



UNIVERSITY *of* MARYLAND
BALTIMORE

UMB Parking and Transportation Services Master Plan Presentation



Master Plan Presentation Outline

- Scope & Methodology
- Key Findings
- Recommendations
- Conclusions

Scope & Methodology

The Parking & Transportation Services Master Plan was developed between April 2018 and August 2019. The consultant team worked closely with Parking & Transportation Services (PTS) and Facilities Management to identify transportation needs and to formulate recommendations. The consultants met with this working group monthly throughout the project timeframe.

This work was supplemented by a range of outreach and stakeholder interviews to identify parking, transit, and TDM usage patterns and needs. The data used was provided by the University, primarily in summer and fall of 2018.



Key Findings

University Shuttle System

The University Shuttle system provides good coverage of the University and its surrounding neighborhoods, but increasing operational costs in recent years have caused the system to regularly exceed its budget. Passengers, in particular students, have indicated the desire to retain the system and are committed to continuing to fund services. Considering passengers' wishes to keep the service, it was recommended that UMB should continue to operate at a rate similar to its current cost, and service should be reduced to meet budget limits. Specific system findings include:

- *Route 701 is the least productive route in the system*
- *The system's ridership significantly drops beginning in the 9:00 PM hour*
- *An analysis of passenger boarding data shows that the average peak passenger load on buses is approximately 21 individuals, meaning that buses are only about 60% full at their busiest*
- *Data collected in Spring 2018 show that route 703 buses tend to run late during the last leg of the route*
- *UMB's passenger profile shows staff, faculty, and affiliate trips account for 46% of total trips across the system, yet students currently fund 80% of system costs*

Transportation Demand Management

A key initial finding was the need for a clearly-defined vision and purpose for the Transportation Demand Management (TDM) program to guide future decisions. Findings consisted of three elements/assessments:

- *Geospatial Analysis*
 - *23% of the total students/staff live within a five-mile radius of campus, 2% within a quarter-mile*
- *Peer Institution Evaluation*
 - *UMB uses nine of the ten types of TDM strategies, (Previously offered a vanpool program, since discontinued). UMB has a comprehensive program that exceeds most of its peers.*
- *Financial Analysis*

UMB Shuttle	\$302.37	per passenger
EV Stations	\$50.44	per vehicle
Transient MTA Subsidy	\$26.46	per participant
Zipcar	\$20.00/hr.	
Carpool	\$14.38	per vehicle



Parking Operations - Technology

The current Parking Access Revenue Control Systems (PARCS) is reaching an advanced age where the cost of maintenance, repair, and replacement are expected to inflate dramatically. Lack of automated integration between the PARCS and T2 platform and other systems employed by PTS and UMB require substantial time and effort to manually manage and reconcile.

- *Neither the current PARCS system nor T2 offer all the functionality PTS desires. Estimated cost to replace current PARCS ranges between \$3.5M and \$5M depending on options chosen (2018 dollars).*
- *Current UMB PARCS does not include pay by cell, web validations, and Automated Parking Guidance Systems (APGS). In 2018, PTS began testing License Plate Recognition (LPR) in one garage and Automated Vehicle Identification (AVI) in two other garages. PTS has concluded LPR is best utilized for inventory purposes in lieu of financial transactions. PTS has also concluded that they will move forward with AVI in all garages.*



Parking Operations - Safety and Security

- *UMB facilities were comparable to peer facilities in terms of cleanliness and paint. UMB has superior signage and lighting scores and comparable security scores for the most part.*
- *Parking facility rovers have a fixed walking tour schedule which is easily predictable, reducing its effectiveness as a security measure.*
- *All parking facilities are equipped with CCTV cameras that focus/record all pedestrian points of access, elevator cabs, and entry/exit drive lanes. Plaza garage has additional cameras throughout the stairwells and drive-in lanes.*
- *All garage call boxes were tested and found to be functional.*

Parking Operations - Operations

Operating Contract – Due to Maryland State Procurement regulations for living wages, UMB minimum pay rates are 30% - 40% higher than the median and mean annual wages for comparable positions for contractor (Penn) personnel. UMB follows best practices with garage operations.

