students receive an income of $14,400 annually, including loan and grant money, carsharing has been implemented on over 250 college campuses in the United States, and this number continues to grow (National Postsecondary Student Aid Study [NPSAS], 2010).

Education

Analysis of foreign and domestic markets has shown positive correlation between education levels and carsharing membership. In European programs, most carsharing members possessed a higher than average formal education (Klintman, 1998). A similar European study
found that the average carsharing member was a university-educated individual (Polk, 2000). When looking at the American carsharing market, several studies found that carsharing members are highly educated and even suggested that education levels are the strongest predictor of whether an individual becomes an “early adopter” of carsharing (Brook, 2004; Lane, 2004). This claim is supported by the commonality of carsharing programs on university campuses.

**Household characteristics**

Similar to the analysis of income, analyst offered conflicting reports regarding household characteristics of carsharing members. One study reported that neither marital status nor home ownership patterns could be used to distinguish carsharing members from non-members (Brook, 1999). German carsharers reportedly lived in small households of one or two persons (Harms & Truffer, 1998). In Sweden, carsharing members live in apartments with partners and/or children (Polk, 2000), and in 2001, Scottish carsharing members were characterized as young families (Hope). Conflicting analyses signify that there is no clearly defined market segmentation for household characteristics among carsharing members.

**Behavioral Characteristics**

The Transportation Research Board of the National Academies conducted a thorough Internet survey over the course of three months in 2004 to address any common behaviors among carsharing participants. There were over one thousand complete and valid survey responses, and the average respondent had been a carsharing member for almost two years. The survey was distributed through major carsharing companies in Canada and the United States, who circulated a companywide email that asked their members to contribute. Participants were asked questions that aimed to identify patterns in six major behaviors among carsharing members:

- Trip purpose
- Trip frequency
- Automobile ownership
- Personal expenses associated with carsharing
- Number of miles driven
- Available alternatives
The forthcoming analysis details the findings of the survey respondents, as reported by the distributor (TCRP, 2006).

**Trip Purpose and Frequency**

The goal of the questions that targeted trip purpose and frequency was to determine the different purposes of trips made with shared cars, the reasons for choosing carsharing versus its alternatives, how frequently each type of trip occurred, and then to determine the relative importance of each trip. Participants were able to select multiple responses for both the trip purpose and the reason for carsharing, allowing for totals above 100 percent. The results of this section of the survey, as reported by The Transportation Research Board, can be seen in Figures 4.2 and 4.3. Responses identified different reasons for carsharing for individuals with different levels of income. Members with annual incomes under $20,000 were more comfortable taking other methods of transportation, and more frequently reported having passengers in their shared vehicles. This statistic demonstrates that shared vehicles satisfy unmet travel demands of low-income individuals.

If carsharing became unavailable, more than 70 percent of respondents said that they would find an alternative transportation option, and only 29 percent said that they would not make the trip at all. A complete breakdown of responses can be seen in Figure 4.4. It should be noted
that choosing not to make the trip was most common among those with the least education and income, which suggests that low-income households benefit from improved mobility in areas that carsharing is available. This also suggests that individuals with lower incomes suffer from limited options with regard to transportation.

**Auto Ownership**

Among respondents, 28 percent lived in a household where a personal vehicle was owned. Instant access to a vehicle at any hour of the day was the most favorable perk to private vehicle owners. Less than 10 percent of vehicle owners listed other reasons, such as the ability to travel long distances and long amounts of time, the ability to personalize the car for children or smokers, or carrying animals. Notably, only two percent of private vehicle owners claimed that having a vehicle of their own was important. Of respondents who reported that they have no interest in owning a car, costs of insurance and upkeep, high purchase prices, parking hassles, and environmental consequences were all listed as concerns.

Those who participated in the survey reported monthly carsharing costs of around $60 when compared to costs before obtaining a membership. This reported cost reduction is lower than the $154 to $435 of monthly savings estimated by the University of California, Berkeley (Shaheen, Cohen, & Chung, 2008). Survey participants reported that on average, participating in carsharing reduces annual miles driven by 63 percent when compared to the amount they previously drove. The positive effects of this reduction are not exclusive to the participant, either. Fewer cars on the road equates to a reduction in traffic and air pollution as well.

