

# Bethesda Parking Lot District (PLD) Parking Demand Study

April 9, 2025| **Final Report**

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## Executive Summary

This report summarizes trends in the availability and usage of parking options in the Bethesda Parking Lot District (PLD), emphasizing sustained changes in parking supply and demand following the COVID-19 pandemic. The findings from this study will be used to recommend future parking management strategies which best utilize existing resources to meet shifts in users' parking behaviors and needs.

This study only evaluates parking facilities which are accessible to the public, including both public and privately-owned facilities. Parking supply in the Bethesda PLD consists approximately of:

- 700 on-street public parking spaces
- 7,000 public parking spaces in County lots and garages
- 3,500 privately owned parking spaces accessible to the public.

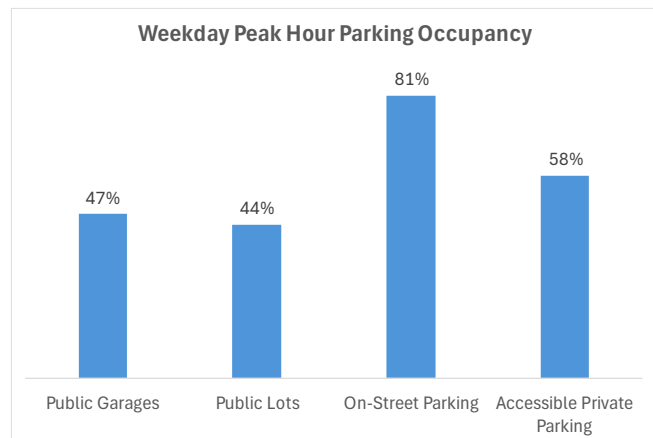
Publicly owned facilities represent about 70% of the total supply. Public parking facilities tend to offer cheaper hourly rates than private facilities, but select private facilities offer discounted monthly parking permits which undercut these public rates.

### Parking Occupancy in Fall 2024

As suggested by systemwide occupancy rates, the greatest weekday parking demand occurs at 12:00 PM. (45% parking occupancy), and the greatest weekend parking demand occurs at 2:00 PM (47% parking occupancy). Between 11:00 AM and 7:00 PM, weekend occupancy rates are more consistent than weekday occupancy rates.

On weekdays, on-street parking occupancy (81%) is double that of public garages (42%) or lots (44%).

Due in part to its greater variety of restaurants and retail storefronts, the portion of the PLD north of Old Georgetown Road sees higher parking occupancy than the southern portion. This geographic variation in parking demand is especially true for on-street parking and is heightened on weekends. In the northern portion of the PLD, public parking occupancy rates exceed 100% occupancy for multiple blocks on both weekdays and weekends. In the southern portion of the PLD, public parking occupancy rates are less than 40% for multiple blocks on both weekdays and weekends.



Overall, public parking garages are well utilized, with an average occupancy of over 50%. Utilization of public lots increases by 22% from the typical weekday to the typical weekend day, with select lots exceeding 100% occupancy at weekend peak hours. During the Midday peak period, the frequency of unloading vehicles can block parking lots and garages, posing a disruption for drivers planning to leave their spaces.

It is important to note that the data collected as part of this study was conducted in Fall 2024, which did not account for the increase in federal workers returning to office in early 2025. Thus, the data collected does not account for a possible increase in demand, particularly at Garage 49 due to its proximity to the Metro.

## Trends in Parking Turnover

While the number of parking customers has returned to near pre-pandemic levels, prolonged parking occupancy rates have not rebounded as resiliently. Following national trip generation trends, parking customers are more likely to park for shorter durations, arrive and depart earlier on weekdays, and concentrate trips on mid-week weekdays as opposed to Mondays and Fridays. As a result, parking turnover rates have increased. Data collection showed that:

- On weekdays, 98% of users park in on-street spaces for fewer than 30 minutes
- In parking garages, approximately 65% of weekday drivers and 75% of weekend drivers occupy their parking spaces for less than two hours

The greatest demand is for on-street parking spaces rather than in lots or garages, for short-term parking rather than full-day durations, and towards the north of the PLD rather than in the south. As commuting patterns begin rebounding to pre-pandemic norms, occupancy rates will continue to increase in these high-demand options, especially during weekday working hours.

Overall, maintaining high turnover among on-street parking spaces and directing other parkers to off-street facilities will continue to be critical to parking operations within the Bethesda PLD.

## Land Use Based Parking Demand in the PLD

In addition to analyzing existing parking utilization, this study also analyzed future potential parking demand based on land use. The relationship between land use and parking demand results in a parking ratio that can be used to predict future demand based on changes to land use type or quantity. Existing land use is summarized by office, retail, mixed-use, industrial, and ‘other’ as primary land uses categories in County parcel data. Parking ratios associated with each land use category were used to project future parking demand based on changes to land use within the PLD.



