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Sustainable Campus Transportation through Transit Partnership and Transportation Demand Management: A Case Study from the University of Florida

Alex Bond and Ruth L. Steiner

Abstract

The University of Florida has established a long-term, sustainable partnership with the local transit system in Gainesville, Florida. This partnership provides over \$5.2 million of annual funding to enhance transit services used by students at the university. Ridership on the system has grown by 284 percent between 1995 and 2003. These ridership gains were made possible through a comprehensive campus transportation demand management (TDM) system, which seeks to reduce automobile use in favor of more sustainable modes. The campus TDM system includes policies such as parking restriction, parking pricing, transit service enhancements, and unlimited-access transit.

Introduction

Colleges and universities have unique transportation needs. Educational institutions value a walkable, green campus where buildings are in close proximity to foster academic collaboration. Parking breaks up the campus landscape, occupying valuable space that could be devoted to classrooms or laboratories. Universities can expect a fairly steady flow of commuters throughout the day since classes begin throughout the day, whereas cities expect spikes in transportation demand during rush hours.

Universities are experiencing rising costs for constructing and administering transportation infrastructure, which detracts from the university's primary mission of academics (Balsas 2002). Creating a modal shift away from automobiles is an important goal for many institutions of higher learning today. Universities are in an excellent position to experiment with and implement transportation policy changes. Universities have complete control over the road network, parking facilities, and land uses on their campuses. These policy changes can enhance not only the sustain-

ability of the university's transportation system, but also the surrounding community's (Miller 2001).

To further the goal of creating a more sustainable transportation network, many universities are implementing transportation demand management (TDM) programs that attempt to stimulate non-automobile commuting. One such institution is the University of Florida (UF), a large, public institution that has partnered with the local transit agency to provide viable alternatives to automobile commuting. In the University of Florida case study, it is observed that a combination of four TDM policies resulted in a substantial modal shift. These policies include parking restriction, parking pricing, unlimited-access transit, and transit service improvements.

Literature Review

Transportation demand management (TDM) is a package term for a variety of planning strategies that promote a more efficient use of transportation resources. TDM strategies seek to reduce or mitigate the negative aspects of automobile travel including congestion, air quality, and transportation inequity. They also seek to build upon positive aspects of a balanced transportation system to foster economic development, expanded housing choices, and a reduction in capital expenditure on transportation infrastructure (Ferguson 1990). TDM policy implementation is important for universities that desire to shift people from single occupant automobiles to more efficient modes of commuting to campus.

TDM policies fall into three broad categories: positive, mixed, and negative. Positive TDM policies expand transportation options and access for all users and include: transit service improvements, flextime work hour scheduling, and carpool/vanpool programs. Mixed TDM strategies expand options and access for only one segment of the population, but do not adversely impact those who are not in that target group. Examples of mixed TDM strategies include: high-occupancy vehicle lanes, unlimited-access or fare-free transit programs, and traffic calming. Negative TDM strategies reduce options or increase costs, and include: fuel tax increases, parking pricing, and auto-free zones (Litman 2003).

Individual TDM strategies have a modest impact on the transportation system, but when multiple strategies are applied in a coordinated manner, the impact on mode choice can be substantial. Further, when multiple strategies are applied, the negative impacts on individual users are mitigated (Litman 1999).

The decision to use transit is in large part based on the transportation demand management policies in place — the most important of which are transit service improvements, parking restriction, parking pricing, and unlimited-access transit (Bond 2005). The decision to use transit is also based on the habits, attitudes, and beliefs of the user. Experience with high level of service transit may influence future behavior, since psychologically the experience was a positive one (Verplanken et al. 1994). Therefore, exposing students to alternative modes could have lasting impacts on the nation's transportation system. Tolley (1996) makes the claim that creating a "green," sustainable and multimodal transportation system on a university campus could make lasting impacts on the travel behavior of graduates. Whether providing high-quality transit service to university students translates into lifelong transit ridership is an unanswered question in the existing literature.