**Attitudinal Characteristics**

In addition to recognizing and quantifying behavioral patterns, survey respondents answered questions that aimed to identify recurrent attitudes of carsharing members. The results were able
to profile carsharing members as social activists, environmentally considerate, forward thinking, and cost-sensitive. These assessments were reached from the following responses:

- 90 percent of respondents felt that it was their responsibility to help create a better world
- 88 percent of respondents in the survey said they were "very concerned" with environmental issues
- 86 percent of participants claimed that they liked to try new things
- 82 percent of respondents said that saving money was important to them

Overall responses to the attitude section of the survey determined that members:

- Are not high-mileage drivers
- Possess lower than average private vehicle ownership
- Are concerned about environmental and social issues
- Are forward-thinking and innovative
- Live in dense residential areas
- Are concerned with purpose and characteristics of vehicle rather than brand or status

**Geographic Characteristics**

Geographic characteristics are important to consider when forecasting the success of carsharing in a region. The current carsharing industry is focused in dense metropolitan cores; a 2004 study found that 94 percent of carsharing membership in the United States was concentrated within eight large metropolitan regions across the country (Shaheen, Schwartz, & Wipyewski, 2004). Although certain conditions make large, dense cities the most promising locations for carsharing, the industry has also been successful in small towns and villages, on university campuses, and within apartment complexes. Market analyses from a variety of sources have examined the patterns that foster successful carsharing ventures, both in dense metropolitan areas and in smaller markets as well (TCRP, 2006).

One factor that can affect the attractiveness of carsharing is the availability of parking. If parking is scarce, expensive, or distant, then parking spaces reserved for carsharing vehicles become more desirable if they are conveniently located. Convenient access to a vehicle becomes increasingly desirable to individuals who live in areas with constrained parking.

Another important characteristic of a carsharing market is the density of the region. By having a large number of people in a small area, there is a larger customer base that is able to access a carsharing vehicle, thereby increasing the amount of potential customers. Dense
metropolitan areas have also been shown to have lower-than-average rates of private vehicle ownership, which increases the desirability of occasional access to a private vehicle. In dense cities, amenities and destinations are generally closer than in suburban regions, meaning that trips are often shorter. The pricing structure and hourly rental periods of carsharing cater to these needs.

Mixed-use developments containing residential and commercial uses employ carsharing opportunities in a different way than a typical development. A carsharing market typically serves either business or personal trips depending on its location. Carsharing operations that service business trips are used mostly during the workday. Conversely, when carsharing targets personal trips, the cars are in higher demand during weekends and evenings, when the customers are home from work. Offering carsharing in a mixed-use development provides vehicles to serve business trips as well as personal trips, thereby combining the different demand patterns and fully utilizing the availability of the shared vehicles.

The ability to live without a personal vehicle also plays a key role in the success of carsharing. Carsharing is a niche product that does not completely replace the mobility needs of a household; the carsharing industry enhances an intermodal network with other modes of mobility to provide an affordable, attractive, efficient, and environmentally friendly transportation alternative. As transportation options are enhanced in a region, the result is a reduction in private vehicle ownership. For a variety of reasons, residents who forego the purchase of a private automobile still have occasional needs for a private vehicle. Combining carsharing with transit can satisfy most (if not all) missing transportation needs. Figure 4.5 displays what participants would do if carsharing services immediately ceased to exist in the area.

<table>
<thead>
<tr>
<th>Category</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use transit more often</td>
<td>38.6%</td>
</tr>
<tr>
<td>Get rides from friends</td>
<td>35.7%</td>
</tr>
<tr>
<td>Use taxis more often</td>
<td>33.9%</td>
</tr>
<tr>
<td>Buy a car</td>
<td>30.5%</td>
</tr>
<tr>
<td>Walk more often</td>
<td>14.8%</td>
</tr>
<tr>
<td>Other</td>
<td>23.1%</td>
</tr>
</tbody>
</table>

Other responses included:
- Rent cars more often
- Borrow cars from friends more often
- Use personal vehicle more often
- Eliminate certain trips

While the aforementioned factors signify that a dense, mixed-use neighborhood would be best for carsharing if parking were scarce and a thorough transit system were in place, these are...
not the only conditions that can nurture a carsharing market. There have also been viable carsharing efforts that have emerged in small towns and villages, on university campuses, and within apartment complexes.

