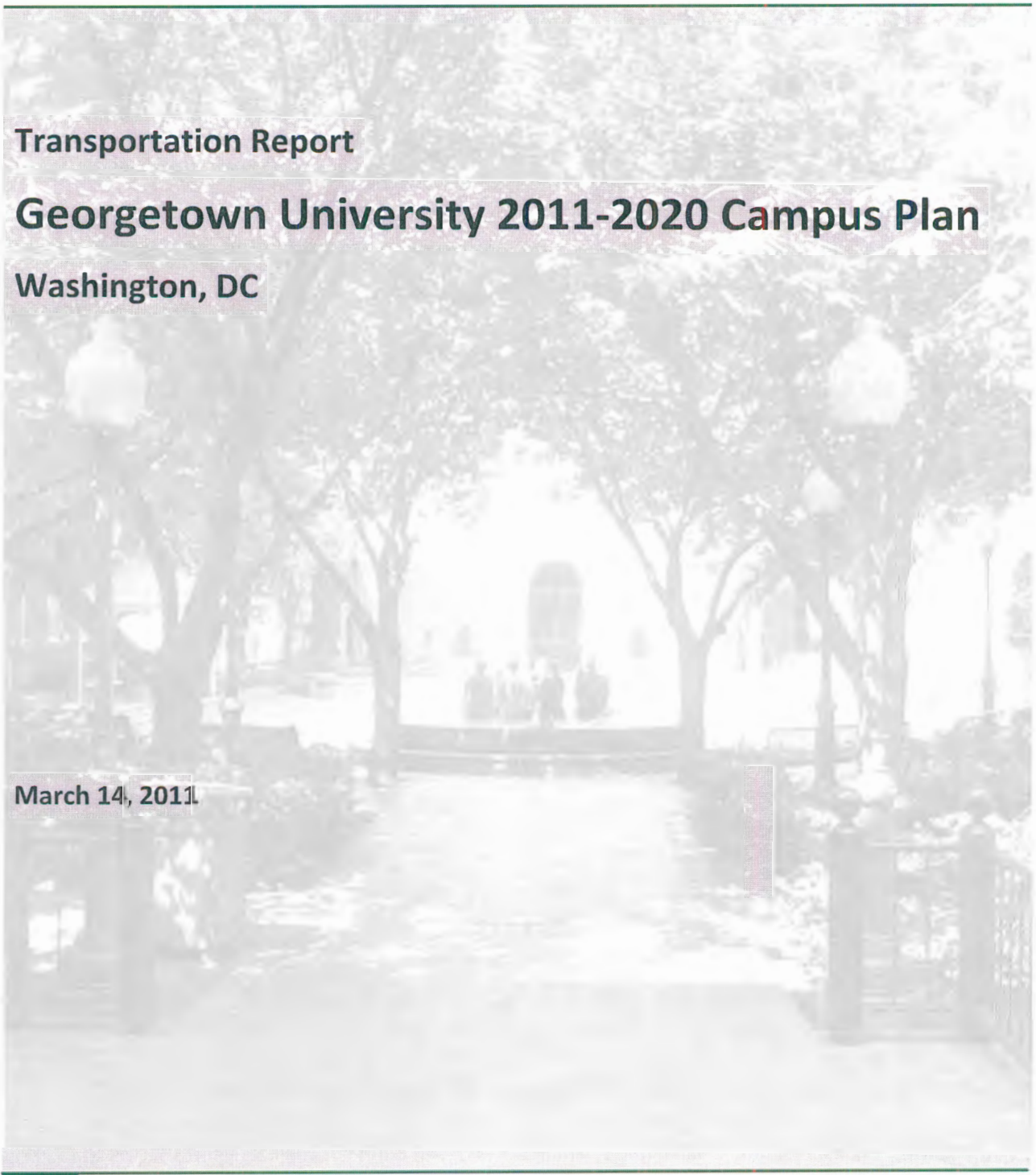
Transportation Report

Georgetown University 2011-2020 Campus Plan

Washington, DC



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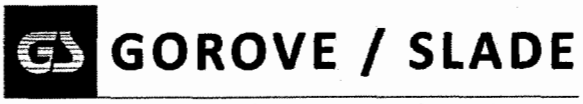

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EXECUTIVE SUMMARY

Georgetown University has a long tradition of integrating smart and sustainable initiatives into its campus planning, development, and operations, and they are described in detail in the Campus Plan itself. (See Exhibit R – Transportation Demand Management (TDM) Matrix.) Georgetown's transportation management measures and initiatives are a key component of these efforts. For decades, Georgetown has implemented an aggressive TDM program that provides the use of alternative modes of transportation and creates disincentives related to single occupancy automobile use, as a part of the University's overall commitment to sustainable and responsible growth.

The centerpiece of this TDM program continues to be the successful Georgetown University Transportation Shuttle (GUTS) bus program. Established in 1974, GUTS now serves over two million riders per year and significantly reduces private automobile trips to and from the campus as well as demand for on-campus parking. GUTS provides a direct connection to two Metrorail stations as well as point-to-point service connecting the campus to satellite locations; it also features a loop around Arlington County and provides a direct connection to a commuter lot in Montgomery County.

In addition, the University provides over 1,600 bicycle parking spaces throughout the campus, and a Capital Bikeshare station is located at the main gates to the campus at 37th and O Streets, NW.

The University manages parking demand through restrictions on permit issuance (no permits are issued to students, and on-campus permits are guaranteed only to tenured/tenure-track faculty) as well as incentives to use satellite parking.

As detailed in this report, the University's extensive TDM program has been successful in reducing single-occupancy vehicle trips to and from campus by students, faculty, and staff over the past decade, even as the University's population has grown to accommodate new graduate and continuing studies programs at the Main Campus.

- Comparisons of 2000 and 2011 surveys regarding mode choice demonstrate decreases across the board in the number of students, faculty, and staff who are driving to campus and increases in the number of students, faculty, and staff who are using transit, walking, biking, and other means to get to campus. Overall, over 60% of the students, faculty, and staff who commute to the campus arrive by means other than private automobile.
- Many of these individuals choose to take GUTS, which operates as a critical link to the regional transportation network. The number of riders per year on the GUTS system has doubled over the last decade to over two million riders per year. This amounts to approximately 7,750 potential vehicles per day taken off the surrounding road network.
- As a result of the decision to use other modes, the number of trips from the southern side of campus (i.e. the primary access point for University populations) has decreased over the last decade. Combined with the reconfiguration of the Canal Road entrance, this has significantly reduced the number of trips on neighborhood streets such as Prospect Street.

These initiatives will all be continued and expanded upon in the 2011 Campus Plan. Most importantly, the Campus Plan calls for the significant expansion of GUTS service on campus through the creation of an on-campus loop road that will allow GUTS to serve both the north and south ends of campus. This loop will also permit the University to re-route buses in and out of the Canal Road entrance, and take them off neighborhood streets. The University will also continue to promote other alternatives to driving, such as bicycle and carpool efforts. The Plan also calls for an increase in the on-campus parking supply in order to accommodate increased demand by visitors and patients. Notwithstanding this increase, the University will continue to manage its parking permits and rates to disincentivize driving to campus.

INTRODUCTION

This report contains the Transportation Report in support of the Georgetown University 2011-2020 Campus Plan. It summarizes the impact of the campus plan, outlines recommendations to mitigate potential impacts, including a Transportation Demand Management (TDM) program for the University. Additionally, the report summarizes the background information gathered in order to develop the recommendations outlined in this report. Technical analyses of intersection capacity supporting the findings within this document are attached as the "*Technical Transportation Report.*"

Georgetown University's (GU) main entrance is located at 3700 O Street, NW in Northwest Washington, D.C. Figure 1 shows the location of Georgetown University, within the Georgetown neighborhood of the District of Columbia, and across the Potomac River from the Rosslyn neighborhood of northern Virginia. The University's campus has approximately 14,033 students and 4,035 faculty/staff. Georgetown Hospital is located on the north side of campus, with 609 licensed beds and a population of approximately 4,269 staff.

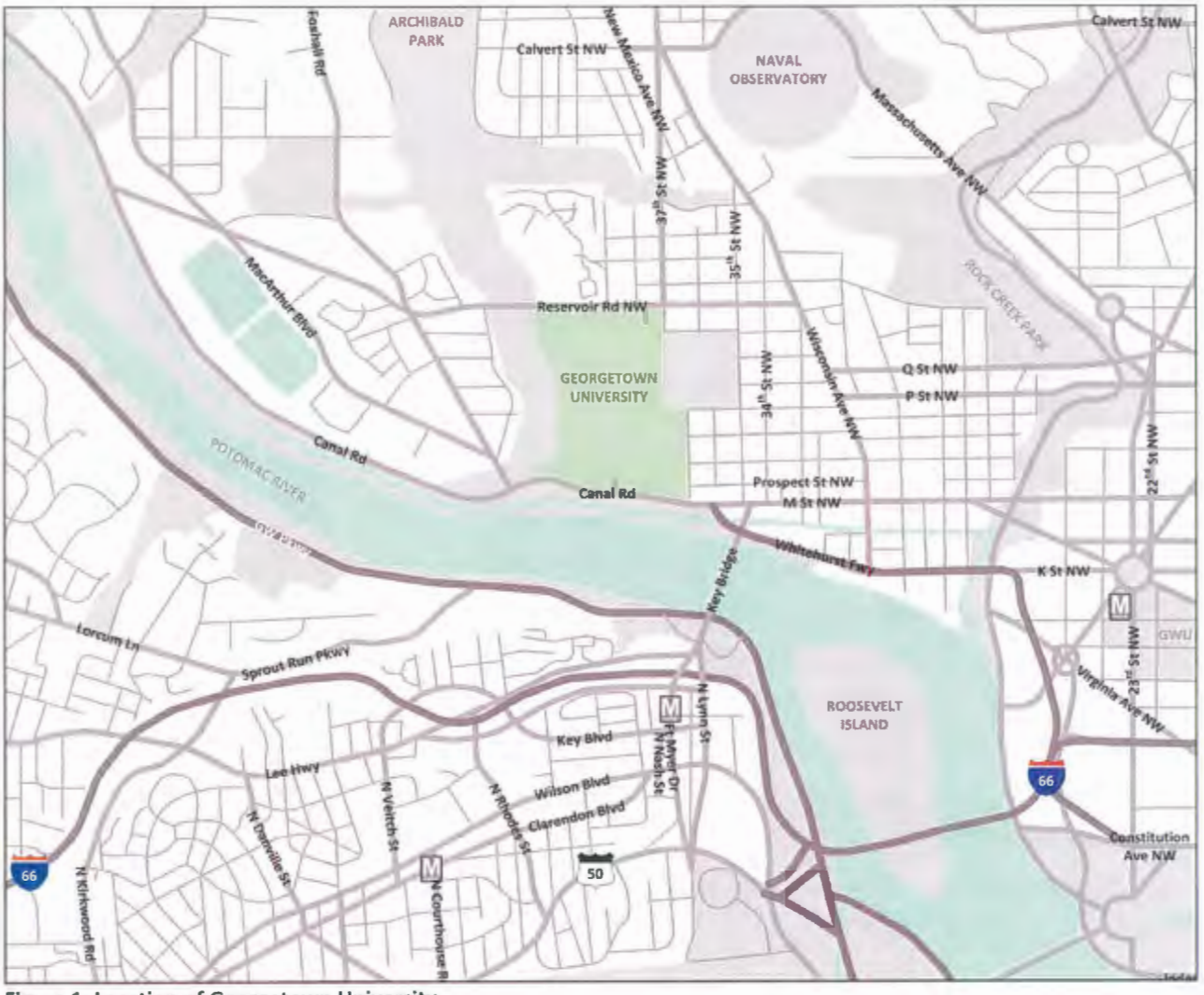


Figure 1: Location of Georgetown University

Report Organization and Summary

This report is organized into two sections. The first section provides a summary of the transportation components of the Georgetown University 2011-2020 campus plan. Based on the proposed changes the potential impacts of the campus plan are outlined and short- and long-term mitigation measures are outlined. Finally, the Transportation Demand Management plan for the University and Hospital is outlined.

The second section provides the background information gathered and analyzed by Gorove/Slade in order to complete the Transportation Report. This includes an overview of the existing pedestrian and bicycle network, the GU Shuttle and WMATA transit services, the parking availability, and the roadway network.

The "*Transportation Technical Analysis*," which provides the details of the technical analysis not included in the main body of this text, is included as an attachment to this report.