The contract uses broad language with regard to reporting requirements. For example, although UMB receives space counts hourly, it does not receive daily reports. Consultant found PTS to be detailed and thorough in required terms and conditions for evaluation and selection procedures.

- *All Penn Parking personnel were found to be professional and approachable. Current format of operations with a pay-in-lane attendant is labor-intensive and costly relative to a central cashier. There are 48 positions accounting for over 2,100 labor hours weekly, equating to over \$1.5M in expenses annually.*
- *PTS job descriptions were detailed, extensive and appropriate for an operation of UMB's size and complexity. Staff is knowledgeable, professional and proficient in their roles.*

Citations: UMB fines for minor violations are similar to those at peer institutions, but are significantly lower for more severe infractions. *Citations are issued by Public Safety.*

Maintenance: PTS meets or exceeds the standards in terms of tasks, clarity of instruction, and completeness.

- *Parking facilities are in good condition. Regular repair and maintenance compare favorably with industry best practices.*



Parking Operations - Pricing Structure

UMB has a universal parking rate structure for all facilities. This is not typical for medical and educational institutions, which normally utilize Demand Responsive Pricing strategies, based on proximity and relative value. However, due to the design of the UMB campus and the number of different institutions served, and their relative locations to UMB assets, instituting such a practice here would be extremely difficult and politically challenging.

- *In addition, rates charged for students, faculty, and staff are substantially lower than peer institutions. There appears to be some opportunity to adjust pricing or to revise rate structures in such a way to improve system income and to address operational challenges.*
- *UMB currently offers limited reserved parking, but does not charge a higher rate for these spaces.*

Parking Operations - Parking Space Allocation

Based upon a review of past parking studies and UMB's parking data, UMB does not currently face a parking capacity shortage. Parking on campus is easily accessible for those who choose to drive. UMB's Parking and Transportation Services is the majority provider of parking on the UMB campus, distributing parking supply among its constituents and the University of Maryland Medical Center (UMMC). One of the complaints heard is that the current terms of allocation are occasionally violated to accommodate the retention of particularly high-profile individuals joining one of the constituents, such as highly regarded physicians, acclaimed faculty, or executive staff members. For the most part, each of the constituents determines the assignment of their allocation of supply according to their own internal set of values and objectives.

Peer Studies:

- *Johns Hopkins University, Duke University, Kansas University, Boston University, the University of Chicago, the University of Cincinnati, and Vanderbilt University (all have a major academic and medical component in an urban setting somewhat similar to UMB):*
 - *Unlike UMB, parking and transportation services are handled by a different agency, and the academic and medical campuses are separate enough geographically that each academic campus has their own parking system independent of the affiliated medical campus. In each instance where parking is allocated to a particular user group, department, or institution, it is typically done for purposes of geography to ensure that parking is proximate to destination, with preference established for certain user groups.*
- *Virginia Commonwealth University (VCU), both academic and medical campuses:*
 - *Most employee permits are not restricted to a specific facility and work as a hunting license, allowing individuals to park in any facility or space specific to that permit type.*
- *It was concluded from the Peer Studies that there is no other campus quite like UMB in the dispersion and use of parking facilities.*

Parking Operations - Parking Space Allocation (cont'd)

There are 13,838 allocations against a total physical supply of 7,511 parking spaces. This is not unusual in a medical and academic campus.

The current allocation is as follows:

Affiliation	Total Allocation	Percentage
School of Medicine	4,000	35%
Carey School of Law	235	2%
School of Dentistry	299	3%
School of Pharmacy	175	2%
School of Nursing	173	1%
Graduate School*	-	0%
School of Social Work	120	1%
UMB Admin	763	7%
University Medical Center	1,510	13%
Faculty Physicians	117	1%
Pay Daily Employees	538	5%
Part Time Faculty	623	5%
Students	2,627	23%
Others	394	3%
Transients**	2,264	16%
Total Allocation	13,838	100%
Total Capacity all Garages	7,511	184%
* Allocated through other departments		
** Average daily demand-not allocated		



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Recommendations

University Shuttle System

The consultant team recommends the following actions as a result of its assessment:

Students clearly expressed a desire to maintain the shuttle system and fund it. It is recommended that UMB pursue several changes to continue shuttle service within budget.