In the existing land use-based demand model, there is a system-wide surplus of approximately 5,500 parking spaces during the weekday and 7,000 spaces during the weekend. At the block level, parking shortages exist, but parking supply is adequately provided in adjacent blocks. In the future condition, the parking surplus decreases slightly: 4,500 parking spaces during the weekday and 6,300 spaces during the weekend, yet the overall surplus remains adequate.

Based on these analyses, additional public parking is not necessary. Strategic wayfinding and signage can help address block specific deficits and guide parking patrons to available parking in neighboring blocks.

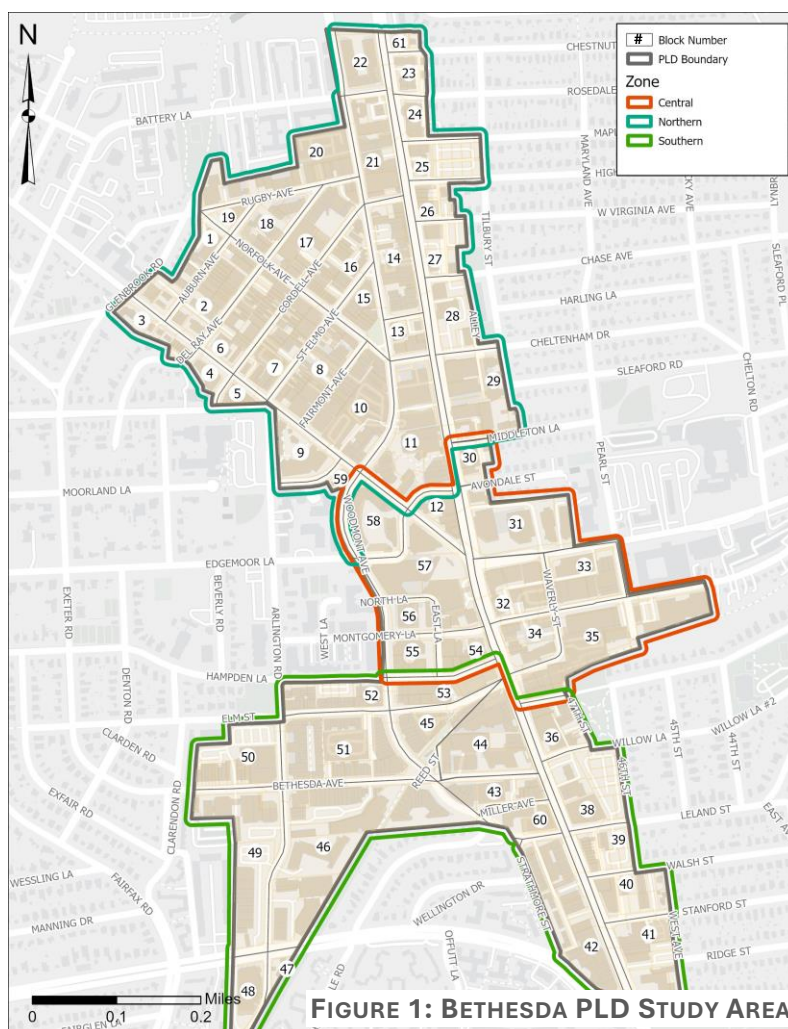
# 1 Introduction

Montgomery County's Division of Parking (the County) completes a comprehensive parking supply and demand study for each Parking Lot District (PLD) on a regular basis to ensure the adequacy of the system to meet parking demand in the area. The most recent of these studies for the entire Bethesda PLD occurred in Fall 2017. In 2022, the County assessed a subset of the Bethesda PLD, with a specific focus on the impact of the removal of surface Lots 10 and Lot 24 from the parking supply.

This study will seek to assess the continued impacts of the COVID-19 pandemic on parking behavior throughout the PLD. The County has indicated that while transactions are nearing pre-pandemic levels, occupancy has not yet reset, potentially indicating shorter durations of parked vehicles and more overall availability. Through a robust data collection and analysis effort and a review of peer jurisdictions and parking trends around the Country, this study identifies post-COVID parking trends and apply them to develop strategies for future parking management.

Given the dynamic state of development projects within the Bethesda PLD, the County is prioritizing a full Bethesda PLD Parking Supply and Demand study to determine the adequacy of parking supply and operation in its current state and future condition.

The study area for this parking supply and demand study, as illustrated in **Figure 1**, is bounded by Chestnut Street and Bradley Boulevard to the north and south, Pearl Street to the east, and Clarendon Road to the west. The Division of Parking Management currently employs a block numbering system for the blocks located within the PLD. The same block numbering system was used in this study and is consistent with the two most recent parking studies prepared for the Bethesda PLD (dated October 2017 by MCV Associates, Inc. and DESMAN) and Bethesda Lot 10 and 24 (dated March 2022 by Kimley Horn).



## 2 Existing Parking Conditions

Phase I of the study included an analysis of the existing parking supply and demand during a typical weekday and a typical Saturday. Fieldwork was conducted to collect both qualitative and quantitative data for the analysis of the PLD.