Report Scope

Gorove/Slade took the following actions as part of this study:

- Established a scope of work during meetings with the University;
- Reviewed University and neighborhood transportation studies compiled since 2000;
- Met with the University to identify existing conditions, concerns, and opportunities;
- Met with representatives of MedStar and its transportation consultant, O.R. George & Associates, to discuss Hospital-related transportation conditions, issues, and opportunities;
- Conducted multiple campus visits to establish existing conditions, concerns, and opportunities;
- Conducted field reconnaissance of existing roadway and intersection geometrics, traffic controls, speed limits and operations;
- Performed morning and afternoon peak period turning movement counts at the study intersections;
- Determined the existing levels of service at the study intersections;
- Compiled parking use surveys to determine the parking demand on campus and on-street near campus;
- Assembled list of concerns and opportunities;
- Aided the campus plan team in refining plan alternatives ;
- Constructed a traffic model of campus, based on available data and observations, to evaluate and refine the recommendations of the 2011-2020 campus plan;
- Analyzed future conditions with and without the 2011-2020 campus plan to determine potential impacts due to campus development;
- Analyzed existing Transportation Demand Management (TDM) program and recommended future steps to be included in the TDM program; and
- Compiled Transportation Report.

2011-2020 CAMPUS PLAN OVERVIEW

This section of the report summarizes the transportation components of the Georgetown University (GU) 2011-2020 campus plan, outlines the potential impacts of the 2011-2020 campus plan, and recommends short- and long-term mitigation measures. The Transportation Demand Management plan is also outlined.

The 2011 Campus Plan focuses on improvements to the University campus intended to improve the on-campus student experience, including the creation of new student spaces, including a student center at New South, the expansion of Lauinger Library, and improved athletic facilities. The Plan also calls for critical facility improvements to both the Hospital and the Medical Center (which is the academic center for research and teaching).

As a part of the Plan, the University proposes a targeted increase in the overall student enrollment, on a headcount basis, from approximately 14,033 students to approximately 16,133 students. Within this amount, the University will freeze traditional undergraduate growth and professional student growth at the Medical School at currently-permitted levels. The University and Hospital each anticipate a 10% growth in faculty and staff.

Figure 2 identifies in general the locations of development areas in the 2011-2020 campus plan. The *Georgetown University 2010-2020 Campus Plan* provides a more detailed description of the proposed developments.

Transportation Components of 2011-2020 Plan

The campus plan includes significant transportation infrastructure changes. Figure 2 shows an overview of these improvements, which include:

- Constructing new roadways to allow for better circulation on campus, including GUTS shuttles.
  - Build a 'loop' using campus roadways to allow for buses to turnaround within campus and to make stops on campus not currently possible. The loop requires the new Campus Service Road on the western edge of campus, and the east-west roadway connecting Campus Service Road to West Drive.
  - Work with the District Department of Transportation to alter the operations of Canal Road to allow for easier exiting maneuvers from the Canal Road gate. There are times when traffic is backed up on Canal Road to the gate, which blocks buses from exiting the campus. It is possible through signal timing changes to allow for a few seconds of clearance time where buses could exit the campus. This could be achieved by retiming the offset of the signals along Canal Road and M Street in order to provide a short gap in traffic that would allow buses to exit the University. It also may be possible to achieve the same benefit through changes to marking and geometry.

    In addition to easing existing movements from the Canal Road gate, this campus plan recommends reexamining the restriction on left turns during the AM peak hour to allow for GUTS routes to use the Canal Road gate at all times of the day.
  - Realign the intersection of 38th Street/Gate 1 and Reservoir Road.
- Establishing a more pedestrian-friendly environment on the east side of campus, including along Tondorf Drive.
- Increasing the parking cap to alleviate pressures on the Campus to accommodate Hospital and University visitors.
  - An increase in the Hospital's parking supply by 750 spaces, to accommodate growth patient and patient-visitor traffic.

- An increase in the University's parking supply by 250 to allow use of existing, but not used spaces in Lot 3 and the P-4 level of the Southwest Garage.

In addition to these infrastructure changes, the 2011-2020 campus plan includes policy and operational changes to help encourage use of non-automobile modes of transportation. A summary of existing and proposed programs is presented in Figure 3, Figure 4, and Figure 5, the Transportation Demand Management (TDM) Matrix. The recommendations chapter of this report contains details on recommendations for each mode of travel and for TDM programs.

The Campus Plan submittal does not include any development sites for further processing. Details on the transportation elements of the development sites will be included within the further processing applications that occur during the span of the 2011-2020 campus plan. These details will include loading access, pedestrian accommodates, and vehicular and bicycle parking locations and amounts.

Figure 2: Summary of Campus Plan

TDM Program	Georgetown University (GU)		Georgetown University Hospital (GUH)	
	Faculty/Staff	Students	Employees (nurses, DRs, staff), 8-5 & 7-7 shifts	Patient/Visitors
On-site Transportation Coordinator	Existing: All TDM coordinated through the Office of Transportation Management (OTM) GU – 2010 Plan Initiatives: OTM will maintain coordination responsibilities.		Existing: All TDM currently coordinated through Office of the Asst Vice President for Safety Management / Environmental Quality GUH – 2010 Plan Initiatives: GUH will designate one additional staff to support the Campus Transportation Coordinator.	
	GU and GUH Combined – 2010 Plan Initiatives: Establish a formal program to coordinate and combine TDM efforts, including monitoring and reporting, among GU and GUH coordinators.			
TDM Marketing	Existing: • Comprehensive OTM website provides information on all campus initiatives, including GUTS service, alternatives to parking, carpooling, and parking policies and rates. • OTM website features, including GUTS schedules, easily accessible from smartphones and other personal devices GU – 2010 Plan Initiatives: Enhance transportation website with improved materials on TDM initiatives and direct links to real time transit information.		Existing: Current activities are somewhat informal. GUH – 2010 Plan Initiatives: GUH will formalize and emphasize this activity through its various media (website, monthly newspaper - The Georgetown Star, brochures, on-site postings, etc.) Employees making major contribution will be recognized (for example, 4-person carpools would be publicized, "bike rider" articles would be featured on the website and other media, DDOT bicycle program manager would be invited to write feature articles and to make site visits/presentation if practicable.)	
	GU Faculty – 2010 Plan Initiatives: Provide "Commuting Options" information to faculty and staff (attached).	GU Students – 2010 Plan Initiatives: Provide "Getting Around the DC Area" information to incoming students on or before first move-in (attached).	GUH Staff – 2010 Plan Initiatives: Establish website targeted to employees, with improved materials on TDM initiatives and direct links to realtime transit information.	GUH Patients – 2010 Plan Initiatives: Establish website targeted to patient/visitors, with improved materials on TDM initiatives and direct links to realtime transit information.
GUTS	Existing: GUTS currently provides free, direct, express connections to multiple locations for over 2 million riders per year (doubled from 1 million/year in 2000). GUTS takes the equivalent of approximately 7,750 vehicles per day off neighborhood streets. 2010 Plan Initiatives Already Underway – Creation of on-campus loop to expand GUTS service to both ends of campus and facilitate rerouting of GUTS buses off neighborhood streets to Canal Road (GU) GU and GUH Combined – 2010 Plan Initiatives: • Enhance on-campus stops, signage, and amenities to improve passenger experience and provide appropriate schedule for GUTS service at bus stops. • Improve marketing of GUTS on population-specific TDM websites, including maps of routes and travel information on GUTS service.			
	GU Combined– 2010 Plan Initiatives : Capitalize on loop to improve use of Dupont Circle shuttle by University populations concentrated at south end of campus and use of Rosslyn and Arlington shuttles by University populations concentrated at north end of campus.		Existing: Significant GUTS ridership, particularly by administrative staff, but noticeably by patients and visitors as well. GUH – 2010 Plan Initiatives: • Capitalize on loop to improve use of Rosslyn and Arlington Loop shuttles by Hospital staff, patient, and visitor populations concentrated at north end of campus. • Provide maps and schedules to physicians referring patients to GUH.	
		GU Students – 2010 Plan Initiatives: • Provide maps and schedules to incoming students upon move-in and/or registration.		
Transit	Existing: • GU has approximately 246 employees who utilize SmartBenefits (pre-tax transit deduction). • GUTS provides connections to Rosslyn and Dupont Circle Metrorail stations as well as DC Circulator • Metrobus routes stop near both north and mid campus (G2@ 37th & O, D6 @ Reservoir Road) DC Circulator Union Station Route travels near campus along Wisconsin and M Streets GU Combined – 2010 Plan Initiatives: • Improve information on websites, including maps of specific routes that serve campus and information on connections via GUTS and other services. • Encourage greater participation in Smartbenefits. • Coordinate with WMATA on making SmarTrip cards available on campus.		Existing: • GUH has approximately 150 employees who utilize SmartBenefits. GUH – 2010 Plan Initiatives: • GUH will strongly promote transit ridership. • The employee transportation survey will identify measures to further incentivize transit usage.	
		GU Students – 2010 Plan Initiatives • Provide detailed information on transit options to incoming students during move-in orientation (attached) • Explore partnership opportunities with WMATA for student discounts (internships, Verizon Center, etc)		

Figure 3: TDM Matrix, Part 1

TDM Program	Georgetown University (GU)		Georgetown University Hospital (GUH)	
	Faculty/Staff	Students	Employees (nurses, DRs, staff), 8-5 & 7-7 shifts	Patient/Visitors
Carpooling	Existing: • Carpools get preferred spaces & lower prices; $49/month (2-person); $33/month (3-person); free for 4-person or more • OTM runs matching service • Approx. 143 participants in 68 carpools. GU Faculty – 2010 Plan Initiatives: • Promote registration with Commuter Connections Guaranteed Ride Home program to encourage greater participation. • Improve marketing of program.	GU Students – 2010 Plan Initiatives: • Bring Zipcar closer to campus to encourage student carsharing.	Existing: • Some carpooling in place but self-organized basis and with no formal incentives • Approximately 112 participants. GUH Staff – 2010 Plan Initiatives: • Will provide financial incentives through reduction of parking costs for ride-sharing. Incentives will range from $45 for 2-person parkers to free for 4-person and more • Issues and constraints related to healthcare providers, work schedules, and the pressing need for easy access to vehicles in responding to emergency situations.	Existing: • The nature of the healthcare service has built-in levels of shared ridership, with significant drop-off and support by family members particularly during visitation. • The parking rates for non-medical visits are quite high ($10 first hour to $25 per day). These rates are comparable and generally higher than charges within downtown area of DC. GUH Patients – 2010 Plan Initiatives: • Issues and constraints related to patient profiles and mobility/access needs.
	GU and GUH Combined – 2010 Plan Initiatives: Coordinate matching between GU and GUH populations.			
Car-Sharing; Electric Cars	Existing: Car-sharing services available in Rosslyn with free shuttle service between campus and Zipcar site. 765 members of GU community registered as Zipcar users. GU – 2010 Plan Initiatives: • Reach out to Zipcar/other services to identify projected demand and location for cars based on campus and off-campus populations. Identify location for and set aside minimum number of spaces on campus. (ongoing) • Monitor usage and expand or shrink capacity over time to respond to actual utilization.		Existing: • GUH provides spaces for taxis, assists patients in accessing taxis and Metro Access vehicles, and encourages ride-sharing by patients wherever circumstances make it practical. GUH – 2010 Plan Initiatives: • GUH is prepared to initiate contact with ZipCar, and will allocate high-visibility locations for use within the campus. • GUH will publish these features on website. • GUH will promote shared car usage by employees as part of the carpool initiatives	
	GU Faculty – 2010 Plan Initiatives: • Toyota Electric Vehicle Research Initiative: make available two plug-in Prius hybrid cars for three-month test-drives. • Level 2 Electric Charging stations (already in Garage 4).	GU Students – 2010 Plan Initiatives: • Worked with Zipcar to reduce rates/waiver of application or membership fees for students (completed) • Aggressively market Zipcar as alternative to private automobile use by students living near campus.		
Bicycle Parking and Policies	Existing: • 1,616 parking spaces throughout campus, some covered in parking garages • Bicycle registration program • Allow use of recreation facility showers for commuting faculty/staff.			
	GU Faculty – 2010 Plan Initiatives: • Upgrade frequently used bike parking locations with covered parking spaces. • Market bicycle commuting program on website. Publish GU-specific bicycle route maps showing major commuting corridors to campus.	GU Students – Existing Initiatives: access to showers either at residence halls or at Yates Recreation Facility. GU Students – 2010 Plan Initiatives: • Upgrade bike parking facilities at residence halls to include covered, secure bike parking. • Upgrade bike parking in front of major student destinations. • Create maps of bicycle routes and facilities targeted to students, publish on website and include in packet to incoming students.	Existing: • GUH currently has bike rack locations accommodating approximately 30 bicycles. GUH – 2010 Plan Initiatives: • GUH has initiated procurement for approximately 100 bike rack locations. (These will meet DDOT's design guidelines and will be dispersed at various locations to provide convenience and visibility.) • GUH will increase shower facilities to 8 locations within different buildings of the hospital complex. • GUH will market a bicycle commuting program on website and publish local area bicycle route maps showing major commuting corridors to campus. • GUH will provide bike valet services for patients/visitors.	
Bike-Sharing	GU Ongoing and 2010 Plan Initiatives: • Rack located on campus at 37th and O Streets, NW • Promote use of bikesharing by GU community; work with Capital Bikeshare to investigate additional potential locations on or near campus.			
	GU Faculty – 2010 Plan Initiatives: Information distribution on Bikeshare through the Blue and Gray (bi-weekly faculty and staff newsletter) and broadcast email messages.	GU Students – 2010 Plan Initiatives: Capital Bikeshare participates in New Student Orientation; similar outreach to be arranged for returning student populations. Marketing in residence halls.		