Small Towns and Rural Regions

In the United States, small towns are beginning to emerge as viable carsharing partners. Rutledge, Missouri initiated an "ecovillage" development where a vehicle cooperative helps reduce the environmental impact of its residents (Dancing Rabbit Ecovillage, 2012). There is a strong village carsharing presence overseas as well; successful carsharing operations can be found in rural areas in Austria, Germany, Switzerland, and the Netherlands (Klintman, 1998). Overseas, towns as small as one thousand residents have been able to consistently sustain carsharing programs, showing promise for domestic towns of similar size.

University Campuses

College campuses have proven to be prolific settings for carsharing programs in the United States. The density and constrained parking of a university campus and the high educational status of its students foster the success of carsharing and enhance its appeal. Some companies like Zipcar have established successful programs on a variety of university campuses around the nation. The growth and popularity of campus carsharing show that shared vehicle operations succeed even when supported exclusively by members belonging to a low-income class. Many universities possess reputable transit systems available to students, faculty, staff, and visitors, as well as a large number of students without easy access to a personal vehicle. When coupled with the fact that university students have a stronger than average desire to reduce environmental impact, universities have proven to be a fertile environment for carsharing regardless of whether the campus is situated in an urban center or a rural region.
V. COMPATIBILITY WITH BALL STATE UNIVERSITY

Ball State University and associated taxpayers would all benefit when a substantial carsharing program commenced. The program would target two main consumers: campus vehicles available to the Ball State community, and university fleet vehicles that provide mobility to all other levels of the University. The positive recommendation for Ball State University is to implement a carsharing program. This recommendation comes from the analysis of demographic, geographic, and behavioral information about students and faculty of the University, as well as proven market trends among carsharing programs around the nation. The costs and benefits of implementing such a program were also considered to fully consider the University’s best interest; shared fleet vehicles were identified as the most profitable model of carsharing, and the neighborhood model that would exist on campus was also found to be beneficial (Wagner, 2005). Ball State University would elect to partner with a third-party company that would operate for-profit, such as Zipcar, whose services are presently on more than 250 college campuses. This would privatize the University’s car fleet and provide students with reliable vehicles to re-rented hourly. A successful partnership between Ball State University and the carsharing operator would save the University and state taxpayers millions of dollars while simultaneously promoting environmentally friendly travel habits and enhancing the intermodal transportation for students, staff, and faculty. This idea could be franchised to other universities as well, further increasing monetary savings to taxpayers across the state and nation.

Characteristics of Success

There are many factors that go into the decision of implementing a carsharing program. The feasibility centers on common demographic, behavioral, and attitudinal characteristics that have been found among carsharing users around the nation that help identify fertile environments for carsharing operations. Similarly, an analysis of geographic conditions with successful carsharing programs has identified physical characteristics that promote the success of carsharing programs.

Demographic analyses among carsharers have found that carsharing excels in areas with smaller households and large populations of adults under the age of 40. Additionally, high income and educational attainment were prominent characteristics of members; some analysts even
suggest that education is the most important predictor of whether an individual becomes an "early adopter" of carsharing. Behavior patterns indicate that carsharing members typically drive less than 12,000 miles per year, consider themselves innovative, live in densely populated areas, and possess lower than average rates of private vehicle ownership. Dense populations with intermodal transportation are prime geographic areas that lead to successful carsharing operations.

Ball State University and its affiliated populace closely match the optimum carsharing characteristics identified in market studies. The University’s large, dense population of students would provide a campus carsharing program with well-educated members who generally care about the desire to create a better planet and also enjoy trying new things. Current University policies do not allow freshmen to have access to campus parking, these students either choose to leave personal vehicles at home, pay for a parking pass (in addition to insurance payments) to inconveniently park off campus at Scheumann Stadium, or park elsewhere off campus. Either scenario leaves students with no convenient access to a personal automobile, an opportunity that a carsharing program would capitalize on.