- Explore partnering with the University of Maryland Medical Center (UMMC) for shuttle operations. In the event a partnership cannot be established with UMMC, UMB should continue operations with UMCP as operator, as they have been a strong partner.
- Service reductions will be necessary to bring the service within the available budget. A proposed package of service changes include:
 - Elimination of Route 701
 - Modification of Route 703 to serve BioPark and to address chronic delays
 - Discontinuing service before midnight
 - Reducing service after 9pm
 - Utilize smaller transit vehicles that more closely match ridership volume
- UMB should consider recalibration of the student contribution level to be proportional to their ridership, reducing their current level of contribution from 80% down to 54%.



University Shuttle System con't

Steps completed by PTS based on recommendations:

- PTS has terminated Route 701, reduced operating hours, and implemented additional late night routes for the SOL and SSW students
- PTS has procured its own shuttle contract and Reston Limo was awarded the contract

Steps being reviewed by PTS based on recommendations:

- Measures are being implemented to curb costs to the students by charging faculty and staff \$1.75 per ride

Additional step completed:

- Due to COVID and low campus populations, the shuttle has not run since March 2019
 - As of November 24, 2020, PTS has implemented a discounted Lyft program. This program allows up to 16 discounted (40% to a max of \$4) rides per month. This discounted program, is at no cost and is being funded by the administration



Transportation Demand Management

The consultant team recommends the following actions as a result of its assessment:

- A vision and purpose for PTS was developed during the course of the study, and now serves as guiding principles.
- Electric Vehicle (EV): Focus on increasing turnover. Stricter enforcement of a time-limit or introduction of a fee for charging EV vehicles
- Low Emissions Fuel Efficient (LEFE): These spaces are regularly full. Increase the supply until there is some availability.
- Carpool: The Carpool Zone spaces are regularly 95% full. Increase the supply until there is availability.
- Establish a monitoring program to regularly collect and analyze parking occupancy rates.
- Maintain the MTA pass program and subsidized rates as MTA pass rates increase.

Transportation Demand Management con't

Steps completed by PTS based on recommendations:

- Approximately 18 EV charging stations are being added
 - This project is on hold due to COVID limited spending
- Additional LEFE spaces have been added to the Pearl Street Garage

Steps being worked on by PTS based on recommendations:

- Working on document to submit to the PTSAC committee regarding benchmarking and recommendation on EV charging stations

Additional steps completed:

- MTA passes are now free to all eligible full time state employees
- CharmPass app available to all students as of December 2020



Parking Operations - Technology

The consultant team recommends the following actions as a result of its assessment:

- UMB initiate a design and procurement process to replace the existing PARCS equipment with a newer system that features:
 - Direct integration between the user registration system (currently T2) and the access control system
 - Automated reconciliation between accounts receivable systems and parking registration and access control systems.
 - Integration between the UMB IT system and user registration system to allow users to self-register for parking permits subject to administrative approval.
 - Automated data capture and/or photographic capture of credentials and other data supporting exception transactions to improve processing and reconciliation.
 - Pre-purchase of parking for special event attendees and use of bar-coded credentials for improved access control.
 - Both physical and web-enabled electronic validation features for transient parkers.
 - The ability to share data regarding facility occupancy with other applications designed to inform the user where available parking is currently located.
- Installation of an APGS package in the Plaza Garage to assist patients and visitors with finding available parking as they arrive.