### 2.1 Data Collection Methodology

Parking facilities within the study area were categorized within the following three categories:

- **Public:** owned by the County
- **Accessible-Private:** owned by private sector, but open to the public
- **Restricted-Private:** owned by private sector for restricted commercial use (not considered in this study)

The study team conducted fieldwork to collect **public** parking supply and occupancy counts on the following dates:

- Tuesday, November 12, 2024 between 11:00 AM and 4:00 PM
- Tuesday, November 12, 2024 between 10:00 AM and 7:00 PM
- Saturday, November 16, 2024 between 11:00 AM and 8:00 PM

The study team also conducted fieldwork to collect **accessible-private** parking supply and occupancy counts on the following dates:

- Tuesday, December 3, 2024 between 11:00 AM and 1:00 PM
- Saturday, December 7, 2024 between 6:00 PM and 8:00 PM

The data collection verified facility location and categorization used throughout the analysis.

#### 2.1.1 Public Parking Supply Categories

Parking supply counts were broken out into the following categories, as illustrated in **Table 1**. A full list of the parking type categories can be found attached to this report in **Appendix A**. Vehicles illegally parked in the no-parking or hatched zones within off-street and on-street facilities were included in occupancy counts. Additionally, segments that were under construction but still had vehicles parked along them were included in the occupancy count.

**TABLE 1: SUMMARY OF PARKING TYPE CATEGORIES**

On-Street Parking Types	Off-Street Parking Types
Parking Permit Only	Regular
Metered Parking	Handicap
No Standing Anytime	Metered Parking
No Parking Except Carshare Vehicles	Electric Vehicle
Under Construction	Bicycle
No Parking Anytime	Motorcycle
Curbside Pick-up zone 30min Limit parking	Roped Off

2.1.2 Private Parking Supply Categories

When evaluating occupancy and inventory for off-street accessible-private parking; reserved parking, motorcycle parking, and bicycle parking spots were not included. Note the parking supply variations between weekday and weekend counts due to construction equipment and traffic cones placed in parking spots during the two fieldwork observations. Additionally, some of the accessible-private parking facilities were closed during the weekend observations.

2.2 Parking Supply and Peak Hour Occupancy

2.2.1 Parking Supply

As shown in the figure below, **Figure 2**, almost 70% of publicly available parking facilities within the Bethesda PLD are publicly owned and operated. Public parking facilities consist of multi-level parking garages, surface parking lots, and on-street parking. Almost all accessible-private parking locations within the study area consist of multi-level parking garages. Based on a 2017 study, accessible-private parking appears to have decreased over the past eight years. The supply for each parking type is shown in **Table 2**.