Parking Pricing and Restriction

Parking restriction and pricing are two of the most powerful TDM policies, and are frequently employed in dense areas such as central business districts and university campuses (Wilson 1995). Morrall and Bolger (1996) found a strong inverse correlation between the available proportion of parking spaces and transit's share of peak-hour commuters. In areas like central business districts with fewer available parking spaces, transit use was high. In areas with an excess of parking spaces, transit use was low. Universities usually have fewer parking spaces (supply) than the number of commuters who wish to park on campus (demand). Therefore, universities can be expected to behave similarly to central business districts.

For-profit landowners build the cost of free parking into the total expense of the development. The cost of the free parking is then passed along to consumers or tenants. However, universities are non-profit entities and do not produce a product that can be increased to pay for parking facility costs. Universities must charge students and faculty who use parking spaces to recover at least a portion of the costs associated with facility construction and maintenance (Shoup 1999). The process known as "parking pricing" achieves a triple goal: to raise funds, discourage commuters from parking on campus, and to encourage commuters to use alternative modes. In a recent sample, the cost of parking passes on university campuses ranged from \$14 to \$300 per semester, with a mean of \$83.43 (Gutkowski and Daggett 2003). Even at schools with more expensive parking, universities are not pricing parking to recover 100 percent of its costs. The monetary costs of parking to a university include salaries for parking personnel, accounting, construction costs, and loss of available land — which at some point in the future could necessitate the purchase of campus annexes (Tolley 1996).

Transit Service Improvements

Increasing transit ridership is not solely tied to fare cost. To attract riders, service must also be improved. The most important service characteristics for non-users of transit are increased frequency and direct routes from home to work (Mierzejewski 1990). Cervero (1990) found that service frequency was twice as important to riders as fare cost. The wait time for a bus is a substantial component of total travel time. By reducing the total wait time — and thus the total travel time — transit begins to become competitive with the private automobile in terms of convenience (Li 2003). Evans (2004) found that frequency elasticity for transit ridership is 0.5 — for every 10 percent increase in frequency, ridership goes up by 5 percent.

New transit routes are important for capturing new riders. Johnson (2003) found that bus transportation is only effective within a quarter mile radius of bus stops. New routes allow access to parts of the city previously not served by transit. New routes also come in the form of direct and express routes, which are a powerful attractor for commuters (Mierzejewski 1990).

Unlimited-Access Transit

The idea of unlimited-access transit (also known as fare-free transit) has been practiced on university campuses since the late 1970s. In 1998, a survey found that 35 major universities offered some form of unlimited-access transit (Miller 2001). Unlimited-access transit is not free transit. It is a different way of paying for transit service. A third party pre-pays the transit provider to carry members of a constituent group without charging them a fare. The transit provider usually receives an annual lump sum payment from the university (Brown et al. 2001). Through a method similar to group health insurance, fares are substantially discounted because so many fares are being purchased, but only a fraction of payees avail themselves of the benefits (Miller 2001). Transit passes are distributed or third-party identification cards double as passes. Unlimited access is not limited to institutions of higher learning. Third-party prepayment can also be offered by large employers or municipal governments (Nuworsoo 2005).

According to the Simpson-Curtin rule (Curtin 1968), free transit should theoretically increase ridership by a third, since ridership goes up by 3 percent when fares are decreased by 10 percent. In practice, agencies that eliminate fares entirely experience ridership gains closer to 50 percent (Hodge et al. 1994), likely due to the concurrent implementation of other TDM policies. Perrone (2002) suggests that small and medium transit systems benefit the most from an unlimited access or fare-free policy. Small

systems have a limited number of activity centers to serve, lower vehicle costs, and lower incidence of vagrancy and vandalism.

In 2001, passengers occupied only 27 percent of available seats on buses nationwide. The enormous number of empty seats drives up the needed operating subsidy. Transit systems want riders to fill those seats, and universities want to discourage automobile commuters to campus. Through university payments to transit systems, new riders can be brought to the transit system while at the same time relieving the parking demand on campus (Brown et al. 2003).