Parking Operations – Technology con't

Steps completed by PTS based on recommendations:

- Consultant on board to begin the PARCS equipment replacement process and a draft of the RFP for a PARCS consultant for equipment specs is currently with SSAS
- Since the pilot program for the AVI project proved successful, PTS is implementing AVI in all additional garages

Parking Operations - Safety and Security

The consultant team recommends the following actions as a result of its assessment:

- Baltimore Grand Garage
 - Equipping the garage with a system which will allow transients to enter the facility after hours with the presentation of a valid parking ticket or other credentials on the Fayette Street side of the garage.
- Lexington Garage
 - Improve lighting along the North Pine Street facade for passing pedestrians by trimming treetops to allow for more light to fall on the sidewalk (this is a facilities issue)
 - Relocate emergency call boxes from central columns to locations out of traffic flow and closer to points of egress on each floor.
- Penn Street Garage
 - Install CCTV cameras in the Southwestern stair tower to provide coverage between the 4th floor and grade level.
 - Upgrade facility lighting from high pressure sodium (HPS) to energy efficient LED fixtures.
- Plaza Garage
 - Upgrade lighting to improve uniformity and brightness.
- Pratt Garage
 - Replace the solid door at the bottom of the stair tower exiting onto West Pratt St. with a door with a larger viewing pane to allow for more visibility from the street onto the landing.



Parking Operations - Safety and Security (Cont'd)

- Pratt Garage (cont'd)
 - Replace the doors off the northwest stair tower at grade level with doors with glass panes so exiting pedestrians can see if there is a vehicle present or other hazard
 - Install convex mirrors or CCTV cameras in recessed elevator lobbies so that pedestrians can see in the corners
 - Eliminate parking spaces right next to the stair tower doors to allow wider sight lines for pedestrians exiting the stair tower. This will result in a loss of 22 parking spaces.
 - Relocate emergency call boxes from central columns to locations out of traffic flow and closer to points of egress on each floor
 - Install fencing to restrict access to dead space on the lower level
- Saratoga Garage
 - Install convex mirrors or CCTV cameras in recessed elevator lobbies so that approaching pedestrians can see if there is someone in the corners
- All Garages
 - Amend the scheduling and routing of Rover tours to provide a more random path that will be less predictable. Instead of traversing the same path through the garage, such as from Tag 1 – 10, creating a route that goes from Tag 5 – 10 and then 5 – 1 or some variation of that irregularity will reduce the predictability of patrols.



Parking Operations - Safety and Security (Cont'd)

Steps completed by PTS based on recommendations:

- LED lighting fixtures have been installed in the Penn Garage
- Fencing has been added to the dead space on the lower level of Pratt Garage
- Public Safety provides random foot and mobile patrols in the garages to improve security
- Pratt doors have been upgraded as recommended

Steps being worked on by PTS based on recommendations:

- Call boxes are being addressed for upgrades or possible removal with Parking and Public Safety
- Plaza garage tested LED fixtures within the facility, however due to restraints caused by COVID, there are no immediate plans for a lamp conversion



Parking Operations - Operations

The consultant team recommends the following actions as a result of its assessment:

- It is in PTS' best interest to have Public Safety continue to issue citations. PTS should examine the citation process and fine structure to be more consistent with peer institutions
- Convert the existing parking operations to partially automated and central cashiered facilities. This conversion would allow UMB to operate its facility with reduced staffing. This change would occur as part of the purchase of the new PARCS equipment, and is estimated to generate sufficient cost savings to pay back the initial investment in about six years.
- Depending upon the selected PARCS system, and whether changes are made to the field staff, some reorganization of office staff may be appropriate.
- Perform a bi-annual condition analysis of all the garages.
- Consider revisions to the parking operations RFP as part of the next solicitation to bring certain sections in line with standard industry practice and UMB policies.
- Collect daily reports of facility occupancy at prescribed times throughout the day to provide a base line of utilization for each facility.

Parking Operations – Operations con't

Steps completed by PTS based on recommendations:

- A new parking operations RFP was implemented July 1, 2020, incorporating the recommended revisions and suggested edits, and issued

Parking Operations - Pricing Structure

The consultant team recommends the following actions as a result of its assessment:

- UMB should consider increasing parking costs for faculty and staff members by 10%, which would still place UMB in the mean for parking costs relative to peer institutions and the local market.
- UMB should consider increasing parking costs for students to bring the institution in closer alignment with the average of its peers. Resident student permit rates could be increased by as much as 20% over current pricing and still remain well below the average. We believe that a rate increase of 10% for commuter students would be tolerated while still keeping UMB highly competitive relative to the rates collected at peer institutions. The increase in costs would produce more revenue for PTS to invest in infrastructure, and will serve as incentive for students to evaluate their transportation selections relative to lower cost, more sustainable alternatives.
- Reserved parking: It is recommended that UMB begin charging for the privilege of assigning reserved parking spaces to offset potential losses in transient revenue and/or revenue from use by other permit holders when the space is unoccupied. At a minimum, the rate for reserved parking should be 150% of the cost of an unreserved permits in the same facility, in line with peer institutions and market pricing.
- UMB should consider increasing parking costs for event parking by 10%, which would still place UMB in the mean for parking costs relative to the local market.



Parking Operations - Pricing Structure con't

Steps completed by PTS based on recommendations:

- Implemented a public and patient rate increase in 2018

Steps being worked on by PTS based on recommendations:

- The recommendation of increasing parking costs for faculty, staff and student parking by 10%, which would still place UMB in the mean for parking costs relative to the local market is not being considered at this time
- Completing a document regarding increased fees for reserved parking recommendations for the PTSAC committee
- Developing a model for a revised pay daily program



Parking Operations - Parking Space Allocation

- The report examines typical approaches used in the industry to allocating and assigning parking spaces to constituencies in institutional settings, such as the identification of mandatory vs. discretionary parkers, and prescriptive vs. egalitarian assignment of spaces. There are a host of hybrid approaches as well. It also examines the practices of peer institutions.
- The historical UMB practice has been for PTS to negotiate with each constituent and UMB Administration on a facility by facility basis for both allocation of spaces and assignment of facility. This has caused a perception of unfairness among some constituencies.
- An alternative approach to allocation would propose to dedicate a fixed number of parking spaces, rather than permits or parking rights, to various constituents. Under this scheme:
 - PTS would set aside a fixed number of spaces for each constituent, then issue a pre-determined number of permits or rights against each set-aside
 - PTS would monitor use of each facility by the various constituent permit holders to ensure that each constituent did not exceed their allocation.
 - Much of this process can be automated with current state-of-the art Parking Access and Revenue Control Systems (PARCS) technology installed in gated facilities and the use of License Plate Recognition (LPR) technology when patrolling ungated facilities, requiring limited additional effort for PTS to support this scheme.



Parking Operations - Parking Space Allocation (Cont'd)

Within the current UMB framework, allocation falls under the purview of PTS while assignment is determined by each school. Given the current allocation scheme, which is based on issue of parking rights or permits to various constituents, the consultant team would propose establishing a fixed ratio of permits per driving population for each constituent where feasible, and using that ratio to adjust allocations as populations change among each constituent. Table 31 on the following slide provides the current permits allocated relative to constituent populations, with a current resulting allocation ratio for each constituent. Analysis of these ratios indicates that there are three constituencies that are currently underserved. These are the Schools of Pharmacy, Nursing and Social Work. The ratios for these schools range from 2.66 to 4.26, whereas the ratios for all other constituencies are below 2.00.

Parking Operations - Parking Space Allocation (Cont'd)

Table 31

Constituent	Allocated Permits	Estimated Faculty ¹	Estimated Staff ³	Estimated Enrollment	Total Population	Allocation Ratio	Population Share	Allocation Share
School of Medicine	4,000	1,565	3,522	N/A ⁷	5,087	1.27	36%	48%
Carey School of Law	235	103	209	N/A ⁷	312	1.33	2%	3%
School of Dentistry	299	152	299	N/A ⁷	451	1.51	3%	4%
School of Pharmacy	175	86	379	N/A ⁷	465	2.66	3%	2%
School of Nursing	173	203	410	N/A ⁷	613	3.54	4%	2%
School of Social Work	120	131	380	N/A ⁷	511	4.26	4%	1%
UMB Administration ^{2,4}	763	20	1,240	N/A	1,260	1.65	9%	9%
UMMS	1,510	N/A ⁵	N/A ⁵	N/A	N/A ⁵	N/A ⁵	N/A ⁵	N/A ⁵
Faculty Physicians	117	N/A ⁶	N/A ⁶	N/A	N/A ⁶	N/A ⁶	N/A ⁶	N/A ⁶
Pay Daily Employees	538	N/A ⁶	N/A ⁶	N/A	N/A ⁶	N/A ⁶	N/A ⁶	N/A ⁶
Part-Time Faculty	623	N/A ⁶	N/A ⁶	N/A	N/A ⁶	N/A ⁶	N/A ⁶	N/A ⁶
Students	2,627	N/A ⁷	N/A ⁷	5,432	5,432	2.07	38%	31%
Others	394	N/A ⁸	N/A ⁸	N/A ⁸	N/A ⁸	N/A ⁸	N/A ⁸	N/A ⁸
Transients	2,264	N/A ⁹	N/A ⁹	N/A ⁹	N/A ⁹	N/A ⁹	N/A ⁹	N/A ⁹
TOTAL	13,838	2,260	6,439	5,432	14,131	1.02	100%	100%