Across campus, pedestrian and bike travel are common means of travel. In addition, the Ball State community has access to two different bus programs that run through the University and Muncie. The existence of an established intermodal transportation system on campus and the use of hybrid cars and buses by the University’s current fleet are indicative of environmentally responsible transportation initiatives. This matches a behavior that has been identified as key among carsharing members. The University’s current environmental transit initiatives ensure that the introduction of a campus carsharing program would fit harmoniously with the current transportation goals.

The inclusion of carsharing in the intermodal transportation network of Ball State University increases the attractiveness of the University to new students, faculty, and staff. Intermodal transportation has been shown to increase the effectiveness of carsharing in cities and campuses around the United States. The availability of other modes of transportation also suggests that students drive very little, a common characteristic of carsharing members. When Ball State University implements carsharing on campus, the entire campus community will be provided with convenient access to a personal vehicle for trips that require one. Doing so would give students,
faculty, and staff a way to access personal vehicles without having to pay the fixed costs associated with owning an automobile, and would also eliminate the need to purchase a parking pass.

Campus Carsharing

The inclusion of shared cars on Ball State University's campus would provide increased mobility to members of the community who may not have access to a personal vehicle. Other modes of transportation may be able to meet most travel demands of community members, though there are several circumstances that may substantiate the need for a private vehicle. Trips made during hours when buses do not operate, destinations that are distant from bus stops or fall outside of its service area, and the ability to move large items like furniture are just some reasons that justify the use of a personal vehicle. Though no student will possess the need to make these unusual trips with great frequency, the sheer number of students on campus solidifies the need for occasional private vehicle travel, substantiating the demand for carsharing. As with all industries, a large and steady demand for services lead to successful business practices.

Ball State University will benefit from the inclusion of shared campus cars. Students, faculty, and staff looking to shed living costs would leave personal vehicles at home or sell them if carsharing were available for occasional use. These community members would take advantage of the University's intermodal transportation to accommodate other travel needs. Fewer students who bring vehicles to campus equates to a lower demand for parking, which would eliminate the University's costs of supplying, maintaining, and enforcing parking across campus.

Fleet and Faculty Carsharing

In addition to providing students with on-campus access to shared vehicles, tremendous potential lies in the opportunity for Ball State University to replace its fleet and faculty vehicles with shared vehicles. The University would save money if carsharing were adopted in place of departmental fleet vehicles. The current fleet of vehicles is operated out of an off-campus facility, with a staff of employees overseeing operations. Because carsharing organizations charge no fees for access to vehicles that are not in use and handle the final disposition of the vehicles, the
University could reduce its costs of operating its fleet by only paying to use cars while they are in use. Carsharing programs charge upfront capital to users by requiring them to acquire memberships, but do not burden host cities or universities with carrying costs to provide shared vehicles. Carsharing will provide Ball State University with vehicles and will eliminate the University’s need to purchase vehicles outright. If all University departments used the same fleet of cars, an online reservation system would be implemented to control reservations on a first-come, first-served basis, so all departments were aware of the future availability of the shared vehicles. Controlling reservations online would allow for vehicles to be rented without the requirement of paid employees, similar to the University’s current FleetCommander reservation system. The only expenses associated with the shared fleet would be annual membership, which starts at $25 per year for students, and rental rates for users, which currently start at $7.50 per hour.

**Mutualistic Benefits**

The motives of the on-campus and off-campus components of carsharing program differ slightly. Students who adopt carsharing do so for the convenience of renting a car from campus, for environmental reasons, and for reduced costs of travel. Implementing carsharing on campus would require no additional employees to oversee operations, as carsharing reservations and returns are handled online or over the phone. The inclusion of carsharing would only require one parking space on campus that is reserved for each shared vehicle. Creating these reserved parking spaces on campus could potentially cause the University to lose a small amount of money by forfeiting valuable spaces that would normally be enforced with parking permits, depending on the logistics of a partnership with the carsharing provider. However, this loss of revenue could be reversed with effective marketing. The inclusion of shared vehicles, if marketed to incoming students, could influence occasional student drivers to leave personal vehicles at home to use shared cars for trips. The reduction of students with vehicles would allow Ball State University to reduce the physical number of parking spaces on campus, eliminating the costs, maintenance, and space requirements associated with parking lots.