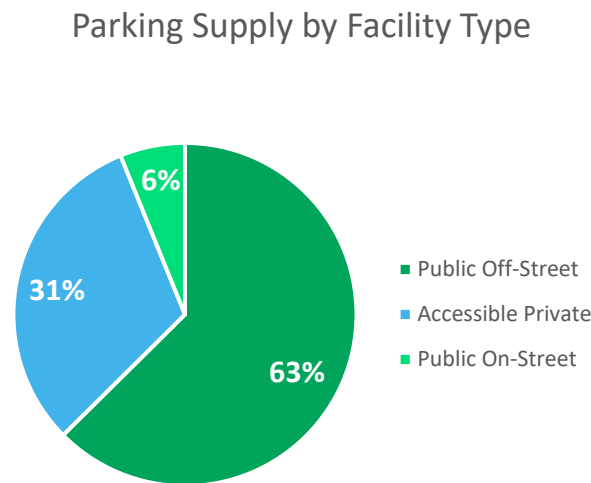


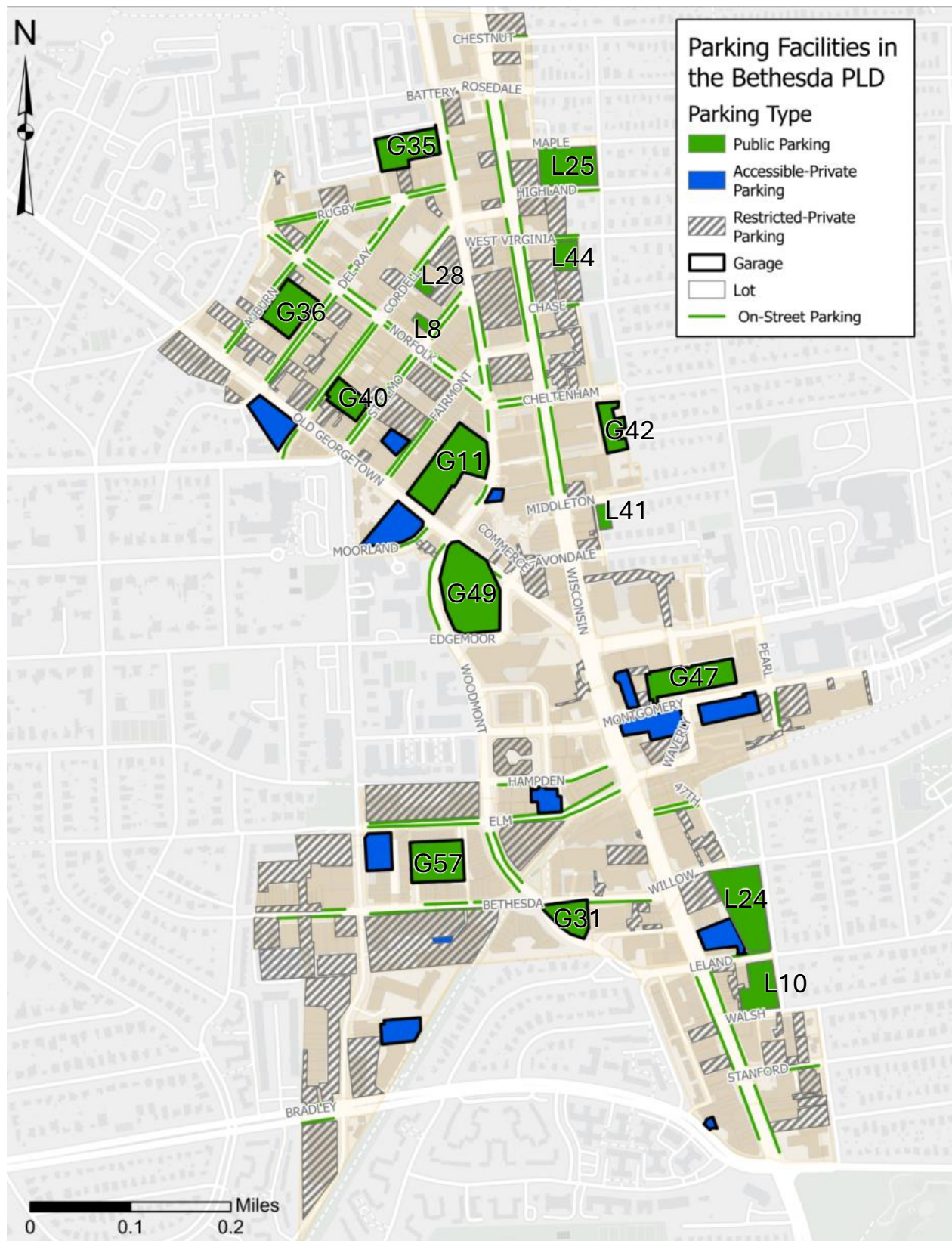
TABLE 2: INVENTORY OF PARKING BY CATEGORY TYPE

Parking Type	Count of Facilities	Parking Supply
Public	16	7,544
Accessible-Private	14	3,436
Restricted-Private	89	N/A

FIGURE 2: COUNT OF PARKING FACILITIES IN THE BETHESDA PLD

Within the study area, there are a total of 673 on-street parking spaces and 6,871 parking spaces in County lots and garages. There are also 3,436 accessible-private parking spaces. The number of parking spaces in restricted-private facilities was not collected as a part of this study. **Figure 3** depicts all parking facilities in the study area.





### 2.2.1.1 Supply Verification and Cost Comparison

Online sources supplemented in- field data collection to identify parking rates and posted supply. The study team reviewed the following sources:

- Parkopedia for private parking
- MCDOT Website for public parking
- Nearmap for the latest aerial imagery and Google Street View

From these sources, the stated supply and hourly rates for parking in those facilities were documented in **Appendix B**. Public and private-accessible parking facility rates are shown in **Table 3**. Overall, private-accessible parking facilities have higher parking rates than public parking facilities. While public parking hourly rates are more cost competitive, some private facilities offer monthly parking permits at a discount, ranging from \$20 - \$70 per month.

**TABLE 3: COST COMPARISON SUMMARY BY PARKING FACILITY OPERATOR**

Operator	Parking Rate/Hour
Montgomery County	\$1.50 - \$2.00
Colonial Parking	\$1.95 - \$6.00
Monument Parking	\$2.50 - \$6.00
Imperial Parking	\$4.00
ABM Parking	\$4.00
LAZ Parking Limited	\$4.38
SP Plus Corporation	\$5.00
Atlantic	\$6.00