A Case Study: The University of Florida

The University of Florida is located in Gainesville, an inland city in northern peninsular Florida about 90 miles south of the Georgia border. A medium-sized city, Gainesville had a 2002 population of 108,856. The metropolitan area had 218,000 people. The transit system serves only the City of Gainesville and adjacent areas of the unincorporated Alachua County.

The University of Florida had a total enrollment of 47,373 students in the 2003–2004 academic year. Of that number, 28 percent are graduate or professional students and 72 percent are undergraduates. Most of the student body has moved to Gainesville to attend classes, as relatively few students are native to Alachua County. In addition to the students, there are over 4,000 faculty and 8,000 other staff members. Founded at its present site in 1905, the oldest part of campus is dense and is best navigated on foot or by bicycle. The core part of the campus is largely a pedestrian-only zone during daylight hours and lacks parking resources. The core part of the campus occupies roughly 600 acres, with the other 1,050 acres devoted to less dense uses such as agricultural research and conservation. Accommodating the needs of more than 58,000 regular commuters to the core of campus requires balancing the needs of diverse groups and maintaining a comprehensive transportation demand management plan that promotes transit use over private automobile use.

The methodology of this case study involved a comprehensive analysis of official documents maintained by the university, including the Transportation and Parking Division, Student Government, the Division of Finance and Administration, and the Campus Master Plan. Historical data were obtained from the Regional Transit System, the Transportation and Parking Division, and Student Government. Minutes of meetings, newspaper resources, and personal interviews helped supply subjective insights to the University of Florida case study.

Regional Transit System

Bus transit in the City of Gainesville is provided by the Regional Transit System (RTS), a division of the Public Works Department of the City of Gainesville. RTS provides the only bus transportation to, from, and around the University. In the 2004-2005 fiscal year, RTS maintained a fleet of 92 diesel busses that operate on 21 standard city routes, 9 campus-only routes, and 4 late night routes. Bus headways range from 60 minutes on some city routes to 6 minutes at peak times on high demand routes operating from student-heavy areas to campus (Perteet Engineering 2002).

Ridership on the Regional Transit System (RTS) has increased each year since 1995. In Table 1 below, ridership increases are documented from 1995-1996 to 2002-2003. Over the study period, ridership increased 284 percent, to 8,106,964 boardings per year. This makes RTS the sixth most patronized transit system in the state of Florida, despite serving the 17th largest county.

Table 1. Total Ridership 1995–2003¹

Year	Boardings	Percent Increase Over Previous Year
95/96	2,110,209	N/A
96/97	2,174,840	3.1%
97/98	2,948,150	35.6%
98/99	4,412,773	49.7%
99/00	5,195,883	17.7%
00/01	6,306,241	21.4%
01/02	7,198,085	14.1%
02/03	8,106,964	12.6%
Increase '95-'03	5,996,755	284.1%

Source: Regional Transit System

The growth in bus ridership on the Regional Transit System has outpaced ridership growth nationwide. Nationwide bus ridership has grown 15 percent to 5.27 trillion over the period 1995 to 2003 (NTST 2003). The disparity between ridership growth in Gainesville and the nationwide total can be attributed to the growth on routes related to the University of Florida. Student subsidy of transit service began in the 1998–1999 academic year and resulted in substantial service improvements, including an unlimited

¹ The RTS fiscal year begins on August 1. This is meant to coincide with the beginning of the academic year. Ridership counts also are recorded by fiscal year.