Ball State University would save millions of dollars when carsharing practices are adopted in place of departmental fleet vehicles. Because carsharing organizations charge no fees for
vehicles that are not in use, the University would reduce its costs of operating its fleet by only paying to use cars when needed for travel. The costs of ownership, maintenance, gasoline, and insurance would be eliminated if the University-owned vehicles were replaced with shared vehicles. Because many of the responsibilities of the University fleet would be eliminated, so too would be several University positions, thereby reducing costs even further. Mechanics, car washers, and employees who manage reservations and returns would no longer be needed with a fleet of shared vehicles. The combined reduction in operating costs would be enormous, and the adoption of a shared fleet of vehicles would require nothing more than the off-campus lot on which the University’s fleet currently resides. The University would incur no costs to adapt its facilities or infrastructure to operate a shared vehicle fleet and the carsharing operator would replace cars at the end of their life cycle. This allows Ball State University to execute an accelerated implementation process, which amounts to cost savings.

Implementation

Incorporating carsharing into official university documents and advertisements would aid in the effort to solidify and publicize Ball State University’s commitment to the success of the program. The University’s Campus Master Plan, Facilities Planning and Management Plan, the City of Muncie’s Master Plan, and Indiana’s state budgetary plan would be appropriate and necessary places to include carsharing as a long-term goal of development. Ball State University’s decision to implement a carsharing program would invite competition among prospective third-party carsharing companies. There would be little layover between the approval of a carsharing program and its subsequent implementation at Ball State University; once a carsharing provider is approved, there would be no need for the University to determine an appropriate business model, as this is already determined and executed by the carsharing provider.

One prospective carsharing operator is Zipcar, a for-profit company whose services are already present on over 250 college campuses. After originally starting in Boston in 2000, Zipcar has expanded to operate in 28 states in the United States and the company’s fleet includes more than 9,000 vehicles that are used by more than 673,000 members.

There are several features that distinguish Zipcar from other transportation options that already exist in Muncie. Like many carsharing companies, Zipcars can be rented at an hourly rate,
and require no local personnel to be involved in the reservation or return of the vehicles, as these processes are all handled online or over the phone. Zipcar’s membership fee and hourly rates cover the costs of insurance, gas, and maintenance, and technology found in every Zipcar vehicle allows Zipsters to make reservations for specific automobiles at any hour of the day, seven days a week. The Zipcar fleet can be used to accommodate a variety of needs, and includes vehicles ranging from economy cars and hybrids to luxury cars and large trucks. Zipcar runs successful operations on five university campuses in Indiana: Butler University, Indiana University, Purdue University, University of Notre Dame, and Valparaiso University (Zipcar, 2012).

<table>
<thead>
<tr>
<th>University</th>
<th>University Population</th>
<th>City per Capita Income</th>
<th>City Median Age</th>
<th>City Density (persons/sq. mi.)</th>
<th>Number of Zipcars</th>
<th>Number of Stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butler University</td>
<td>4,667</td>
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<td>33.5</td>
<td>2,234</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Indiana University</td>
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<td>23.3</td>
<td>4,074</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Purdue University</td>
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<td>$19,530</td>
<td>22.8</td>
<td>5,368</td>
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<td>3</td>
</tr>
<tr>
<td>University of Notre Dame</td>
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<td>33.3</td>
<td>2,615</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Valparaiso University</td>
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<tr>
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<td>$15,642</td>
<td>28.1</td>
<td>2,898</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 5.1 compares these universities with Ball State University in several characteristics that were used to determine the market segmentation for the carsharing industry. The chart illustrates that Ball State University falls in the middle of most characteristics when compared with universities that currently run carsharing operations on campus, but has the lowest per capita income of the selected cities.

When Ball State University adopts a carsharing program, the implementation process will require very little from the University. Placing shared vehicles on campus only requires the University to forfeit one campus parking space per vehicle. Off campus, the introduction of a shared fleet of vehicles would shift the responsibilities of purchasing, maintaining, fueling, and insuring the fleet to the carsharing provider. The carsharing services would be operated on the existing grounds, requiring no additional space requirements, and would also eliminate the need for many full-time employees to oversee operations. Because all shared vehicles are insured and provided free of charge, introducing a carsharing program provides the University with more services, yet simultaneously reduces the University's financial liabilities. The biggest obligation
demanded by a carsharing program is one that is easily controlled: the initiative to try something new.
VI. PARTNERSHIPS

No matter the purpose or location of a carsharing program, administrations of all types have pursued partnerships with carsharing organizations for a variety of reasons. The purpose of partnerships between carsharing programs and other entities is to foster a mutualistic relationship that enhances the appeal of both the carsharing program and the organization it serves. The specific partnerships that occur between carsharing programs and developers vary depending on location, but there have been many successful partnerships that have emerged on college campuses across the United States.