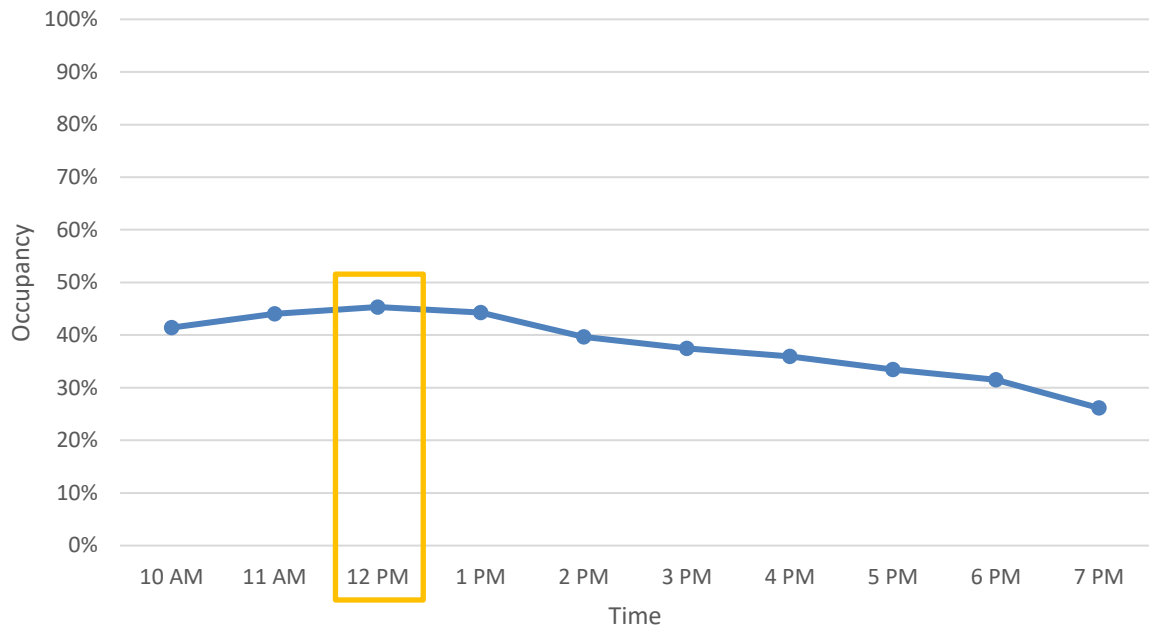
### 2.2.2 Parking Occupancy

Kimley-Horn in partnership with NDS staff collected occupancy data at public and accessible-private parking facilities and on-street parking within the study area. The purposes of this data collection effort were to establish the current “typical” parking demand (occupancy and utilization percentages) for the various facilities within the study area and to identify the peak periods of parking demand. The data is also used to develop land use-based parking demand ratios (as discussed in subsequent sections of this report).

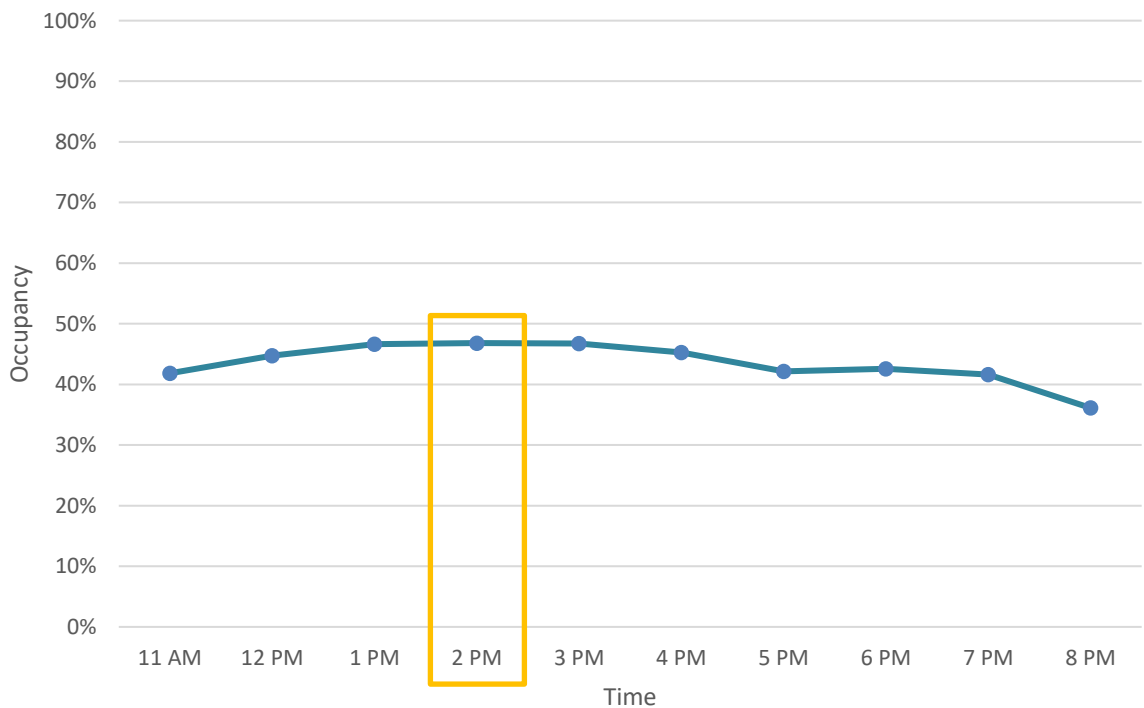
It is important to note that the data collected as part of this study was conducted in Fall 2024, which did not account for the increase in federal workers returning to office in early 2025. Thus, the data collected does not account for a possible increase in demand, particularly at Garage 49 due to its proximity to the Metro.