Figure 4: TDM Matrix, Part 2

TDM Program	Georgetown University (GU)		Georgetown University Hospital (GUH)	
	Faculty/Staff	Students	Employees (nurses, DRs, staff), 8-5 & 7-7 shifts	Patient/Visitors
Parking Policies and Pricing	Existing : • On-Campus Permits: $135-$147/month • Satellite Lots: $55 - $110/month • Carpools: reduced rates range from $0 for 4-person to $49/month for 2-person • Only tenured/tenure track faculty are guaranteed parking on campus. GU Faculty – 2010 Plan Initiatives: • Maintain discounted rates for satellite parking to increase use and open up on-campus spaces for visitors. • As needed, shift current on-campus permit parkers to satellite facilities to open up on-campus spaces for visitors.	Existing: • On-campus students are prohibited from bringing cars. • No on-campus parking permits are issued to students; commuter student permits limited to satellite lots. • Evening students can park on campus after 5 PM for $3; access from Canal Road improved to facilitate ease of access. • All students can park on campus on weekends for free to discourage parking on residential streets GU Students – 2010 Plan Initiatives: • Discourage all students from bringing cars. • Provide Zipcars as alternatives to car ownership.	Existing: • Permits: $68-$120/month • Some carpooling in place but self-organized basis and with no formal incentives GUH Staff – 2010 Plan Initiatives: • Will provide financial incentives through reduced parking costs for ride-sharing incentives will range from $45 for 2-person parkers to free for 4-person and more • Issues and constraints related to healthcare providers, work schedules, and the pressing need for easy access to vehicles in responding to emergency situations.	Existing: • $2/hour or $6/day for patients and immediate families • $10 first hour to $25 per day maximum for visitors GUH Patients – 2010 Plan Initiatives: • Encourage use of alternative modes (GUTS, biking, Metro bus, SmartBike, ZipCar) through promotions on GUH website and information dissemination during scheduling of visits. • Issues and constraints related to patient profiles and mobility/access needs.
	GU Combined – 2010 Plan Initiatives: • Improve parking allocation and management to maximize utilization of existing supply. Potential technologies include electronic monitoring of available capacity and electronic messaging to identify location of available spaces in SWQuad. • Monitor and analyze parking utilization during peak periods of use to establish need for additional visitor parking. • With additional parking spaces, maintain same ratio of faculty and staff to parking permits as exists currently, leaving remainder of spaces for guests and evening students.		GUH Combined – 2010 Plan Initiatives: • Conduct transportation usage surveys to identify opportunities for improved allocation and management of permits to maximize utilization of existing supply. • Investigate potential technology upgrades including electronic monitoring of space availability along with electronic messaging to facilitate greater efficiency and increase practical capacity.	
Satellite Parking, Commuter Lots, and Satellite Locations	Existing: • Rosslyn – parking spaces secured for regular satellite parkers. Additional spaces secured as-needed based on demand (approx. 40-50 spaces currently leased) • Wisconsin Ave (Harris Bldg) – approx. 27 park in Harris bldg; approx. 100 spaces available but not yet used except for large-scale events. • Commuter lot in Montgomery County served by GU commuter bus service (Free parking; $49/mo for bus) GU Faculty – 2010 Plan Initiatives: • Promote and maximize use of Harris bldg satellite parking with additional incentives and communication. • Identify additional opportunities for satellite parking, and encourage greater participation through pricing and other incentives.	Existing: • Commuter students limited to permit for satellite parking lots (Daily students park on-campus for evening and weekend classes and events.) GU Students – 2010 Plan Initiatives: • Locate some SCS programs off-campus to reduce evening demand or identify satellite parking for evening students. • Require ALL daily student parkers to park in satellite lot during the day.	Existing: GUH/MedStar currently operates over a dozen satellite offices supporting the Georgetown University Hospital. These are favorably distributed within suburban Maryland and northern Virginia suburbs, where large portions of GUH employee reside. These sites accommodate approximately 330 employees and 650 patients per day. GUH Staff – 2010 Plan Initiatives: • Based on the healthcare delivery pattern indicated in the narrative, GUH faces constraints in locating medical staff in satellite offices. The existing sites serve primarily administrative staff.	Existing: Ten of eleven existing satellite offices provide for medical and surgical care. This is in line with MedStar policy of enhancing convenience to clients wherever practical. GUH Patients – 2010 Plan Initiatives: • As part of MedStar strategic planning opportunities for expanding off-site facilities will be examined.
	GU and GUH Combined – 2010 Plan Initiatives: • Coordinate to maximize efficiency and utilization of satellite or commuter parking lots and related shuttle routes. • Capitalize on improved shuttle bus access to campus as a result of Loop Road. • Monitor initiatives over fixed trial period and make utilization information publicly available as a precursor to new parking on campus.			

Figure 5: TDM Matrix, Part 3

Transportation Trends

Gorove/Slade has several sets of parking and traffic data collected at the GU Campus, collected during this campus plan update process, during the previous campus plan update, and for other traffic studies performed for the GU Campus dating back to the 1980s. This section uses these data sets to review trends in the GU campus GUTS, traffic and parking patterns.

As discussed below, the trends indicate that the University's extensive TDM program has been successful in deterring single-occupancy vehicle trips to and from campus by students, faculty, and staff. Multiple data points collected by the University and Gorove/Slade demonstrate this effectiveness.

- A campus wide survey regarding mode choice demonstrates decreases across the board in the number of students, faculty, and staff that are driving to campus and increases in the number of students, faculty, and staff that are using transit, walking, biking, and other means to get to campus.
- The number of riders per year on the GUTS system has doubled from one million in 2000 to two million in 2010.
- Trip generation from the southern side of campus (i.e. the primary access point for University populations) has decreased over the last decade

Mode Split

The University conducted a mode split survey of its population during the spring 2011 semester. A description of the 2011 survey results is contained in the background information chapter of this report. The prior campus plan also conducted a mode split survey. Although the surveys asked different questions and were conducted differently (the 2000 survey was in person, the 2011 survey was online and had significantly more responses), Table 1 shows a comparison of the two.

Table 1: Comparison of 2000 and 2011 GU Mode Splits

Mode	Survey Results by Type of Respondent, for 2000 and 2011							
	Undergrad Student		Graduate Student		University Faculty/Staff		Medical Faculty/Staff	
	2000	*2011*	*2000*	*2011*	*2000*	*2011*	*2000*	*2011*
Car (Drive alone, Carpool, Drop-off & Taxi)	7%	4%	37%	24%	62%	51%	63%	52%
Transit (GUTS, Metrobus, Metrorail, DC Circulator)	2%	13%	18%	67%	29%	41%	28%	43%
Other (Bike, Walk, Telework, Lives on Campus)	91%	83%	45%	8%	9%	8%	9%	5%

The mode split comparison shows that each type of respondent had a decrease in automobile use, accompanied by an increase in transit use. The increase in transit use is notable for the faculty/staff, which indicates that the TDM programs implemented by the University have allowed for growth in campus population without a corresponding increase in traffic and parking demand.

GUTS Ridership

The University collects ridership data for its GUTS system on a regular basis. In 1990, GUTS provided 54,065 annual trips. Ridership has grown significantly since then; by 2000, ridership had increased to one million trips annually and in 2009, GUTS provided two million annual trips, which is comparable to Metrobus ridership along several corridors.

The tremendous growth in GUTS ridership over the last twenty years indicates that the University's programs to reduce reliance on automobile traffic are working. GUTS has supplanted 'drive alone' as the top mode choice of the GU campus population.

Trip Generation

Traffic data was collected at the campus gates during the prior campus plan, and in 2009 and 2011 for this campus plan update. In addition, several counts were performed for the gates on the southern side of campus (Canal Road, Prospect and O Streets), during several years dating back to 1982. Figure 6 shows the total trip generation of the Georgetown campus from 2000 to 2011. The trip generation is presented as a total between the AM and PM peak hours, and shown as a cumulative total between the northern and southern driveways. Figure 7 shows trends in trip generation on the southern side of campus, generally served by University related traffic, since 1982.

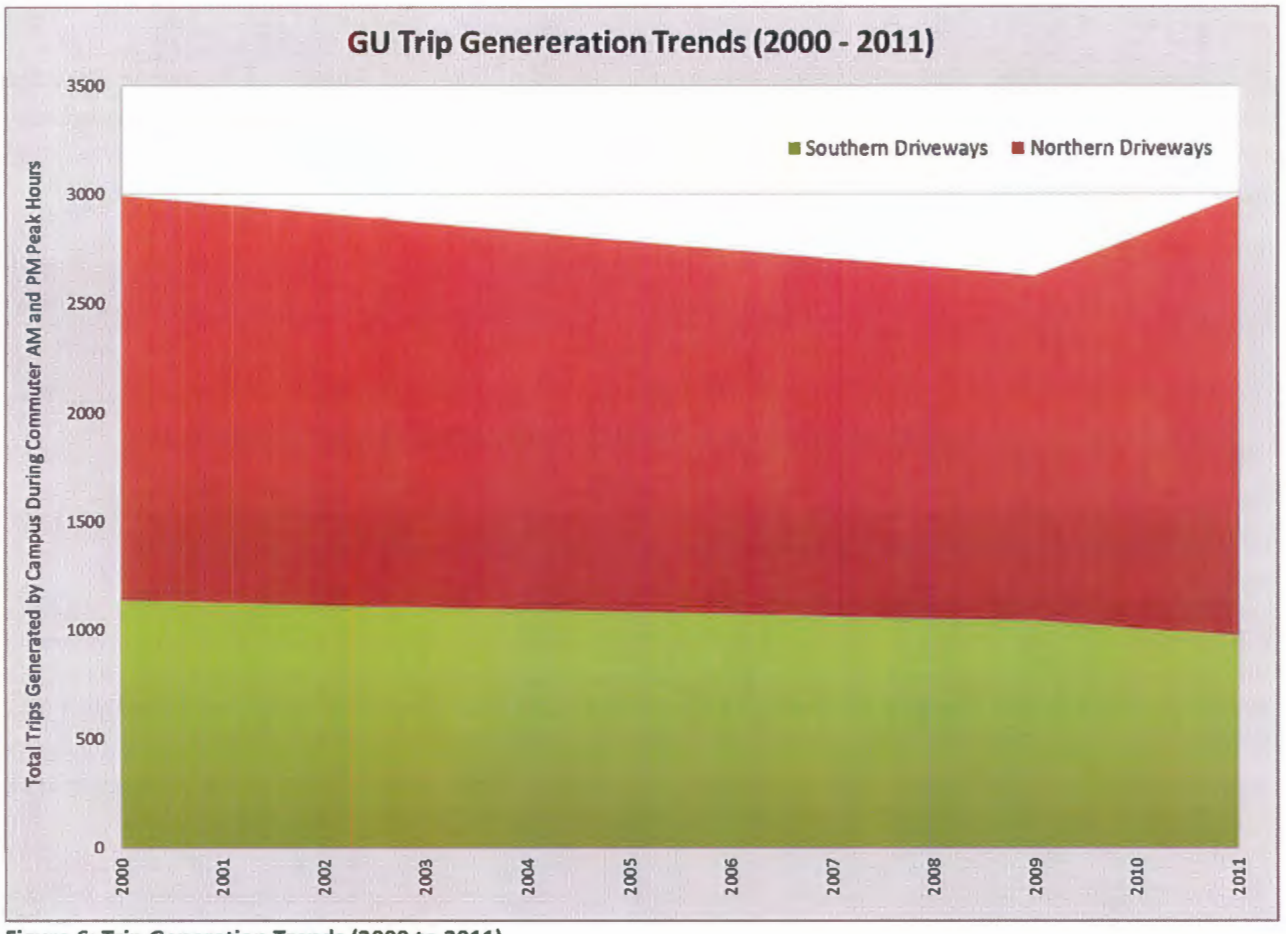


Figure 6: Trip Generation Trends (2000 to 2011)