Universities

A campus presence is attractive to potential carsharing programs because campus communities exhibit physical and behavioral characteristics that are conducive with the carsharing market. Research by several organizations consistently finds that university students and faculty are more familiar with their personal environmental impacts, and thus are more willing to curb their behaviors when compared to the population at large.

Parking scarcity, cost, and constraint plague many large, dense areas and decrease the appeal of private vehicle ownership. This effect is also present on university campuses for the very same reason; even universities located within rural regions operate much like large cities with regard to parking management and offer very few spaces on campus without requiring the user to purchase a parking permit. Universities have a greater ability to implement new parking regulations than traditional municipalities because of their independence and operation as self-contained entities. This freedom means that forfeiting services to obtain a partnership is much easier for universities than for municipalities. Carsharing programs also benefit from the university’s existing communication network as a way to enhance marketing around campus.

Goals and Benefits of Campus Carsharing

A key goal of universities is to reduce parking demand. This is not often be resolved by one method, and usually requires the combined effort of many different strategies. Providing a thorough transit system to students is one way to reduce the number of students using personal
automobiles for trips, amounting to a reduced environmental impact. Across Canada and the United States, carsharing has been implemented on campuses to tackle a variety of goals, including:

- Sustaining the environment (University of Victoria, British Columbia)
- Reducing carbon emissions (Tufts University, Massachusetts)
- Parking and transportation demand management (University of Washington, Seattle)
- Providing a means of transportation for students

*Initiating a Partnership*

Partnerships between universities and carsharing programs have been created from a variety of interactive patterns. Some universities are proactive about their involvement in partnerships, and sometimes a carsharing operator contacts the university first. In Palo Alto, California, Stanford University issued a Request for Proposals in 2003 to implement a carsharing program on campus. The University listed specifications that the carsharing program was required to meet. Bidders then responded, and a program was chosen and implemented (TCRP, 2005). To best initiate a partnership with a carsharing program, Ball State University needs to issue a Request for Proposals to obtain a carsharing operator similar to the process followed at Stanford. After the request is reviewed, the University would meet with possible participants to discuss the logistics and partnership commitments of a proposed deal. When subsequent cost-benefit analyses confirmed favorable conditions for all entities, the implementation process could occur immediately.

*Sources of Campus Carsharing Support*

Analysts have identified seven main sources that a campus could support a carsharing program, and briefly outlined how to accomplish such a task (TCRP, 2005). The criteria listed were:

- Marketing
- Administration
- Parking
- Memberships
- Policy Issues
- Transit Integration
Marketing

Universities employ a variety of different marketing tactics to advertise and promote carsharing programs. A valuable asset to campus marketing is the extensive communication network that exists in universities. This marketing can include emails to faculty and students, newsletters or tabloids, websites, fliers, billboards, and programs that target new and prospective students. The carsharing company is often tasked with providing the university with marketing material, and the university distributes the material through its network to effectively communicate the idea with relatively little loss. Marketing methods in universities across North America include:

- Campus calendars that advertise the carsharing program on the back, including information on car-sharing (The University of Victoria, British Columbia)
- Signs advertising car-sharing in the campus shuttles (MIT and Stanford University)
- Weekly ads in the student newspaper (University of Washington)
- Carsharing information is provided in packets sent to new students, which advise them not to bring vehicles to campus (University of Pennsylvania)

Effective marketing is possible with a proper environment and target audience. Even with a comprehensive communication network, certain factors can lessen the effectiveness of aggressive carsharing marketing. Universities would be ineffective at marketing if they lacked transit opportunities, did not provide convenient parking for shared vehicles, or if campus parking rates were too affordable. Affordable parking rates would lessen the cost of vehicle ownership on campus and thus lessen the incentive for students to seek alternative methods of transportation. Conversely, having excessively inflated parking rates would increase support for carsharing, causing more students to forfeit the high costs of having a private vehicle on campus.