#### 2.2.2.1 Peak Hour Identification

Analysis of fieldwork data indicates that the highest weekday parking demand occurs at 12:00p.m., and the highest weekend parking demand occurs at 2:00p.m., as illustrated in **Figure 4** and **Figure 5**. Throughout the analysis, peak parking occupancy during these time periods are utilized to estimate parking demand.



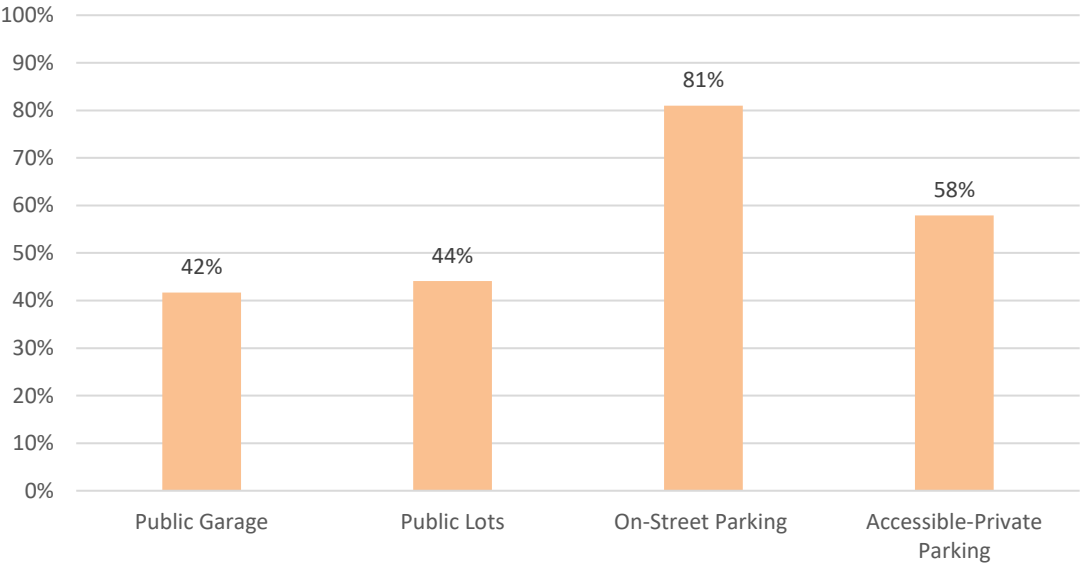
**FIGURE 4: OVERALL SYSTEM OCCUPANCY DURING THE WEEKDAY**



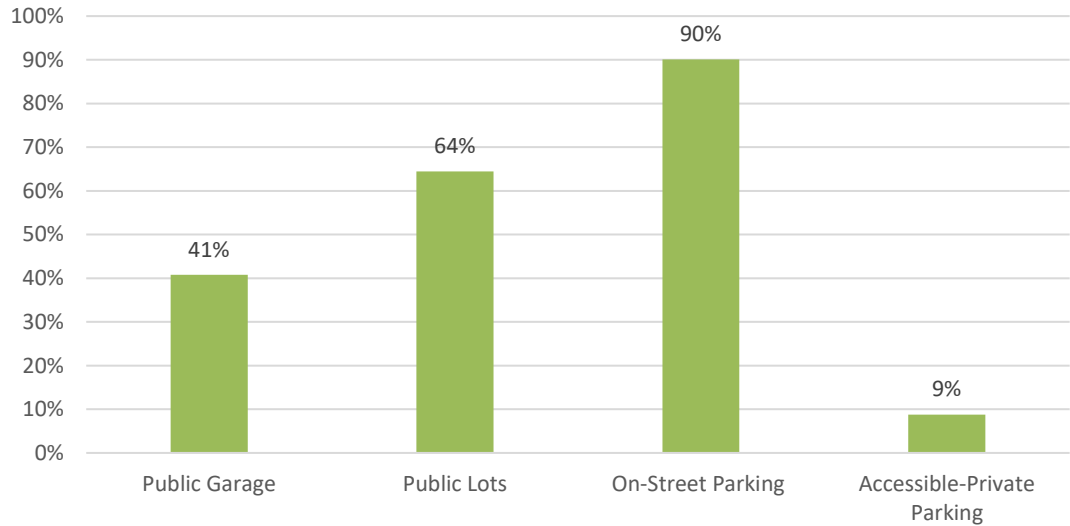
**FIGURE 5: OVERALL SYSTEM OCCUPANCY DURING THE WEEKEND**

During both the typical weekday and typical weekend day, on-street parking was over 80% occupied. This is likely due pick-up and drop-off activity generated by the variety of restaurants and retail stores within the study area. On a typical weekday, accessible-private parking facilities are the second

most utilized, but the least utilized on a typical weekend day as shown in **Figure 6** and **Figure 7**. Note that some privately owned facilities are not open on weekends which may account for the low parking occupancy. Utilization of public lots increased by 22% from the typical weekday to the typical weekend day.