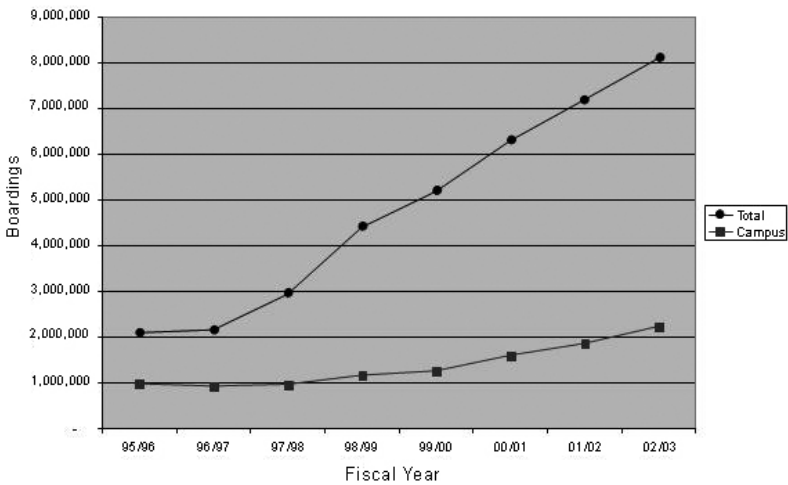
access policy for UF students. RTS experienced the largest increases during the two years when university subsidy of transit services began. Since 1999–2000, ridership has been steadily increasing at more modest rates, although it is far out-distancing transit growth nationwide.

Growth on campus routes has not been as steady as on the total system. Over the period from the 1995–1996 to the 2002–2003 transit fiscal year, ridership on campus circulator routes has increased by 125 percent to 2,253,041 boardings annually. However, the proportion of campus route riders to the total number of riders has been steadily decreasing. Campus-only trips accounted for nearly half, 47.4 percent, of all RTS riders in 1995–1996. That figure had decreased to 27.8 percent in 2002–2003.

Figure 1 demonstrates the separation between the number of riders using campus circulators and the total number of riders. Total ridership growth has outpaced campus-only growth, indicating that off-campus and special routes have been the source of greater ridership growth.

Figure 1. Campus-Only Versus Total RTS Ridership Growth

Figure 1- Ridership 1995 to 2003



Source: Regional Transit System

University of Florida Transportation Demand Management

Multiple TDM policies are maintained by the University of Florida. These policies are chiefly responsible for creating the modal shift toward bus transit. The University does not maintain a stand-alone transportation demand

management plan. Rather, TDM policies are distributed throughout the Campus Master Plan and in the regulations of the Transportation and Parking Services Division. Even without a formal TDM plan, the University is employing several TDM strategies to foster a modal shift among students, faculty, and staff. The university's TDM strategies are summarized as follows according to the broad categories defined by Litman (1999):

- Positive (expands options for all): **Unlimited-access transit, transit service characteristic improvements**, pedestrian/bicycle capital improvements
- Mixed (expands options for certain users): Carpooling program with preferential space assignment, park-and-ride facilities, traffic calming
- Negative (reduces options for all): **Parking pricing, parking restriction**, auto-free zones, transportation fees

The most important of these TDM policies, noted in **boldface**, are parking pricing, parking restriction, unlimited-access transit, and transit service improvements. Each of the four TDM policies is discussed below in detail. However, it is clear that all TDM policies play at least some role in creating a modal shift. For example, without effective pedestrian infrastructure, bus riders would be deposited in an unfriendly and unsafe environment. This has been shown to be detrimental to transit ridership (Cervero 2001).

Unlimited Access

In 1998, the University of Florida entered into a contractual service agreement to provide enhanced transit service to the university in lieu of a massive parking facility construction project. The City of Gainesville made an ongoing commitment to fund the "baseline" levels of service found on routes in 1997. Newly established routes would be city-funded to provide a level of service consistent with routes operating in 1997, which operated with one or two buses on 30- to 60-minute headways. Additional funds to provide higher frequency, unlimited-access transit would come from the university.

The Transportation and Parking Services Division and the Campus Facilities Planning and Construction Office are a second source of funding for the transit system. Each year the Transportation and Parking Services Division provides \$1.5 million to RTS. This revenue source is derived from parking decal sales and parking fine revenue. The administration's payment is the part that actually pays for unlimited access. However, administration funds do not pay for any service improvements.