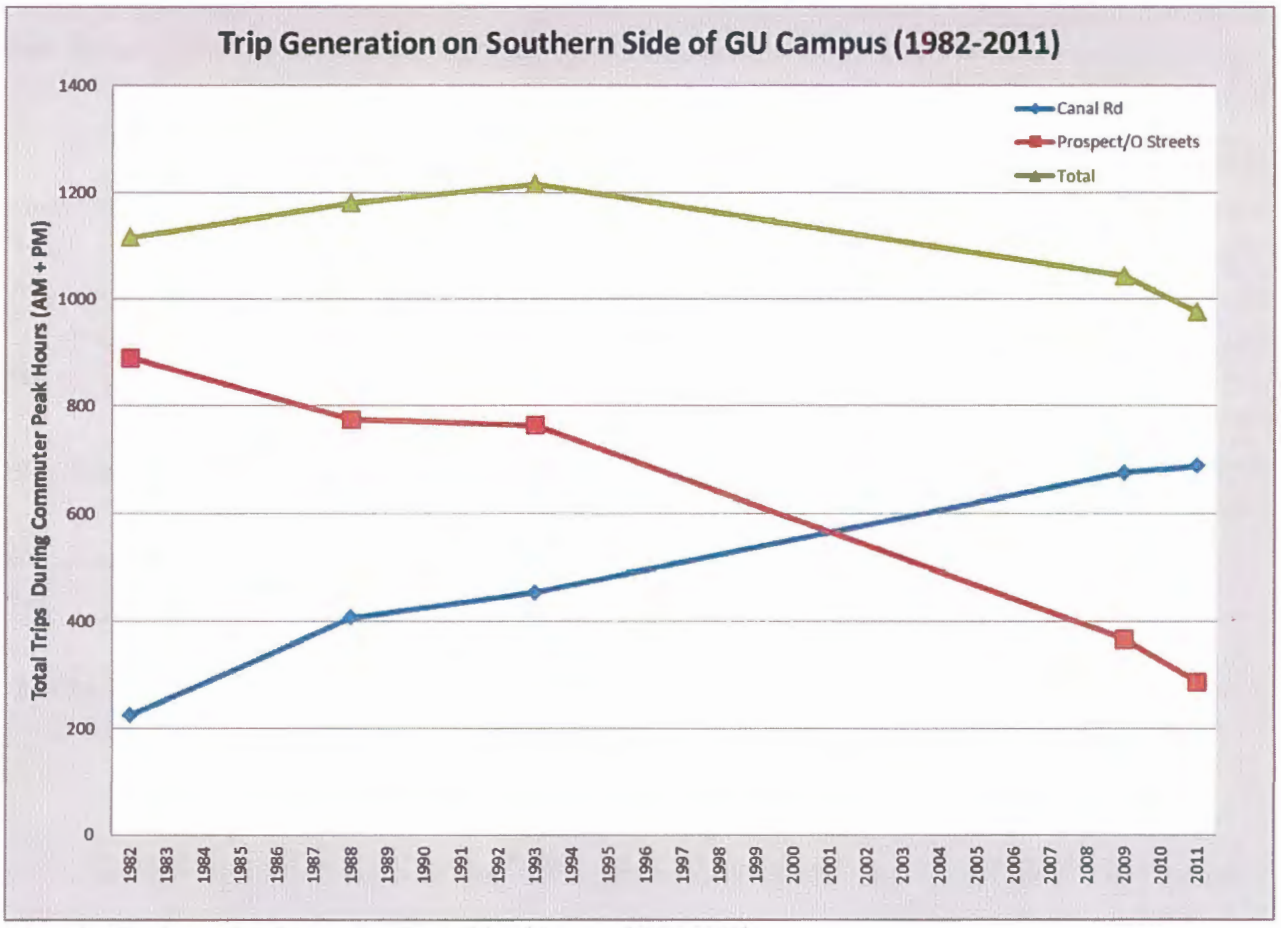


Figure 7: Trip Generation Trends, Southern Side of Campus (1982-2011)

These charts show that the overall number of vehicular trips generated by the campus that overlap with the commuter peak hours is nearly the same as it was in 2000. The proportion using southern driveways, generally University related, has been decreasing. Conversely, the proportion using northern driveways, generally Hospital related, has been increasing. It is likely that these patterns show that the University's programs to reduce automobile use have been effective. Similarly, because of the mode split results for hospital faculty and staff, it is likely that the hospital has been successful in reducing automobile use for its employees. The increase in the proportion of traffic using the gates on the hospital side of campus is likely due to an increase in the number of patients and patient-visitors generated by the Hospital.

Parking Demand

As described in the background information section of this report, the current typical weekday parking demand at the campus is 3,591 parking spaces. A similar count of typical weekday demand was performed during the spring semester in 2000 for the prior campus plan. That count found a typical demand of 3,596 spaces. The Georgetown campus was operating under a parking cap of 4,080 spaces at the times of both parking counts. Comparing these count results shows that the amount of vehicles parking at the University has remained essentially the same between campus plans.

Although the parking counts are similar, these data points do not mean that parking demand has not increased. There is latent demand that is not represented because the number of vehicles parking on campus is limited by the practical

capacity of the parking supply. As detailed in the Background Information section of this report, parking demand at GUH is regularly higher than the parking supply, and the University does not have enough visitor parking available to handle special events or other days with high-visitor demand.

Summary of Technical Analyses

A detailed technical analysis of the 2011-2020 campus plan impacts on vehicular capacity is included as an attachment to this report. This section provides a summary of its findings.

The impact of the 2011-2020 campus plan on the transportation network is determined by examining the changes to vehicular capacity on the roadways surrounding the campus during the commuter peak hours on a typical weekday. The impact is determined by examining the differences in future capacity and delay projections between a scenario with development of the Plan and a scenario without development of the Plan.

The main differences between the year 2020 scenarios with and without the development of the 2011-2020 campus plan are:

- The addition of 750 parking spaces for patient and patient-visitor use, access via the Gate 1 intersection along Reservoir Road. The future scenario with the development of the campus plan generates traffic based on this increase to the parking cap and distributes them on roadway network adjacent to campus.
- The addition of 250 parking spaces for University-visitor use, accessed via the Canal Road gate. The future scenario with the development of the campus plan generates traffic based on this increase to the parking cap and distributes them on roadway network adjacent to campus.
- The recommended change to align the intersection of 38th Street/Gate 1 with Reservoir Road.

Since the 'impact' of the campus plan is defined by comparing future scenarios with and without the campus plan, the technical analysis was designed to locate these differences. The following summarizes the results the technical analyses:

- *Intersections along Canal Road*

  The development of the campus plan has a limited impact to intersections along Canal Road on the southern side of the campus, due to the relative amount of traffic generated by 250 visitor spaces compared to commuter traffic.

  An analysis of the recommendation to allow left turns from the Canal Road gate during the AM peak period showed that there would be a slight impact to intersections on Canal Road and Foxhall Road upstream from the Canal Road gate. The extent of this impact is limited due to the overall amount of delay and congestion already on these commuter routes.

  This report recommends that after approval of the campus plan, and once the new roadways on campus are under design, a detailed study be performed on the Canal Road gate to permit further analysis and agency consultation on modifications to the traffic signal.

- *Intersections along Reservoir Road*

  The development of the campus plan will have a relatively higher impact along Reservoir Road, due to the lower amount of non-campus traffic on the road, and the amount of trips generated by 750 visitor and patient spaces. However, this additional traffic will be primarily midday and not during the AM or PM peak commuter times. A comparison of future conditions with and without the development of the campus plan shows that no

intersections are projected to experience unacceptable levels of delay, with the possible exception of the intersection of Gate 1/38th Street with Reservoir Road.

The design of the hospital development sites and their associated parking facilities are not final, and details on the exact amount of spaces and their access are not developed. The technical analysis assumed an increase of 750 spaces, accessed via Gate 1. The analysis showed that delays for traffic entering and exiting Gate 1 may operate at unacceptable levels of delay in the future. A potential mitigation measure for this delay would be to create a left turn pocket on westbound Reservoir Road for traffic turning into Gate 1.

This report recommends that when the development sites on the hospital are presented for further processing, that a detailed traffic study be performed to investigate the impacts of the parking increase to the Gates along Reservoir Road. At that time, if mitigation measures are needed at Gate 1, the concepts can be incorporated into the further processing applications for the development sites that increase the amount of parking.

RECOMMENDATIONS

This section of the report reviews recommendations assembled by the Campus Plan team to address both existing issues and to minimize the impact to the transportation network generated by development of the campus plan.

Pedestrian

Georgetown University has a compact campus, a sizeable on-campus student population, high transit usage and parking located on the periphery of campus. These factors contribute to high levels of pedestrian activity throughout campus.

Issues

Some sections of campus, in particular Tondorf Drive and near several GUTS stops, have inconsistent or incomplete pedestrian facilities and amenities. Conflicting uses and vehicular traffic reduce the quality and comfort of walking in these areas. Some adverse pedestrian conditions have resulted from building and roadway design, such as Tondorf Drive having inconsistent sidewalks and significant service activity. Other adverse pedestrian conditions are a result of natural elements, such as changes in topography, which results in many routes having long stairways or increases in elevation that increase walking time and effort.

Recommendations

- Enhance the pedestrian experience by including extensive landscaping and pedestrian treatments along Tondorf Drive, the roadways east of Tondorf Drive and a new east-west path north of Harbin Field.
- Limit Tondorf Drive to pedestrian traffic as much as possible, the exceptions being for service and emergency vehicles, deliveries, and disabled parking access.
- Perform a design review during further processing application for development sites that examines pedestrian impacts, including connections, crosswalks, location of building access points, and width of sidewalks.
- Carefully design new GUTS on-campus stop locations, once the new GUTS circulation patterns are established, to allow for sufficient queuing space for passengers not to disrupt pedestrian flow on adjacent sidewalks.

Bicycle

The University generates frequent bicycle traffic and high bicycle parking demand. Bicyclists are visible throughout the campus during pleasant weather and bicycle racks are often full, regardless of weather. The University has 1,616 bicycle parking spaces, some are covered in parking garages, employs a bicycle registration program and allows use of recreation facility showers for commuting faculty and staff. GUH currently has 30 bicycle parking locations. A Capital Bikeshare station is also located at the main gates to the University at 37th and O Streets NW.

Issues

Some improvements are possible that could encourage more bicycling, such as enhanced parking facilities, additional amenities for bicycle commuters, and greater connectivity between the campus and neighborhood.

The primary issue with existing bicycle rack designs is that they make it difficult to effectively secure a bicycle and do not efficiently use space. In some locations, bicycles are locked to railings or poles when the racks are full or not conveniently located.

Recommendations

- Maintain and promote the campus bike registration program.
- Provide additional and improved parking options for bikes on campus. Each year, upgrade a portion of bicycle parking on campus to meet DDOT standards, including:
  - Maintaining bicycle parking in all structured parking garage facilities, and incorporating bicycle parking into any new parking facilities.
  - Upgrading racks at all major campus entries and exits, and near the doors for all major destinations on campus, including recreation facilities, libraries and academic buildings.
  - Enhancing the bicycle parking system adjacent to residence halls. Existing DDOT standards do not include a covered parking system that accommodates many bicycles in a small amount of space. Such a system would be preferable adjacent to residence halls where covered, long-term parking is needed.
- Provide GU specific bicycle route maps showing recommended campus access routes and routes between campus and major off-campus destinations.
- Work with DDOT to develop and improve bike lanes leading to campus as proposed in the 2005 DDOT Bicycle Master Plan. The plan recommends installing on-street bike lanes along 33rd and 34th Streets and an on-street separated bicycle facility along M Street between 28th Street, NW And 6th Street, NE.
- Work with DDOT to locate additional bike-sharing stations on campus.
- At GUH provide additional parking spaces, increase the number of shower facilities and market bicycle commuting to potential users.
- Provide bicycle valet services for patients and visitors at GUH.

GUTS

GUTS shuttle service is a fundamental component of the University's transportation network. GUTS provides free, direct, express connections to multiple locations and fulfills its mission of providing alternative travel options for faculty/staff, students and visitors.

Issues

Although GUTS effectively provides access and mobility between campus and neighborhood destinations, there are several issues with the service, including:

- Quality of Service
  - GU is concerned about the quality and safety of the GUTS stops on campus due to their lack of pedestrian facilities and amenities (shade, shelter, benches, rider queuing, etc.). The lack of amenities also reduces the comfort and quality of service provided by GUTS. Inadequate or limited pedestrian facilities and amenities lead to increased pedestrian-vehicle conflicts. This is notable at the existing on-campus Dupont Circle stop.
  - GU stopped routing GUTS routes through campus, having the routes to/from the south stop only once on the southern side of campus, and the routes to/from the north stop only once on the northern side of campus (near Kober Cogan). Previously routes would traverse campus along Tondorf Drive, stopping once on both

sides before turning around. This has decreased pedestrian conflicts with transit vehicles along Tondorf Drive, but has led to an increase in complaints from GUTS riders that now have to walk across campus with significant changes in elevation. (There is currently no internal campus circulation for the shuttles.)