**FIGURE 6: WEEKDAY OCCUPANCY WITHIN THE BETHESDA PLD AT 12:00 PM**



**FIGURE 7: WEEKEND OCCUPANCY WITHIN THE BETHESDA PLD AT 2:00 PM**

2.2.2.2 Off-Street Parking Peak Hour Occupancy

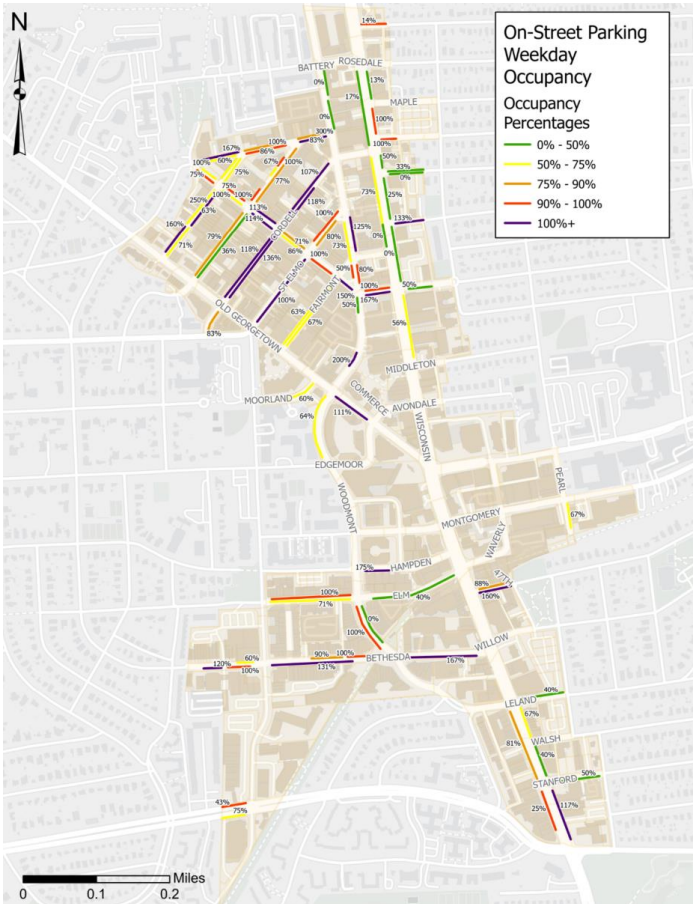
Weekday parking demand by off-street facility is illustrated in **Figure 8**. As shown, half of the public facilities have occupancy percentages less than 50%. The smaller, private-accessible parking



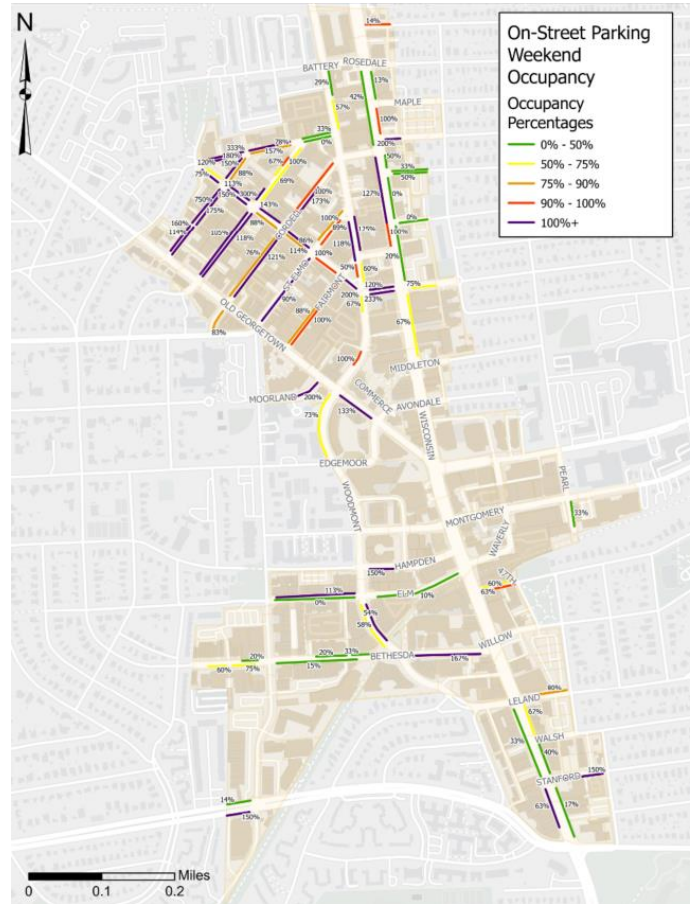


Woodmont Avenue in the southern zone. A majority of occupancy percentages in the southern zone exceeded 50%, with Bethesda Row having three segments with over 100% occupancy.

Weekend parking demand by on-street facility is illustrated in **Figure 11**. As shown, the northern zone had higher occupancy percentages than the typical weekday. Although, the southern zone had more segments in it with occupancy percentages less than 50% compared to the weekday analysis.