The bulk of RTS's funds come from a third source, a fee charged to students on a per-credit hour basis, similar to fees charged for capital improvements or activities. These funds pay for service enhancements on selected bus routes. RTS is paid \$42.50 per additional bus operating hour above and beyond the operating level of service paid for by the city.² The cost of constructing bus stop infrastructure is shared by RTS, the UF Transportation and Parking Division, and the Office of Campus Facilities Planning.

The Campus Transit Development Agreement has paid for several bus transit improvements. The most important improvement was the creation of an unlimited access, fare-free system for students, faculty, and staff. Anyone possessing a valid University of Florida Identification Card can board any RTS bus free of charge. The ID Card — referred to as a Gator-1 Card — is presented to the driver upon boarding. There is no need for riders to obtain passes or interact with a third party to gain access to free transit services. This allows students to use bus transit services as frequently or infrequently as they desire. This is an important factor since bus route enhancements are intended to support a variety of different trips, some of which are used infrequently by patrons. The unlimited access program began during the fall semester of 1998 and has been renewed every succeeding year.

Transportation Access Fee

The increase in ridership correlates closely to funding increases to the transit provider. RTS realizes very little of its operating revenues from fare-paying customers. In 2002, farebox revenues accounted for \$714,183 of the agency's \$9,462,631 budget. This represents a farebox recovery rate of only 7.5 percent, less than half the state of Florida average of 15.2 percent. Nationwide, farebox recovery averages 37.7 percent. The remainder of RTS's budget is realized through federal formula programs, state programs, and payments from the University of Florida

The Transportation Access Fee is the discretionary and variable portion of the payments to the Regional Transit System. Student funds are separate and distinct from administration funds. The university administration's share of the service contract pays for unlimited access to RTS buses. Any improvements to service characteristics come from student funds. From 1998 to 2001, student funds were allocated from the Student Government budget. For the period 2001 to 2004, funds came from the Transportation Access Fee.

² The per-operating-hour fee was raised to \$46.75 in 2004–2005. The increase was the first since the inception of the contract. The increase was necessary due to rising costs of fuel and labor.

The responsibility for collecting the Transportation Access Fee rests with the University Financial Affairs Office. Students are required to pay the fee as if it were a component of their tuition, and financial aid awards can be used to pay the fee. The responsibility for setting the Transportation Access Fee and allocating the funds is directed by a seven-member committee of faculty, students, and administrators. Four voting members of the committee are students, all of whom are appointed by the Student Body President.³ The Transportation Access Fee Committee is authorized to charge a required fee to all students under Florida State Statute 240.209 (3)(e)8 to “support the transportation infrastructure of the university for the purpose of increasing student access to transportation services.”⁴

Student funds began to pay for enhanced bus services during academic year 1998–1999. Since a dedicated Transportation Access Fee had not yet been instituted by the Florida Legislature, funds were budgeted through Student Government. In academic year 1998–1999, \$179,055 was paid to RTS, which translates to about \$0.15 per credit hour. This first fee paid for frequency improvements to areas where critical shortages of bus space were occurring on a regular basis, specifically to three routes serving student-heavy areas of southwest Gainesville. The first year of student subsidy of the transit system proved to be a success, and it was renewed for a second year.

During the third year of student bus subsidy (2000–2001), the student contribution increased to \$282,290. Daytime bus service levels remained the same as in previous years, costing \$179,522. The additional \$103,235 was spent to create a new late night bus route known as Later Gator.

The idea of a separate Transportation Access Fee for all State of Florida universities had been discussed as far back as 1996 (Salazar 1996). However, creating a separate Transportation Fee would require approval from the State of Florida legislature and the State University Board of Regents. This approval came during the 2000 legislative session. This allowed the establishment of a dedicated Transportation Access Fee beginning in the Fall 2001 semester.