- Bus/Passenger Vehicle Conflicts
  - The geometry of 38th Street, NW campus entrance (Gate 1) makes right turns difficult for GUTS buses and other large vehicles
- Neighborhood Impacts
  - GU reroutes the Dupont GUTS route during off-peak periods to minimize neighborhood impacts along Q Street. Off-peak route diversions along the Dupont Circle route increase travel time for 69% of the route's ridership, which may result in reduced ridership and increased private auto usage.
  - During the Canal Road entrance approval process residents west of GU expressed concern about the potential traffic impact of egress traffic at the Canal Road gate to commuters that use this corridor. To minimize the impact, left turns were prohibited during the AM commuter period. Left turn restrictions at the south entrance on Canal Road require GUTS routes with stops in south campus to use Prospect Street for campus egress during morning rush hours.
  - Neighborhood impacts along Prospect Street and Q Street, NW have resulted in neighborhood concerns about vehicle impacts. The turn restriction at the Canal Road gate requires that GU maintain the Prospect Street gate.

Recommendations

- Continue operation of the GUTS shuttle program, a proven and successful transit operation that has dramatically reduced on-campus parking demand and the number of vehicles in the area because it is frequent, dependable, express and free.
- Continue the commuter shuttle and investigate feasibility of adding routes.
- Build a 'loop' using campus roadways to allow for buses to turnaround within campus and to make stops on campus not currently possible. The loop requires the new Campus Service Road on the western edge of campus, and the east-west roadway connecting Campus Service Road to West Drive. Figure 8 shows the resulting GUTS on-campus routing and stops.
- Move the Dupont route from Reservoir Road to Canal Road. Once the Dupont route is altered to use the Canal Road gate, explore changing the off-campus route to approach Dupont Circle from the south. Possible future GUTS routes are depicted in Figure 9.
- Work with the District Department of Transportation to alter the operations of Canal Road to allow for easier exiting maneuvers from the Canal Road gate. There are times when traffic is backed up on Canal Road to the gate, which blocks buses from exiting the campus. It is possible through signal timing changes to allow for a few seconds of clearance time where buses could exit the campus. This could be achieved by retiming the offset of the signals along Canal Road and M Street in order to provide a short gap in traffic that would allow buses to exit the University. It also may be possible to achieve the same benefit through changes to marking and geometry.

- Explore removal of the Canal Gate morning rush hour restrictions. Even with an internal loop for GUTS vehicles on campus, they will still need to exit via Prospect Street during the Canal Road left turn restriction in the morning. In order to minimize the impact to neighborhood streets, this report recommends that this restriction be lifted for GUTS vehicles.

  This report recommends that after approval of the campus plan, and once the new roadways on campus are under design, a detailed study be performed on the Canal Road gate to permit further analysis and agency consultation on modifications to the traffic signal.

- Provide passenger amenities such as bus shelters at the new on-campus stop locations. As the routes change, update the information on the University web site.

- Improve the geometry at the intersection of 38th Street and reservoir road when realigned as recommended to improve mobility of larger vehicles.

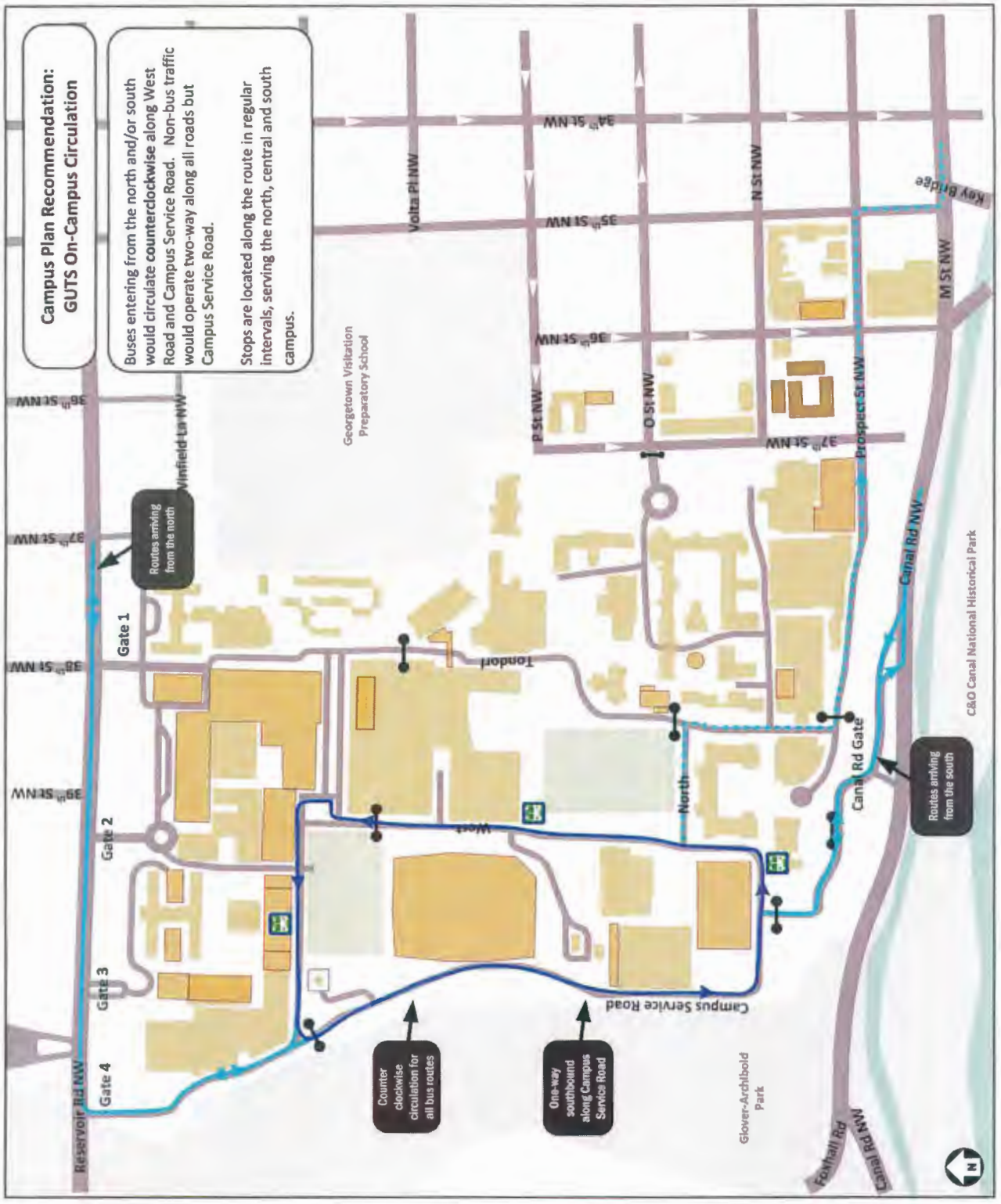


Figure 8: Campus Plan Recommendations - On Campus GUTS Routing

Figure 9: Potential Future GUTS Routes

Transit

GU is directly served by Metrobus and linked with Metrorail Stations located on the Red and Orange lines by GU Shuttles and Metrobus. To promote transit use, GU allows employees to utilize SmartBenenfits (pre-tax transit deduction); 264 GU employees and 150 GUH employees take advantage of this program.

Issues

The University and Hospital would like to increase bus travel to and from campus in part to increase use of non-automobile modes, and to take advantage of the unused capacity on the Metrobus routes that pass by campus.

Recommendations

- Continue the SmartBenefits program, which enables employees to pay for public transit costs through payroll deduction on a pre-tax basis, and encourage greater usage.
- Continue the sale of WMATA passes on campus through the Office of Transportation Management, coordinate with WMATA on making SmartTrip cards available on campus and explore partnership opportunities with WMATA for student discounts.
- Continue liaison with WMATA and DDOT to ensure integration of Georgetown's plan into a total transit program to reduce single occupant vehicle trips to and from the campus.
- There is substantial untapped capacity in the Metrobus routes that pass-by the campus, although it will be difficult to encourage GU employees and students to use these services because unlike GUTS they do not provide free and express connection to Metrorail and other destinations. It is recommended that marketing of Metrobus routes be increased, including such efforts as creating specific GU-oriented maps for the G2, D3 and D6 routes, providing more information on the web site, and making SmarTrip cards available on campus (including a possible GU branded SmarTrip card and a kiosk on campus to load funds). These efforts would need to be coordinated with WMATA.

Parking

The University has a campus-wide parking cap that limits the total number of parking spaces to 4,080. When GU partnered with MedStar Health to operate the hospital and clinical enterprises, the cap was split, and currently stands at 2,700 spaces for the Hospital and 1,380 spaces for the University. The parking cap was established in 1990 and has reduced the University's traffic impact in the surrounding neighborhood by limiting the total number of cars that can travel to campus and park. The majority of the parking cap is used to handle employee parking (faculty and staff), with some parking reserved for patients and visitors. Monthly parking fees for faculty and staff have increased significantly, 74% since the year 2000. A large increase occurred in 2002, to discourage single occupancy trips and increase operating revenue for GUTS.

No permits to park on-campus are provided to students. Graduate and Continuing Studies students can park on campus for evening classes and are charged only $3, and the University has improved access to the Southwest Quad garage from Canal Road to encourage those evening students who drive to for evening classes to park on campus rather than on neighborhood streets. All students can park on campus after 6pm for $3 and on weekends to encourage parking on campus rather than on residential streets.

Issues

On a daily basis, the University parking approaches its practical capacity. During times with high visitor activity, the University struggles to find parking locations for all of its guests. There is concern that further growth on the University without additional parking could create a situation where the University will lose the ability to park visitors on campus. Parking at GUH regularly exceeds practical capacity. The visitor parking at the Hospital is very overcrowded due to the success of the Hospital in outpatient service, something not anticipated in previous years.

Recommendations

- Continue policy of restricting parking for students on campus and limiting parking privileges for commuter students to satellite garages.
- Continue use of price to discourage single occupancy vehicles.
- Continue and expand the satellite-parking program, maintaining deeply discounted rates and free shuttle service for participants.
- Increase the parking cap by 1,000 spaces, with 750 allocated to GUH to use for patient and patient-visitor parking, and 250 allocated for the University to use for visitor parking.
- Maintain faculty and staff parking levels at the same proportion of the total number of faculty and staff as they are currently to allow adequate space for event participants, campus admissions tour participants and evening student parking. The University does not want a greater percentage of faculty and/or staff commuting by private automobile, and plans to limit increases in parking permits for commuters to a proportional growth based on population. This will allow the parking cap increase to serve its intended goal of easing the constrained parking situation for visitors and patients.
- Provide additional financial incentives for GUH employees who carpool.
- Encourage use of alternative modes by patients/visitors through marketing and promotions.

Roadways

Issues

Currently the campus has two major north-south corridors: 1) Tondorf Drive and 2) West Drive. These roadways serve all north-south campus traffic, including pedestrians, private automobiles, and service, emergency, and transit vehicles. The roadways are heavily used and often there are conflicts among the different users. The existing intersection at Gate 1/38th Street and Reservoir Road is not aligned and is difficult to maneuver through.

Recommendations

- Complete the Campus Service Road on the western edge of campus to accommodate service vehicles, including buses. This allows for a simple hierarchy of north-south streets through campus, with Tondorf Drive being pedestrian-oriented, West Drive being passenger car oriented, and Campus Service Road being service vehicle and shuttle oriented.
- Complete an internal circulation loop for GUTS vehicles by constructing an east-west roadway connecting Campus Service Road and West Drive.

- Realign the intersection of 38th Street/Gate 1 and Reservoir Road.
- Upon further processing for the development parcels for GUH, revise capacity analysis of Gates along Reservoir Road. If necessary, coordinate with DDOT and explore the addition of a short left turn lane from westbound Reservoir Road into campus.
- During further processing of GUH development sites, carefully examine pick-up/drop-off locations, including taxi and valet for possible conflicts with traffic going to/from the parking garages.

Transportation Demand Management

This section summarizes the Transportation Demand Management measures employed at GU that were not discussed above in the mode sections, which includes the following:

- Transportation Coordinator: GU coordinates all transportation programs through the Office of Transportation Management (OTM) while GUH coordinates transportation programs through the Office of the Assistant Vice President for Safety Management / Environmental Quality.
- Marketing: GU's OTM website provides information on all campus transportation initiatives and programs while GUH TDM marketing initiatives are somewhat informal.
- Carpooling: GU provides preferred parking spaces and lower permit prices for carpool participants. Approximately, 143 faculty/staff are participants in 698 carpools. GUH has some carpooling in place but it is self-organized and with non-formal incentives.
- Carsharing: GU does not have car-sharing vehicles on-campus but there are several locations nearby with car-sharing provided by Zipcar. GUTS shuttles stop near the Zipcar vehicles provided nearby in Rosslyn. Zipcar is a private company that allows registered users to reserve cars for a minimum of 30 minutes or for longer periods up to several days. Car-sharing provides individual access to automobiles for trips made easier by car. 765 members of the GU community are registered as Zipcar users.