Administration

The most common way for carsharing programs to receive administrative help from a university is through marketing, as detailed above. Carsharing programs can reduce the amount of work needed from a university by supplying all promotional materials, requiring the university only to distribute the material. In Oregon, Portland State University reports that its staff only spends 15 hours per month working on marketing distribution for their campus carsharing program (TCRP, 2005).

Parking

Parking is constrained and scarce on university campuses, and parking spaces within close
proximity to campus nodes are some of the most important assets a university could supply. Current policies at Ball State University forbid all freshmen from parking on campus during enforcement hours, instead forcing students to park off campus or at Scheumann Stadium. In 2011, almost 2,200 students received permits for off-campus parking at the stadium, signifying a large proportion of students without easy access to their private vehicles. Nine universities with campus carsharing disclosed their parking policies in the survey provided by the Federal Transit Authority, with the following results:

- Six universities provide free parking for carsharing programs
- The remaining three universities discount the parking fee for carsharing operators
- The University of Victoria provided free parking to carsharing initially, but now charges full price
- Portland State University must pay discounted rates for carsharing spaces, but the carsharing company can specifically choose the location of the spaces

The value of forfeited parking depends on the rurality of campus and the relative demand for each space; Massachusetts Institute of Technology provides five free spaces for carsharing, an offering valued at $50,000 annually. No matter the rurality, the availability of parking is such a precious commodity in dense dwellings. Universities provide carsharing programs with an enormous boon when they agree to partnerships with discounted parking spaces.

**Memberships**

It is common for universities to have cars available for use by departments, with the size of the fleet depending on a variety factors. Universities can eliminate expenses associated with departmental fleets by exploring the idea of carsharing. To attract carsharing operators, some universities have subsidized the cost of campus carsharing membership. Universities save money by sharing one fleet of vehicles between departments, and the university fleet generates increased revenues for the local carsharing operator.

Examples of universities implementing programs to boost carsharing membership are springing up around the nation. Portland State University allows eligible campus employees to join its carsharing program without having a membership to the program. Students who work full time, own a transit pass, and do not have campus parking are able to use any of the university’s shared cars for up to 4 hours per day between the hours of 8 A.M. and 6 P.M. The university pays the carsharing provider upfront for use of all carsharing vehicles and memberships, and distributes the services among students who qualify. The carsharing company then adds incentive for students to
continue membership outside of the university’s services by eliminating an initial membership fee. The carsharing presence on Portland State's campus is also receiving free marketing through word-of-mouth advertising and promotion. The university and carsharing company were mutually pleased with the partnership and recently expanded the fleet with an additional 20 cars.

Similar to Portland State University, the University of Wisconsin purchased 200 carsharing memberships for campus employees that were discounted 50 percent. The memberships were given to employees, who were granted 5 hours and 50 miles of free carsharing use. The university reported that between 60 and 70 percent of the recipients joined the carsharing program after the trial period was over.

Policy Issues

Carsharing has been implemented as a strategy to address a variety of issues that a university faces, such as environmental impact, sustainability, and transportation demand management. To solidify the future of carsharing, universities are incorporating the idea into official documents like environmental and master plans. The University of Wisconsin, whose carsharing subsidies are detailed above, has updated its University Master Plan to include carsharing in its transportation section.

Transit Integration

The presence of carsharing on a university campus is enhanced when it is coordinated with the university’s other forms of transit. The coexistence of these transit varieties creates a desirable intermodal transportation network that provides more efficient travel options. Carsharing alleviates the apprehension of students or faculty who would take transit, but can face one of the following inconveniences:

- Needing to make multiple short trips
- Needing to make trips after the hours of transit operation
- Taking transit to work, but needing to run errands during lunch
- Travelling somewhere outside the range of transit

All of the above difficulties could be resolved by implementing shared vehicles on campus. Two universities in Washington promote carsharing through the campus transit system: Portland State University's subsidized carsharing program is advertised via information packet whenever a student or faculty member purchases a transit pass, and University of Washington students receive
discounts on carsharing membership if they are enrolled in the transit program that services the university.
VII. CONCLUSION