The Transportation Access Fee grew rapidly to keep pace with the rising demand for transit service. Table 2, below, outlines the fee and the amount raised from academic year 1998–1999 through 2004–2005. The fee amount has risen each year since its inception, starting in Fall 2001 as a \$2 per credit hour fee. In 2004–2005, the fee was \$4.10 per credit hour. One

³ Only 29 percent of university transit agreements guarantee students a voting seat on advisory committees (TCRP #39, 2001).

⁴ Florida State Statute 240.209 (3)(e)8 and Florida Administrative Code Rule 6C-7.003(34), authorizing legislation of the transportation access fee, was passed in 2000.

hundred percent of fee money is spent on motorized mass transportation services. The fee has been increased to provide service enhancements to address congested buses, new residential construction, and rising student demand.

Table 2. Student Subsidy/Transportation Access Fee Growth

Academic Year	Funding Source	Fee Amount per credit hour	Cost Per Student Per Year	Funds Raised
98/99	Student Government	\$0.15 ⁵	\$4.50	\$179,055
99/00	Student Government	\$0.15 ⁵	\$4.50	\$179,055
00/01	Student Government	\$0.24 ⁶	\$7.20	\$282,290
01/02	Transportation Access	\$2.00	\$60.00	\$2,200,000
02/03	Transportation Access	\$3.00	\$90.00	\$3,940,000
03/04	Transportation Access	\$3.59	\$107.70	\$4,510,800
04/05	Transportation Access	\$4.10	\$123.00	\$5,264,500

Source: UF Business Services Division and RTS. Cost to students is based on 30 billed credits per academic year.

The Transportation Access Fee was not intended by the state legislature to be solely a means to subsidize or improve bus transit services. Funds can be used to build bike/pedestrian infrastructure, provide paratransit or jitney bus service, construct parking facilities, or add roadway capacity. Other Florida universities have used Transportation Access Fee funds for all of these purposes, but at the University of Florida it remains solely a means to subsidize bus transit.

Transit Service Improvements

Prior to 1998, RTS operated as a small urban system. Buses covered the city by circuitous routes at infrequent intervals. Nearly all riders on the system were transportation disadvantaged. The system was experiencing declining community support and ridership. Meanwhile the University of Florida had added over 8,000 students to its total enrollment during the previous decade. Off-campus housing patterns had shifted to the southwest of the city into unincorporated Alachua County. The newer student apartment

⁵ Fee amounts in 98/99, 99/00 and were allocated as a portion of the Activity and Service Fee. RTS also benefited from several Department of Transportation grants during this period.

⁶ The fee amount in 00/01 continued service enhancements from the previous two years and funded the first Later Gator late night service route. These fees were also budgeted and appropriated from Student Government's Activity and Service Fee.

complexes were 2 to 5 miles from the core campus. The outward sprawl of student housing coupled with rising enrollment increased the demand for motorized transport to campus. The mid-1990s were a critical juncture for the university. It was during this period that the university adopted most of its transportation demand management policies to place an emphasis on public transit rather than private automobile use.

The Service Contract provides three different services — Standard City Routes, Campus Only Routes, and “Later Gator” Late Night Routes. The service characteristics, funding arrangements, and intended users differ for each type of bus route.

Standard City Routes

Of the city’s 21 Standard Routes, 10 are supplemented by university funds. Standard city routes are identical to fixed bus routes found in cities throughout the U.S., except the subsidized routes provide direct service on a frequent basis for extended hours. They are designed to connect residential areas (trip producers) with trip attractors like the university, hospitals, and the downtown. Increased frequency is intended to entice more off-campus students to use the bus. Subsidized routes have had their operating hours lengthened to accommodate the irregular schedule of college students. There is a disparity between the level of service for UF-supplemented routes and routes operated only on city funds.

The sharing of costs for citywide fixed routes requires close coordination between the university and the Regional Transit System. Transit planners for RTS monitor full bus conditions and the locations of new student-oriented housing developments. They present the information to the responsible parties at UF, including the Transportation Access Fee Committee and the Student Body President, who collectively appropriate funding changes to alter the bus routes, schedules, and hours to accommodate changes in demand for transit service. Final approval of expenditures comes from the University President. In 2004–2005, \$3.02 of the \$4.10 fee went toward supplementing service levels on selected city routes.