Notes:

1. Full-Time Equivalent (FTE) Faculty as of Fall 2019 per UMB Office of Institutional Effectiveness, Strategic Planning, and Assessment (OIESPA)
2. Faculty FTE's from the Graduate School, Academic Affairs, and the Office of the President.
3. Full-Time Equivalent (FTE) Employees as of Fall 2019 per UMB OIESPA
4. Employee FTE's from the Graduate School, Academic Affairs, Operations & Planning, Administration & Finance, Center for Information Technology, External Relations, Philanthropy, Research & Development, and the Office of the President.
5. Information on University of Maryland Medical System faculty and staff specific to the UMB campus unavailable.
6. Population information not provided.
7. Enrollment data per UMB OIESPA for fall 2019 for students enrolled in Baltimore campus programs.
8. No data provided on actual typical number of parkers per permits issued.
9. Transient allocation based on average number of daily transients per facility and does not reflect number of transients parked at any given time.



Parking Operations - Parking Space Allocation (Cont'd)

It is recommended that PTS begin moving toward a 'population based' allocation model that pledges new supply as it comes online according to the relative share of population each constituent represents. Table 34 on the following slide provides a new Target Allocation Ratio for the Schools of Pharmacy, Nursing and Social Work. These new target ratios were developed considering historical demand by each constituent, and are limited by the anticipated availability of additional spaces. If more spaces become available, these targets should be adjusted downward as needed to satisfy demand. One possible approach to making more spaces available within the current supply of spaces for those underserved constituents would be to reallocate School of Medicine spaces as they become available through attrition. This would gradually increase the allocation ratio for the School of Medicine to come more into line with the other schools.



Parking Operations - Parking Space Allocation (Cont'd)

Table 34 Recommended Allocation Adjustments

Constituent	Current Population	Current # of Permits	Current Allocation Ratio	Target Allocation Ratio	Target # of Permits	Net Change
School of Pharmacy	465	175	2.66	2.10	221	46
School of Nursing	613	173	3.54	2.94	209	36
School of Social Work	511	120	4.26	3.80	134	14

Note: The resulting adjusted Allocation Ratios for these three constituents are shown in blue, along with the associated impacts. Therefore, the consultant team recommends that as new spaces become available, they be allocated to these three constituents until these new target Allocation Ratios are achieved.



Parking Operations - Parking Space Allocation (Cont'd)

Regarding assignment of parking facilities to constituents, the study does not address this. Given the complexity of the mix of constituencies within the UMB, FPI, and UMMC community, and locations of the parking facilities, this is an extremely complicated situation that is virtually impossible to comprehend and model. A method of assignment has evolved over many years whereby the Director of PTS continues to assess the needs of each constituency and match available spaces and locations to best suit the needs of the parking program, including financial performance. This has proven to work effectively, and no recommendations for improvement or revision to this approach have been provided. Table 30 in the following slide provides the current allocation and assignment of each parking facility by constituency, for information.