Issues

The University and Hospital already have robust TDM programs. To continue to stress use of non-automobile modes of transportation in the future, additional management of programs including marketing and monitoring will be necessary.

Recommendations

- Maintain successful elements from the existing TDM program:
  - Continue to work with local transportation agencies to assist with the widest dissemination of regional transportation information.
  - Continue and expand the carpool program, promoting the web-based matching service for Georgetown faculty and staff and offering significantly reduced parking fees as incentive.
  - To the extent possible, continue to schedule events so the start time does not coincide with local traffic rush hours.

  - Maintain all University TDM programs under the purview of a single department to assure integration within the campus and with public programs. Work with MedStar to integrate management of the Hospital and University TDM programs.
- Work with DDOT and ZipCar to provide access to car-share vehicles closer to campus.
- Develop and implement a comprehensive marketing program and campaign for all TDM strategies.
- Develop a means of monitoring the comprehensive TDM program to collect performance data, which will be used to identify both effective and wasteful strategies, to determine additions and deletions to the program and to show progress from year to year.

BACKGROUND INFORMATION

This section details the existing condition of transportation facilities and services at Georgetown University and the surrounding neighborhood. The University's main campus has approximately 14,033 students and 4,035 faculty/staff. Georgetown Hospital is located on the north side of campus, with 609 licensed beds and a population of approximately 4,269 staff.

Campus users arrive primarily by transit and to a lesser extent, by private automobile and neighborhood pedestrian and bicycle facilities. Pedestrian and bicycle demand and impacts are concentrated along neighborhood streets to the north and east of the campus, in particular Reservoir Road, and 35th, 36th, 37th, M, Prospect, P, O, and Q Streets. Vehicular traffic demand is concentrated at the north campus entrances on Reservoir Road and at two south campus entrances on Canal Road and Prospect Street. There is also some taxi and passenger pick-up and drop-off activity along 37th Street adjacent to the main gate and library.

Once on campus, nearly all persons rely on the pedestrian network to meet their mobility needs. Vehicular traffic between north and south access points is restricted by traffic control gates located in the center of campus and by the limited capacity and connectivity of the campus street network.

The University maintains an aggressive transportation demand management (TDM) program to reduce private automobile trips and encourage GUTS usage. Features of this program include bicycle parking and paths, Metrocheck benefits to encourage Metrorail usage, free shuttle service to major off-campus destinations, taxi stands, satellite parking in Rosslyn and on Wisconsin Avenue, and on-campus housing. Many amenities on-campus, such as restaurants, convenience stores, a bank, a bookstore, a coffee shop and student laundry rooms reduce the need to make off-campus trips.

Constraints

The University's transportation facilities have developed under a series of physical and legal constraints that have impacted GU transportation facilities and services. These constraints consist of physical and historic conditions on-campus and in the neighborhood, legal conditions established by Board of Zoning Adjustment orders, and conditions implemented by the University based on interactions with the surrounding neighborhoods.

Key constraints include the following:

- *Topography*: The campus has two distinct elevations between east and north campus and south and southwest campus. The elevation change between these two sections of campus impacts transportation conditions, in particular for pedestrians because the elevation changes and lengthy staircases increase walking time and effort. It has also impacted the alignment of roads and the location and footprint of buildings, which limits vehicle access.
- *Campus size (104 acres)*: Georgetown University is a compact, urban campus. The location and density of buildings results in limited space for transportation facilities such as bus turnaround locations. It also creates opportunities to create a highly walkable campus.
- *On-campus roadway configuration and capacity*: The University has a limited number of roadways, many of which are narrow or have other constraints that limit the mobility of vehicles on campus. Many roadways also have heavy pedestrian traffic, which slows vehicular traffic.
- *Building locations and access points*: The location of several buildings and their vehicle and pedestrian access points guide pedestrian and vehicle pathways; many of these pathways overlap or conflict. They also limit options for improving vehicle routing.

- *Left turn restriction*: Left turns are prohibited onto Canal Road from the south entrance during the morning commuter peak period (6:15 am – 10:15 am); this restriction requires that traffic exiting south campus and traveling east must use Prospect Street while this turn restriction is in place. This restriction limits options for routing vehicle traffic and shuttle routes.
- *On-campus parking cap (4,080) and neighborhood parking restrictions*: The parking cap limits the volume of traffic traveling to the campus and caps the demand for parking, which would likely be higher were it not for the cap. The cap also elevates the importance of other modes and services to ensure that there is effective and efficient access to the campus.
- *Neighborhood shuttle routes*: Some neighbors prefer that shuttles do not traverse residential streets due to vehicle generated noise, ground vibrations and traffic impacts.
- *Restricted travel routes between north and south campus*: To deter traffic from traveling between Canal Road and Reservoir Road via campus roadways, the University has installed traffic control gates on all north-south roads. While this prevents cut-through traffic, it also impacts campus vehicle routing and circulation options.
- *Prospect Street must remain open as a campus entrance*: To ensure ingress and egress routes from the south, the University is required to have an entrance to the Campus on Prospect Street.
- *Restricted event schedules*: To prevent event traffic from affecting commuter traffic, the times for certain events are restricted.

Pedestrian Facilities

Georgetown University has a compact campus, a sizeable on-campus student population, high transit usage and parking located on the periphery of campus. These factors contribute to high levels of pedestrian activity. Portions of the campus have excellent pedestrian facilities, such as the original, eastern area of campus and the recently completed Southwest Quadrangle. The pedestrian facilities in these areas provide dedicated pathways that are separated from or give priority to pedestrians over vehicular traffic. They provide direct links between pedestrian generators, such as student housing and dining facilities, that do not cross or conflict with vehicle routes and have slight changes in topography. There are pedestrian amenities along these routes that make walking comfortable and convenient, such as benches and shelters from the elements. Figure 10 maps pedestrian pathways on Campus.

Some sections of campus, in particular Tondorf Drive and area near GUTS stops, have inconsistent or incomplete pedestrian facilities and amenities. Conflicting uses and vehicular traffic reduce the quality and comfort of walking in these areas. Some adverse pedestrian conditions have resulted from building and roadway design, such as Tondorf Drive having inconsistent sidewalks and significant service activity. Other adverse pedestrian conditions are a result of natural elements, such as changes in topography, which results in many routes having long stairways.

Figure 10: Main Campus Pedestrian Paths

Bicycle Facilities

The University generates frequent bicycle traffic and high bicycle parking demand. The University benefits from several factors that make bicycling an attractive travel option, including the compact size of the campus, the location and quantity of bicycle parking, and the proximity to neighborhood bicycle pathways, dedicated lanes, and off-street multiuse trails. Most on-campus destinations are within walking distance, a quarter mile or less from housing, transit stops, or parking lots, which allows most on-campus trips to be made by walking rather than bicycle. Thus, most bicycling is between campus and off-campus housing, retail, or recreational facilities. Figure 11 maps the bicycle routes serving campus and the location of bicycle parking on campus. The bicycle routes are based on a 2008 District Department of Transportation District of Columbia Bicycle Map.

Bicycle parking is located throughout campus, at all residence halls and at most other buildings. In some locations, bicycles are locked to railings or poles when the racks are full or not conveniently located.

Overall, the campus has good bicycle amenities but some improvements are possible that could encourage more bicycling, such as enhanced parking facilities, amenities for bicycle commuters, and greater connectivity between the campus and neighborhood bicycle facilities. Several different bicycle rack designs are used throughout the campus. The primary issue with the existing bicycle rack designs is that they make it difficult to effectively secure a bicycle and do not efficiently use space. The existing racks on campus make it difficult to lock both the frame and wheel or both wheels if one is removed and increase the wear and tear on a bicycle. There are improved bike racks on the market today that provide more secure and efficient bike parking, such as those recommended by DDOT in the 2002 Bicycle Parking Design Guidelines. These would accommodate more campus bicyclists and provide an incentive for non-bicyclists to consider this mode a viable option. Long-term covered parking is preferable for these infrequent on-campus student cyclists. In order to minimize the impact of bicycle parking on the campus landscape it may be preferable to use non-DDOT standard racks near residence halls designed specifically for these users (racks that use less space per bicycling return for longer locking/unlocking access times).

The 2005 DDOT Bicycle Master Plan recommends several improvements that would enhance bicycling conditions. The plan recommends installing on-street bike lanes along 33rd and 34th Streets and an on-street separated bicycle facility along M Street between 28th Street, NW and 6th Street, NE. The upgrades would improve community conditions for GU bicyclists.

The newly created DC bike-sharing system, Capital Bikeshare, which premiered in September 2010, has one station located at GU. The station is located outside the Main Gate at 37th and O Street NW. Additional stations are located throughout the District and Northern Virginia providing good connectivity between the campus and major off-campus destinations.

Memberships to the Capital Bikeshare system are available on a yearly, monthly, or daily basis for a $75, $25, or $5 fee, respectively. Additionally, the first 30 minutes if each trip on Capital Bikeshare is free, with an additional fee paid for each 30 minute period thereafter.

GU Shuttle Service

Georgetown University Transportation Shuttle (GUTS) was established in 1974 and provides express and limited-stop transit service for University and Hospital faculty/staff, students, patients and visitors. Shuttles travel between campus and nearby Metrorail stations, Georgetown University Law Center, University off-campus offices, off-site parking, and North Arlington, VA. This service is provided free of charge and provides express service between campus and major destinations on all but one route. Express service significantly reduces the travel time because there are no stops between campus and the final destination. WMATA or DDOT services have stops at regular intervals, usually every two blocks. Express service also allows for route flexibility, which allows bus traffic to route around points of congestion, such as those caused by an accident, and minimizes travel time. In 1990 GUTS provided 54,065 annual trips. Ridership has grown significantly since then; by 2000, ridership had increased to one million trips annually and in 2009, GUTS provided two million annual trips, which is comparable to Metrobus ridership along several corridors. Figure 12 illustrates annual ridership for each route between July 2008 and June 2009.