Campus Circulator Routes

Campus Circulator Routes run on fixed routes on the UF Campus. Certain routes leave the campus briefly, but only to complete loops when road connections and configurations require completing a loop using city streets. They are intended to facilitate the movement of UF students, faculty, and staff around the campus. The existence of Campus Circulator Routes gives on-campus residents mobility within the campus. These routes also

allow off-campus students to park once or arrive by off-campus bus and move around to multiple destinations. The high-frequency backbone of the campus system runs on 9- to-15 minute headways during peak hours. Three routes primarily transport patrons of remote parking facilities to the center of campus.

The Campus Circulator Routes are funded entirely by the university, but are operated by RTS. The total cost of operating the Campus Circulator Routes is \$2,272,005, or \$48.54 per UF student per year. In 2004–2005, \$1.61 (or 39.5 percent) of the \$4.10 per-credit hour fee was allocated to fund campus circulator routes.

Later Gator

Later Gator buses operate on special routes from 8:30 p.m. to 3:00 a.m. Wednesday through Saturday evenings. These routes are intended to connect student residential areas with evening activity centers, including downtown bars and restaurants. The mission of the Later Gator program is threefold. First, it extends transit options into the late evening hours, a time traditionally ignored by transit providers. This further contributes to the ability of students to go about their daily lives with little or no automobile use. Second, Later Gator seeks to reduce the frequency of driving under the influence of alcohol by connecting student residential areas to popular bar and night club districts. Third, Later Gator seeks to alleviate severe parking shortages along University Avenue and downtown Gainesville, the two primary districts of late evening activity.

The first Later Gator route was instituted during the summer of 2000, by a special appropriation from Student Government. This first trial year cost \$103,276 to operate for the fall and spring semesters from 9:00 pm to 2:00 am on Thursday, Friday and Saturday nights. The first route, known as Later Gator A, continues to operate in a loop through the university campus and downtown Gainesville, where many bars and night clubs are found. The program proved extremely popular, and in 2001 the responsibility of paying for Later Gator was moved to the Transportation Access Fee. Along with the greater funding base, three new routes were created. During the period 2001–2004, routes were added and deleted based on ridership and demand. In 2004–2005, the Later Gator program offered routes that operate Wednesday through Saturday from 8:30 pm to 3:00 am. \$0.34 (or 8.2 percent) of the \$4.10 Transportation Access Fee goes to pay for Later Gator Service.

Campus Parking

The university's Transportation and Parking Services Division (TAPS) implements several TDM policies. Eligibility to park in certain facilities is separated into classes based on student seniority and faculty status. TAPS also issues parking decals and collects fees for their purchase. Stringent parking enforcement is coordinated through the TAPS office. Thus the Transportation and Parking Services Division implements the parking restriction and parking pricing TDM policies.

Four of the most important TDM policies are discussed in the rest of this section. The parking pricing, parking restrictions, bus transit service enhancement, and transportation fees are all investigated in greater depth.

Parking demand far exceeds supply on the University of Florida campus, although some limited parking facilities are available in neighborhoods adjacent to the university. A total of 19,371 spaces are available on campus. The available spaces are prioritized for certain groups' use: 5,094 are reserved for students who live on campus, another 7,719 are reserved for faculty and staff, and only 6,558 spaces remain to accommodate students living off campus.

Approximately 37,750 students live off campus. About half of the spaces reserved for off campus students are located in the core area of campus, and are designated "Commuter." Students with 90 credit hours (senior status) and graduate students can park in these more centrally located commuter spaces, usually in structured parking facilities. Other students must use park-and-ride spaces. Park-and-ride spaces are found on the perimeter of campus, and users require a bus or bicycle ride to reach most instructional facilities. Under the contractual UF-RTS agreement, RTS provides dedicated park-and-ride buses at 10- to 20-minute intervals at a cost of \$995,000 annually.