Parking Operations - Parking Space Allocation (Cont'd)

Steps completed by PTS based on recommendations:

- PTS reached out to all schools and departs in June 2019 asking for specific parking information as it was related to future needs
- Meetings with each school's parking liaison was held October – December 2019
- Information was reviewed and finalized
- Jan- Feb 2020 allocations were adjusted based on need

Steps being worked on by PTS based on recommendations:

- Allocations have not been adjusted to reflect the parking study due to COVID

Parking Operations - Parking Space Allocation (Cont'd)

Table 30

Facility	School of Medicine	Carey School of Law	School of Dentistry	School of Pharmacy	School of Nursing	School of Social Work	UMB Admin.	University Medical Center	Faculty Physicians	Pay Daily Employees	Part Time Faculty	Students	Others	Transients	Total Allocation	Total Capacity
Baltimore Grand	366	121	2	2		57	35	335	8			31	87	495	1,539	989
Lexington	177		14			2	49		1			2,121	25	241	2,630	803
Peaf	339	51	187	54			78	50	1		623		71	288	1,742	739
Penn Street Plaza	544	4	1	25	131		86	180	1				104	297	1,373	975
Pratt	220	3				10	13	32	4				23	366	671	534
Pratt	1,455		1	4	33		20	640					24	212	2,389	1,001
Saratoga Street	297	16	25	64	7	4	249	250	1	538			26	365	1,842	919
BioPark Garage	143			1			36		1						181	195
Redwood Garage	79					13	2		73						167	190
Lexington Market	231	12	69	14	1	34	99	22	27			175	1		685	570
Market Center												300			300	300
Medical Center Garage	54														54	50
Surface Lots	95	28		11	1		96	1					33		265	246
TOTALS	4,000	235	299	175	173	120	763	1,510	117	538	623	2,627	394	2,264	13,838	7,511

Conclusions

Based upon a review of past parking studies and UMB's parking data. UMB does not currently face a parking capacity shortage. Though the parking experience can be supplemented through technological enhancements and safety measures, parking on campus is easily accessible for those who choose to drive.

- The UMB shuttle, while appreciated and regularly utilized by a segment of the UMB population, currently does not generate sufficient income to be self sustaining. If the shuttle program is to be retained, recommendations have been provided to increase revenue and cut costs, including elimination or modifications of underused routes, partnering with UMMC, reduce bus size, and adjust the funding model.
- TDM efforts support long-term University goals and allow for choice of access, helping to maintain parking availability, but a short-term expansion of the programs is not required. Specific recommendations include better management of the EV charging program, addition of spaces for LEFE and carpool programs, monitor space occupancy rates and subsidize the MTA pass program.
- Within Operations, UMB should prepare to update its current PARCS system, allowing for the incorporation of an improved feature set and to streamline the customer payment process. This would free up booth staff to provide additional patrols or other direct customer service support. In addition, an APGS is recommended for the Plaza Garage to assist patients and visitors in finding available spaces.
- The existing safety and security procedures and infrastructure were found to meet, if not exceed, most peer and industry operations and standards. Some individual improvements in facilities and or procedures were identified to enhance the current user experience.



Conclusions (con't)

- Current operations and maintenance procedures are generally good and in-line with industry standards. A review of staffing identified the potential to reassign several field personnel. This would provide an enhanced customer experience as well as provide noticeable cost-savings, paying for equipment upgrades in just over six years. Some adjustments of the office staff to support this effort and ongoing maintenance efforts are suggested.
- While the garages were generally observed to be in good condition, ongoing maintenance and evaluation is important, particularly of older facilities, including Baltimore Grand and Pratt Street Garages.
- Permit pricing is generally in-line with the local market and peer institutions, though a small increase in event and permit fees would be warranted. It is also recommended that reserved parking be addressed and priced appropriately,
- While a range of parking allocation models exists, the current model seems to fit the needs of UMB well. Slight adjustments are recommended, utilizing future increases in parking inventory to reduce the current allocation ratios of three schools who are currently underserved to new target values.
- The current approach to assignment of parking facilities to constituencies is complex and requires discretionary decision making at the highest levels. The system works effectively and requires no adjustment.



Glossary of terms

- EV – Electric Vehicle
- LEFE – Low Emission Fuel Efficient
- T2 – Parking permit system
- Web Validations – online access to for parking validation
- ZipCar – Independently owned vehicle for rental use