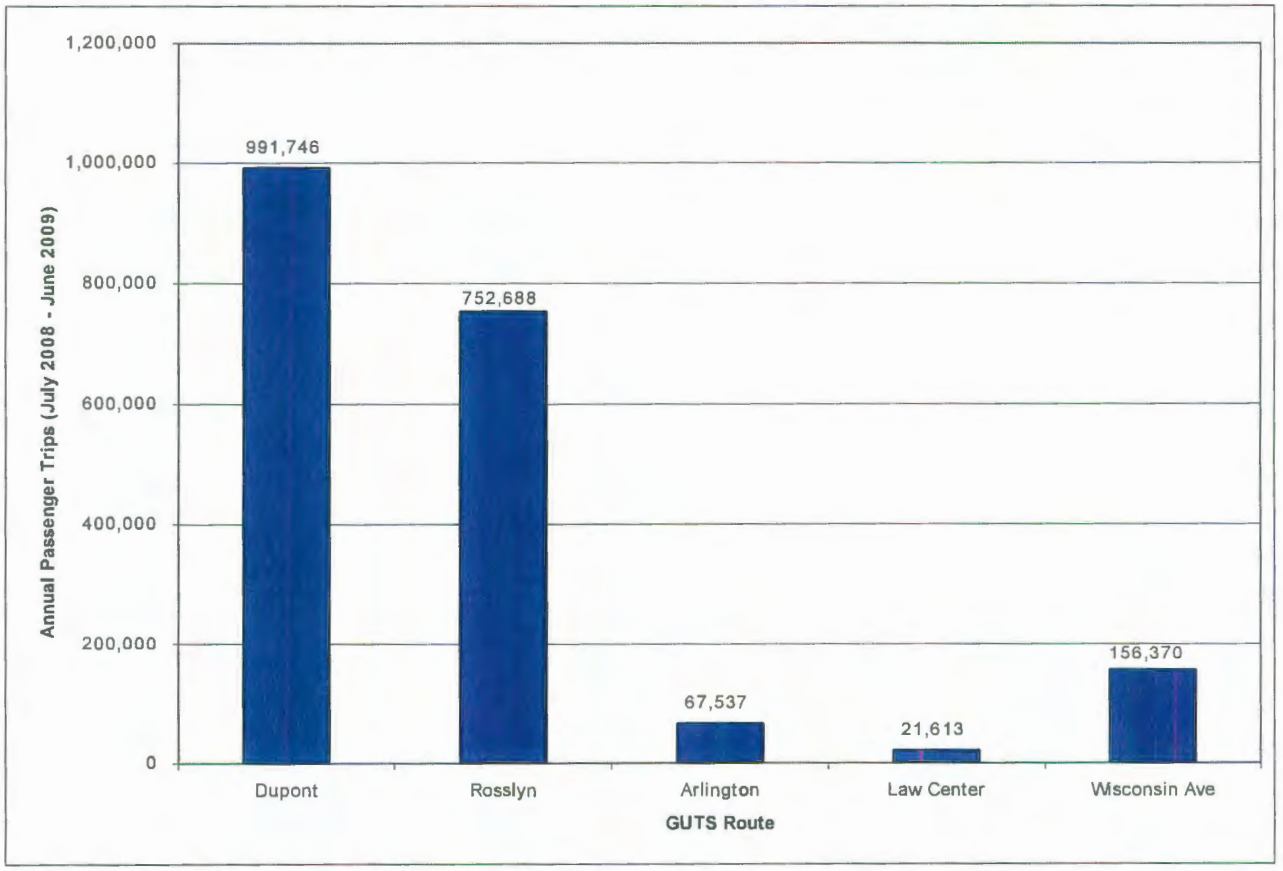


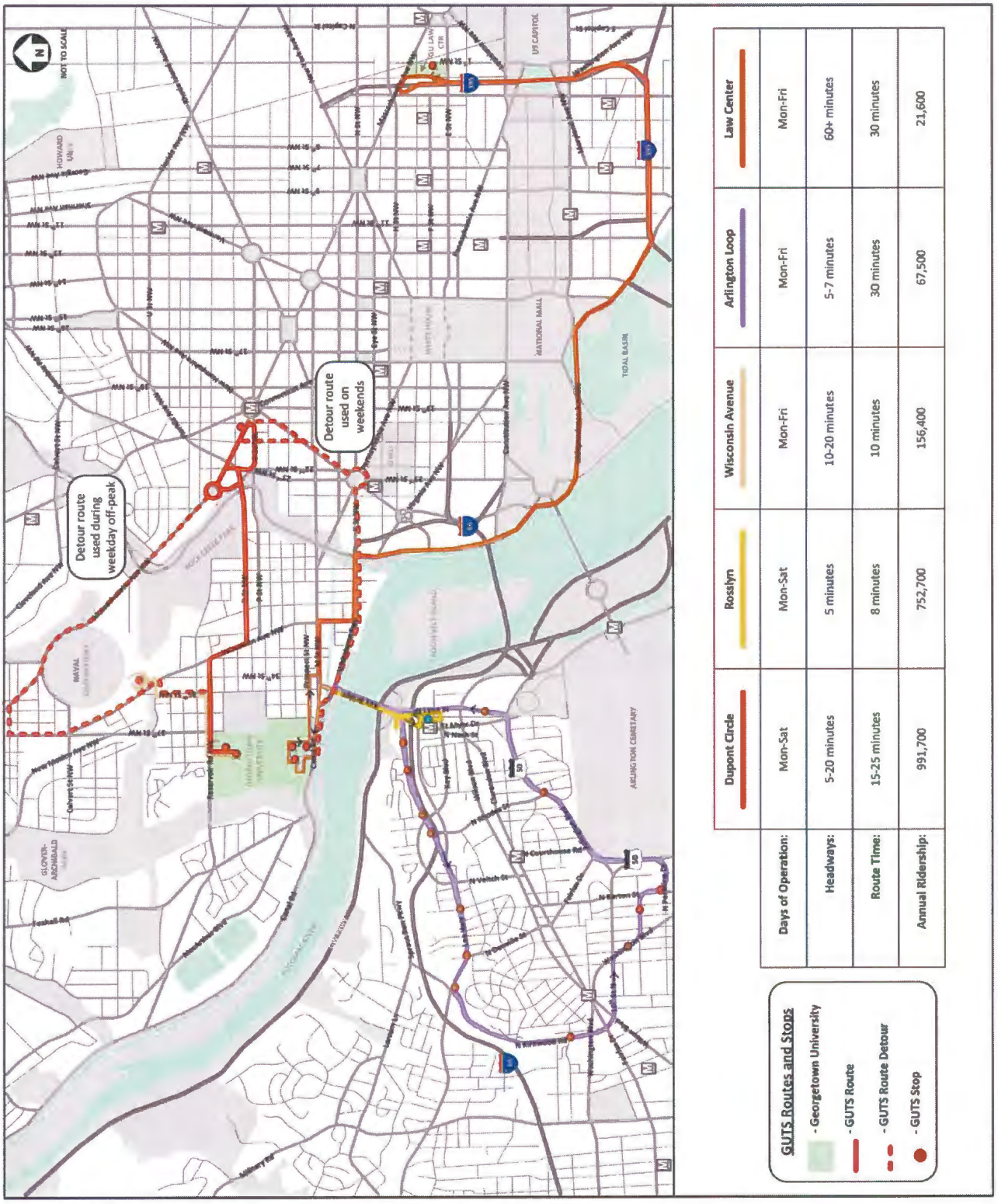
Figure 12: GUTS Ridership by Route

Combined with other TDM measures, GUTS significantly reduces private automobile trips and parking demand. Figure 13 maps the neighborhood routes and stops and provides information on schedules and travel times for each route. Figure 14 maps the on-campus GUTS routes and stops. These stops are major sources of pedestrian traffic and have high volumes of passengers waiting, boarding and alighting.

Transit

GU is served directly by several Metrobus routes and is within walking distance of WMATA, DDOT, and privately operated buses and shuttles that link the campus with Metrorail and major destinations in the city and region. Mass transit services compliment the free shuttle service provided by the University but do not provide the same frequency of service or express service as GUTS according to WMATA route maps and timetables. To encourage transit use by employees, GU offers Metrocheck benefits. This program enables employees to pay for monthly transit expenses with pre-tax dollars, up to $230 per month. Figure 14 maps the Metrobus stops adjacent to the campus.

Currently, WMATA buses have routes and stops along the northern and eastern edges of campus. DDOT, which operates Circulator bus service, operates a bus route that has stops along M Street and Wisconsin Avenue.



	Dupont Circle	Rosslyn	Wisconsin Avenue	Arlington Loop	Law Center
Days of Operation:	Mon-Sat	Mon-Sat	Mon-Fri	Mon-Fri	Mon-Fri
Headways:	5-20 minutes	5 minutes	10-20 minutes	5-7 minutes	60+ minutes
Route Time:	15-25 minutes	8 minutes	10 minutes	30 minutes	30 minutes
Annual Ridership:	991,700	752,700	156,400	67,500	21,600

Figure 13: GUTS Routes

Parking

The University has a campus-wide parking cap that limits the total number of parking spaces to 4,080. The cap was established in 1990 and has reduced the University's traffic impact in the surrounding neighborhood by limiting the total number of cars that can travel to campus and park. It also ensures that, as facilities are improved and developed, University traffic impacts do not increase because traffic growth is constrained by the parking cap. Figure 15 identifies the location of major parking facilities on campus. Table 2 inventories the parking facilities on campus.

Table 2: GU Parking Facilities

Lot/Garage	Number of Spaces		Access Road
	University Use	*Hospital Use*	
3	43		Canal Road
6	20		P Street
8	16		Canal Road
9	78		Prospect Street
B-1	6		Reservoir Road
E	67		Reservoir Road
G	64		Reservoir Road
WM	10		Reservoir Road
Y	18		Canal Road
Garage 4	195		Canal Road
Leavey	398		Canal Road & Reservoir Road
Leavey		576	Reservoir Road
Southwest	465		Canal Road
Southwest		199	Canal Road
Garage 1		638	Reservoir Road
Garage 2		990	Reservoir Road
Lot A		169	Reservoir Road
Lot B		128	Reservoir Road
Total	**1,380**	**2,700**	

The parking cap on campus is split between Hospital use (2,700 spaces) and University use (1,380 spaces). The University currently uses 1,380 marked parking spaces, although there are physically more spaces not being used due to the parking cap. The Hospital currently has 2,328 marked spaces, and valet parks up to 372 cars in unmarked spaces.

In order to gauge demand, parking surveys were performed of the University based parking facilities during a typical weekday during the spring 2011 semester. Table 3 shows the results of these surveys, including the peak demand observed for each lot during the observations by user type. Figure 16 shows a chart of University parking demand over a typical weekday.

On a daily basis, the University parking approaches its practical capacity, defined as 90% of the total marked spaces. During times with high visitor activity, the University struggles to find parking locations for all of its guests. University visitors use the Southwest Garage, which as shown in Table 3, reaches its practical capacity on a typical weekday. Thus, whenever the University has a special event, or during other days of high visitor-activity, the Southwest Garage operates over-capacity with drivers having difficulty finding spaces and/or parking in drive aisles.

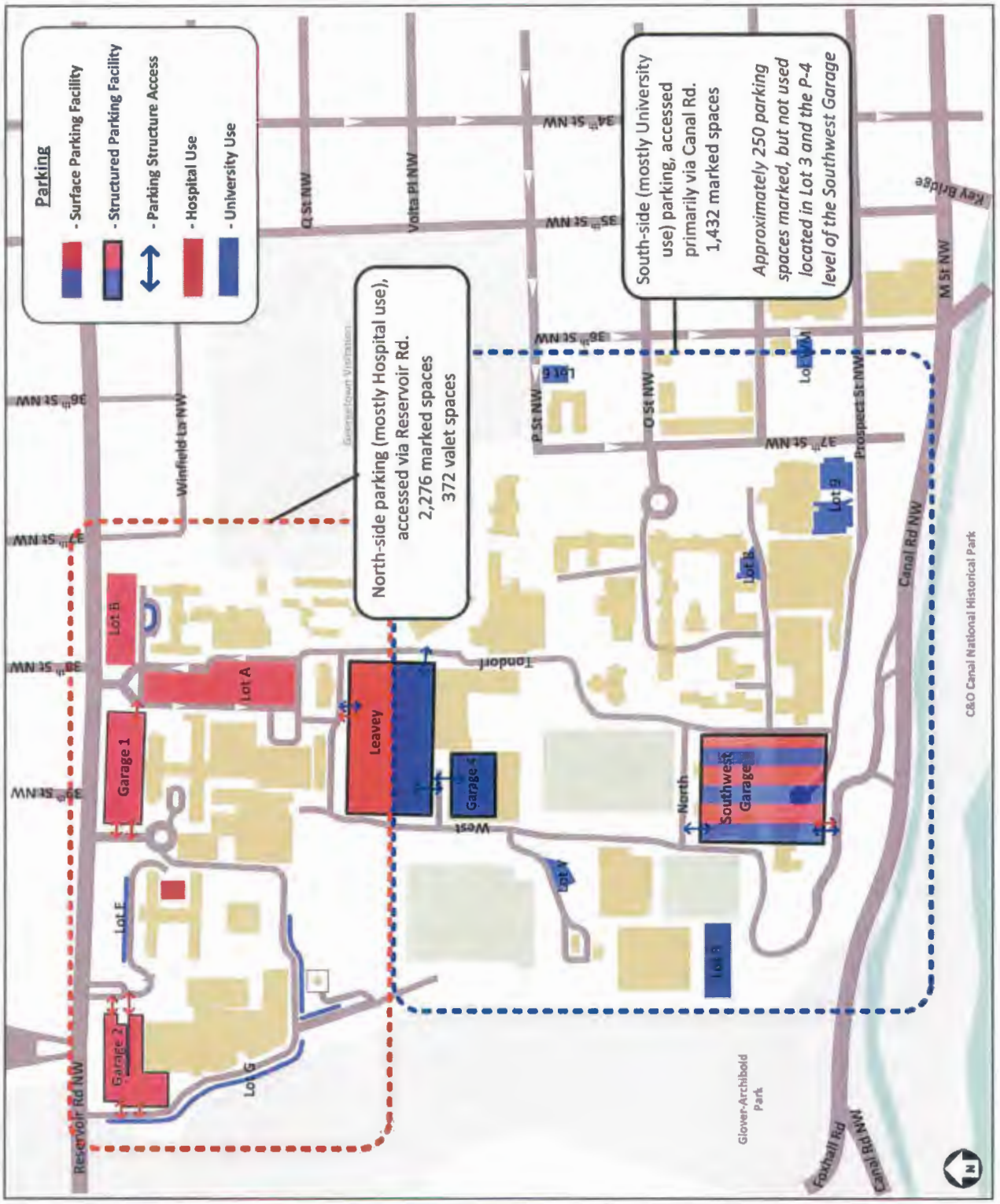


Figure 15: Existing Campus Parking Facilities

Table 3: University Parking Demand

Parking Facility	Total Spaces	Peak Occupancy	Time at Peak
3	43	33	2pm
6	20	14	11am
W	10	13	7pm, 8pm
8	16	13	2pm
9	78	54	1pm
Lot Y	18	17	8am
Garage 4	195	145	2pm
Leavey (University Use)	398	344	2pm
SW (University Use)	465	416	12pm
Lot E	67	60	10am
Lot G	64	62	11am
Lot B1	6	6	3pm
Total	**1380**	**1136**	**2pm**

The University recognizes that some University parkers find parking on nearby neighborhood streets. The University has a parking and vehicle registration system that is designed to ensure that those eligible for University parking can easily park on-campus. The University has developed its policies and procedures to keep neighborhood parking by the University community to a minimum. In addition to University efforts to minimize on-street parking in the neighborhood, there are residential parking restrictions that limit campus generated traffic and parking impacts in the neighborhood.