With the proper leadership, a partnership between Ball State University and a carsharing operator would produce benefits for all parties. Ball State University would benefit from cost savings for the university, a decrease in parking demand and constraint, and an enhanced intermodal transportation network. Carsharing operators benefit from increased revenue from the University, access to the University’s marketing network, and convenient locations on campus. The carsharing industry has experienced exponential growth in the last decade, flourishing in large metropolitan areas and college campuses. The average carsharing members have been identified as environmentally conscious adults under the age of 40 who possess a Bachelor’s Degree or higher. Carsharing is desirable for individuals motivated to reduce travel costs, eliminate parking and maintenance responsibilities, and practice environmental responsibility. Carsharing programs benefit from tremendous marketing and advertising networks at universities, resulting in increased ridership.

From the perspective of Ball State University, carsharing should be implemented as a strategy for a number of issues, including: environmental impact, sustainability, and transportation demand management. Additionally, providing the Ball State community with convenient on-campus access to shared automobiles would reduce the demand for bringing private vehicles to campus. This leads to parking (and subsequently, cost) reductions for the University, who would benefit from less construction, maintenance, and space required for each eliminated parking space. It will take the combined proactive support of the University President, Board of Trustees, and the entire Ball State community to enhance transportation on campus through carsharing.

Ultimately, Ball State University has control over a potential carsharing program because of the contractual agreement with the carsharing operator. The success of the program will be monitored by Ball State University and executed by the operator. In addition to financial support through ridership, the University has many resources that are valuable to an incoming program. Among them is the integration of carsharing with the established marketing and transit networks that exist on campus. Because carsharing programs have proven to be compatible with universities and their students, raising awareness of the program is a vital tool to attract initial
members. Adapting the existing transit systems to work with carsharing is another way to enhance the University's intermodal transportation network. Being involved and supportive of shared campus vehicles will help Ball State University foster a symbiotic relationship with the carsharing operator.

Eliminating Ball State University's fleet vehicles in favor of carsharing vehicles would save money in a variety of ways. Carsharing reservations, returns, and operation require no physical employees, as all matters are handled online or over the phone. This would eliminate the cost of staffing the current Facilities Planning and Management Building. Additionally, maintenance, car washes, and other routine sales procedures are covered in the standard rental fare of a carsharing vehicle, amounting to further cost reductions. The University fleet carsharing would operate on the same premises as the current fleet, requiring no additional sites or construction to become operational. A routine shuttle service that provides transportation from the fleet site to campus would be instituted to supplement the convenience of a fleet of shared vehicles. Because Ball State University's campus already meets the physical demands for a complete carsharing operation, a simple change in policy is all that is needed to make a carsharing program operational. Once Ball State University issues a Request for Proposals to obtain a carsharing operator, carsharing operations will commence immediately following the signing of the contract.

When successful, Ball State University will experience a variety of benefits from a carsharing organization without forfeiting many assets. Providing campus cars to the Ball State community would require the University to lease or give up a few parking spaces. The addition of a carsharing fleet off-campus would require changes and expansion of the existing bus system that services campus. For the off-campus fleet, buses need to transport members to the parking lot during all hours that the fleet is available. This could be accomplished by implementing a demand-based taxi service to take members to and from the carsharing site. Providing members with access to the vehicles would ensure that the fleet is always conveniently accessible. These losses are miniscule in comparison to the benefits documented by the carsharing operations that exist on more than 250 campuses across the nation.
Providing the Ball State University with shared vehicles would benefit the community by:
providing members with convenient and reliable automobiles on campus, reducing travel costs for
students, providing environmental benefits, reducing the number of students who bring their cars
to campus for occasional trips, and alleviating university parking constraints. Members would be
able to save money on transportation while also benefitting from the convenience of reliable
vehicles. Providing the University with a shared fleet of vehicles would decrease or eliminate
departmental fleet vehicles, reducing the number of full-time employees who are involved in the
operations and maintenance of the University fleet. These reductions amount to savings of
millions of dollars. With the number of fiscal, environmental, and intermodal benefits, carsharing
will increase the quality of life for the entire Ball State community.
VIII. BIBLIOGRAPHY


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