Analyzing the purchases of parking decals can render useful information about the demand for parking on campus. UF Parking and Transportation Services does not limit the number of decals sold, but lets the supply of parking spaces and the willingness of drivers to search for spaces determine the number of decals sold. Table 3 summarizes the parking situation on campus. Holders of faculty/staff, on-campus, and commuter decals are only allowed to park in spaces reserved for their respective category of decal. Overall, the number of decals sold exceeds the number of spaces by a 1.43-to-1 ratio. The likelihood of finding parking is even more bleak for students; seniors and graduate students can park in close-in facilities, but the number of decals sold in this category exceeds the number spaces by an even larger 2.7-to-1 ratio. Only park-and-ride decals are sold at a rate lower than the number of available spaces.

Table 3. Parking and Decal Sales, 2003

Decal Type	Spaces	Eligible Purchasers	Decals Sold	Decal Cost	Oversell Ratio
Faculty/Staff (Orange, Blue, Official Business)	7,719	N/A ⁷	11,351	Up to \$636	1.47
On-Campus Residents (Red)	5,094	9,623	5,823	\$94	1.14
Commuter	3,393	~21,000	7,655	\$94	2.73
Park and Ride	3,165	~26,300	2,837	\$94	0.89
Total	19,371	~58,000	27,666	-	1.43

Source: UF Office of Parking and Transportation Services

Many of the students commuting daily to campus must use alternative modes of transportation to get to class due to the strategic lack of parking. Some students will live close to campus and walk or bike to class. Some who live farther away will use public transit. Since 1998, the University of Florida has applied substantial monetary resources to the local transit system to make riding the bus a more viable option for students to commute to campus. During the period 1998 to 2004, the number of student riders has been increasing very rapidly. In 2004, the number of students arriving on campus each day by bus was more than double the number of students who arrived by car.

Discussion and Conclusion

Sustainability can be viewed through the lens of TDM. Most of TDM's goals are inherently sustainable, including mitigating transportation inequity, offering better affordability, fostering the development of the overall economy of the community, and reducing environmental impacts. The existing body of TDM literature provides an excellent platform to examine the sustainability of a transportation system (Litman 1999; Ferguson 1990). If a system is designed using TDM principles, it is also likely designed for sustainability.

"Sustainability" should also be defined as transportation systems that literally sustain themselves year after year. Sustainable transportation should be largely immune from political whims. The Regional Transit System/University of Florida partnership continues funding through

⁷ The Faculty/Staff Category is broad and includes Faculty Staff (Orange) Official Business, Medical Resident, Gated Reserved, Shands Hospital (Blue) and certain types of advanced students. Data is not readily available to calculate the total number of eligible Faculty/Staff decal purchasers.

fees set one year in advance. The partnership is designed to be mutually beneficial, which immunizes the program from discontinuation and enhances its sustainability. This stands in stark contrast to federal and state transit programs, which depend on irregular appropriations that supply benefits only in one direction. There is little mutual benefit in federal or state formula programs, which explains their volatility and long-term lack of sustainability.

The University of Florida case study shows that people will use transit under the right circumstances. This experience can serve as an example to other transit agencies — irrespective of whether they serve a college town or not. Partnering with constituent groups like higher education, large employers, or government agencies to provide unlimited-access transit can boost ridership, remove cars from the road, and promote smart growth. There are dozens of potential partners available to every transit agency, but leadership is required on both sides to forge agreements.

The University of Florida's experience with partnering to provide public transit to students demonstrates several principles to equitably balance the transportation system. The provision of unlimited-access transit paid for by student fees is the hallmark of the program. However, an unlimited-access transit component is but one feature of an effective TDM program. Stimulation of a modal shift toward public transit requires other measures demonstrated at the university, including parking restriction, parking pricing, and transit service improvements. These ancillary TDM policies would be necessary for other communities to adopt if similar results are to be expected.

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