Georgetown Hospital (GUH), as part of the campus planning process, has also measured their parking demand[1]. GUH is concerned that the success of the Hospital and future growth may be limited by its ability to park patients and patient-visitors. Their measured peak parking demand is 2,455 spaces out of a total supply of marked and unmarked spaces of 2,700. Figure 17, reproduced from GUH's transportation report, shows a chart of Hospital parking demand compared to practical parking supply. GUH's practical capacity was determined to be 2,007 spaces, thus GUH's parking supply is operating at 22% over its practical limit.

The combined typical weekday parking demand for the University and Hospital is 3,591 spaces.

[1] *Transportation Management Plan for Georgetown University Hospital*, prepared by O.R. George & Associates, Inc., 2010

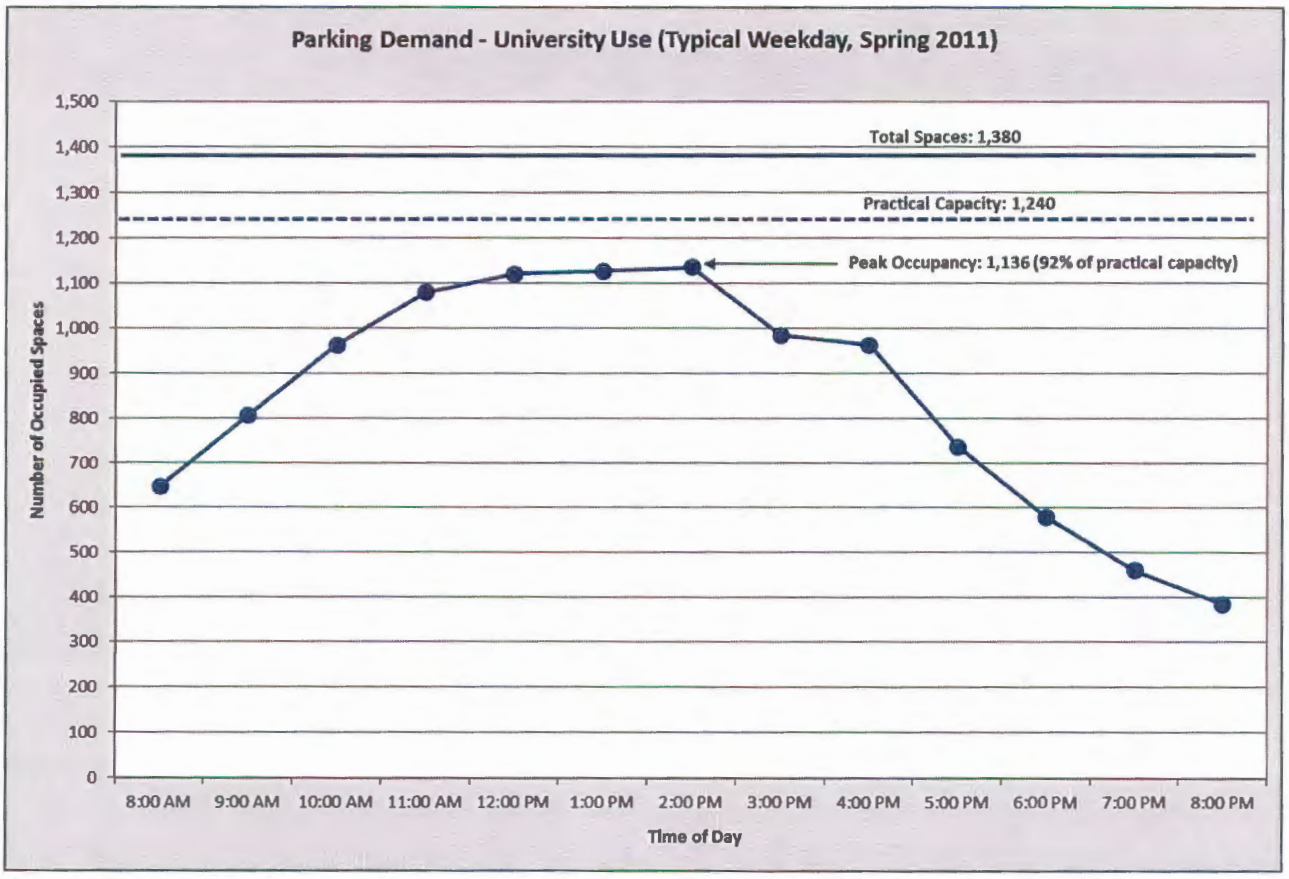


Figure 16: University Parking Demand

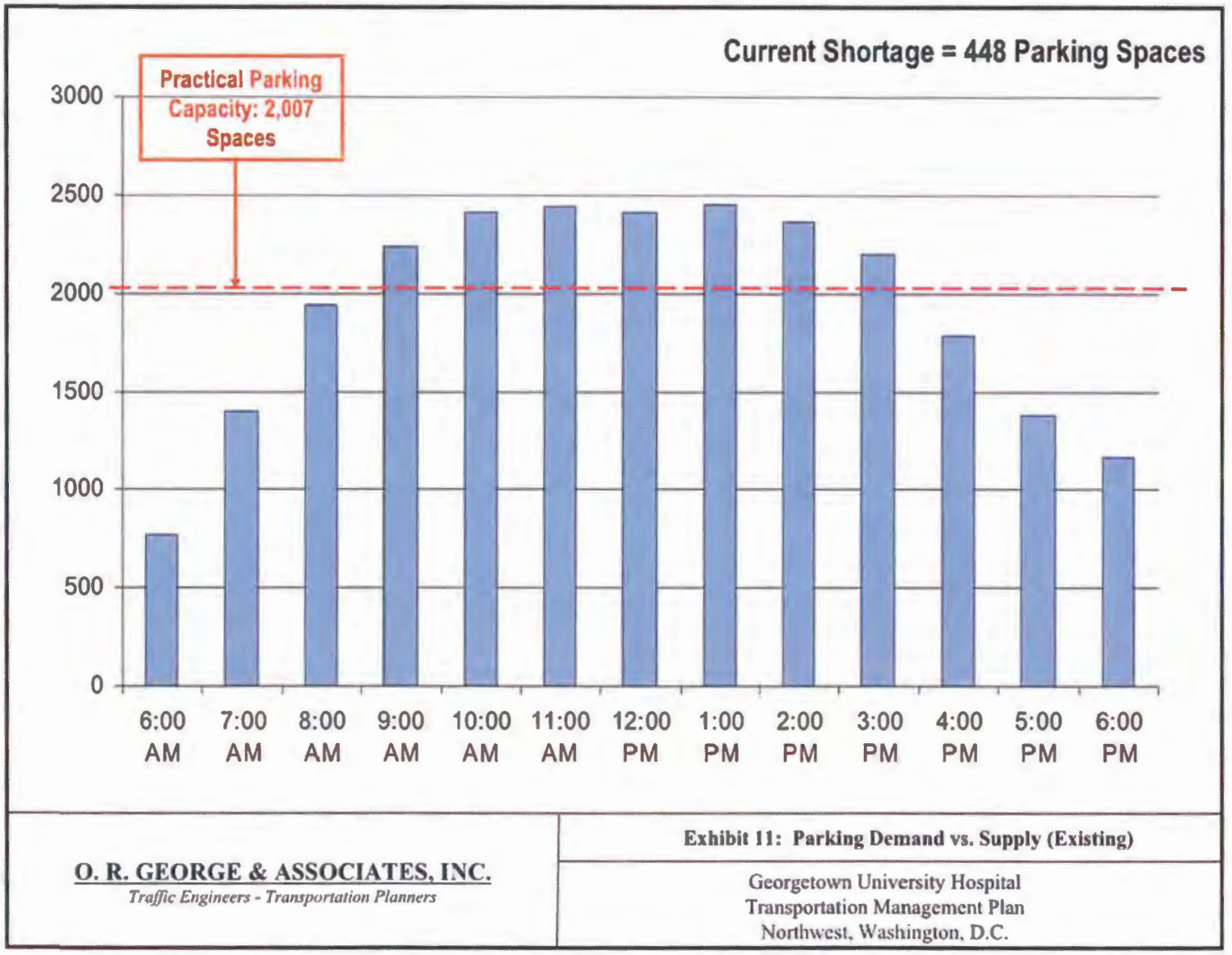


Figure 17: Hospital Parking Demand

Mode Choice Survey

The University conducted a mode choice survey of the campus population during the spring 2011 semester. The survey was performed electronically and asked respondents about their travel patterns on a specific day. There were over 2,900 respondents. Table 4 summarizes the results of the survey.

Table 4: Summary of Mode Choice Survey

	Automobile		Transit		Bike				
Mode Split Breakdown	*Drive Alone*	*Carpool, Drop-off & Taxi*	*GUTS (GUTS only or via other modes)*	*MetroBus*	*Bike*	*Capital Bikeshare*	**Walk**	**Telework**	**Other**
Overall Mode Choice	37.9%	5.0%	41.8%	6.9%	4.8%	0.3%	0.1%	0.8%	2.5%
Purpose on Campus									
Faculty/Staff	46.1%	6.9%	32.4%	7.2%	3.0%	0.2%	0.1%	1.3%	2.8%
Undergrad Student (off-campus)	18.8%	1.0%	56.4%	9.9%	10.9%	1.0%	0.0%	0.0%	2.0%
Graduate Student	21.4%	3.1%	59.5%	7.4%	6.4%	0.2%	0.0%	0.2%	1.9%
Affiliation									
University	35.4%	3.7%	44.0%	7.9%	5.1%	0.3%	0.0%	0.9%	2.7%
Medical Center	41.3%	6.7%	40.9%	4.3%	4.3%	0.2%	0.2%	0.2%	1.8%

The results of the mode choice survey show that GUTS has replaced driving alone as the primary mode choice for the campus population as a whole. No campus user-group has a drive alone mode choice over 50%.

Traffic and Circulation

Campus roadways are used by bicycles, shuttles, taxis, medical vehicles, shipping and receiving vehicles, facilities management vehicles, construction vehicles, and private automobiles. The volume and routing of vehicles are constrained by the parking cap, traffic gates that restrict north-south through traffic, the campus' narrow streets and high pedestrian volumes.

There are several locations and heavily used corridors where vehicular traffic and pedestrian flows intersect or overlap, such as Tondorf Drive, North Drive and along roadways adjacent to Kober Cogan. Improved vehicle routing and reducing the locations and corridors where vehicles and pedestrians overlap would improve conditions for both.

Site Access and Circulation

Access for the campus is provided by six gates located around campus. Primary access to the academic campus is provided along Canal Road on the south side of campus. Secondary access to the academic campus is provided on Prospect Street at the southeast corner of campus. Access to the GU Hospital is provided by four entrances along Reservoir Road on the north side of campus. Gates located on campus north-south roadways prevent passage through the campus. Drivers need to enter on the side of the campus on which they plan to park. Passenger drop-off and pick-up activity occurs throughout the campus. Figure 18 identifies campus traffic controls, the most commonly used locations for passenger drop-off and pick-up, and shipping and receiving facilities located throughout the campus.

Roadway Capacity Analysis

Gorove/Slade performed existing and future roadway capacity analyses as part of the campus planning process. The intersections included in the study area include those studied in previous Campus Plan updates with the addition of intersections along Canal Road (the Canal Gate being opened since the last Campus Plan update). Since the capacity analyses are highly technical and can contain many tables and graphics, they are detailed in a separate document, the *Technical Transportation Report*.

Car-Sharing

GU does not have car-sharing vehicles on-campus but there are several locations nearby with car-sharing provided by Zipcar. GUTS shuttles stop near the Zipcar vehicles provided nearby in Rosslyn. Zipcar is a private company that allows registered users to reserve cars for a minimum of 30 minutes or for longer periods up to several days. Car-sharing provides individual access to automobiles for trips made easier by car. Many universities have car-sharing programs because they reduce the number of students that bring cars to campus, which reduces the number of parking spaces that are needed. GU might benefit from having Zipcar or other car-sharing options location on-campus.

Figure 18: Campus Circulation & Traffic Controls