**FIGURE 10: WEEKDAY ON-STREET PARKING OCCUPANCY DURING PEAK HOUR (12 PM)**



**FIGURE 11: WEEKEND ON-STREET PARKING OCCUPANCY DURING PEAK HOUR (2 PM)**



### 2.2.2.4 Parking Occupancy by Block

Aggregating all parking supply and occupancy by block illustrates areas within the PLD where parkers may experience greater difficulty in finding a space, as shown in **Figure 12** and **Figure 13**. Overall, many blocks are 50% parking occupancy or less and those that have less availability have parking supply accessible in adjacent blocks.

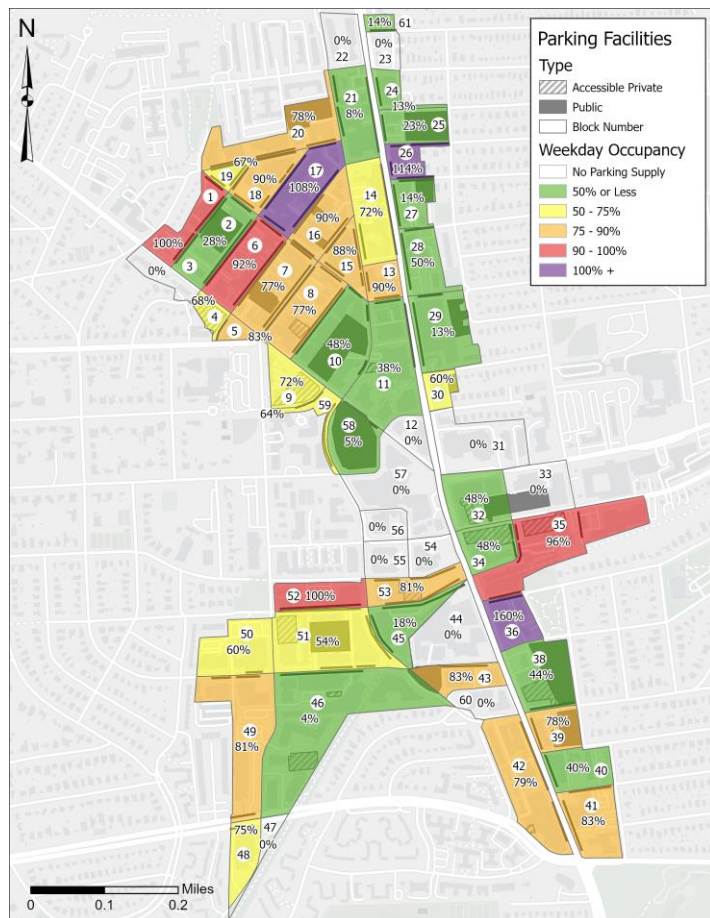


FIGURE 12: WEEKDAY PARKING OCCUPANCY

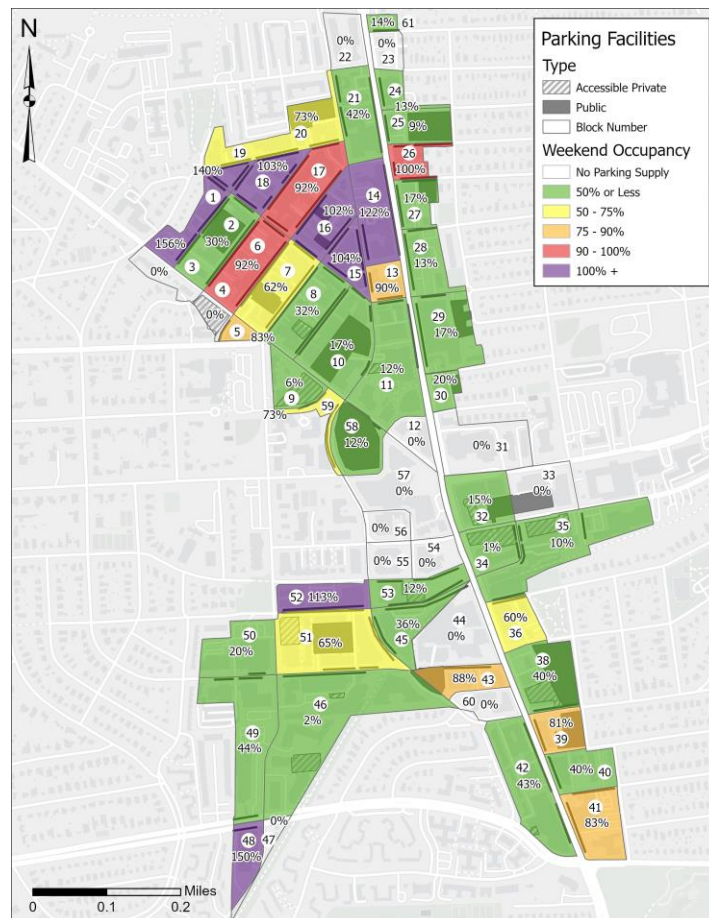


FIGURE 13: WEEKEND PARKING OCCUPANCY

## 2.3 Parking Turnover and Duration of Stay

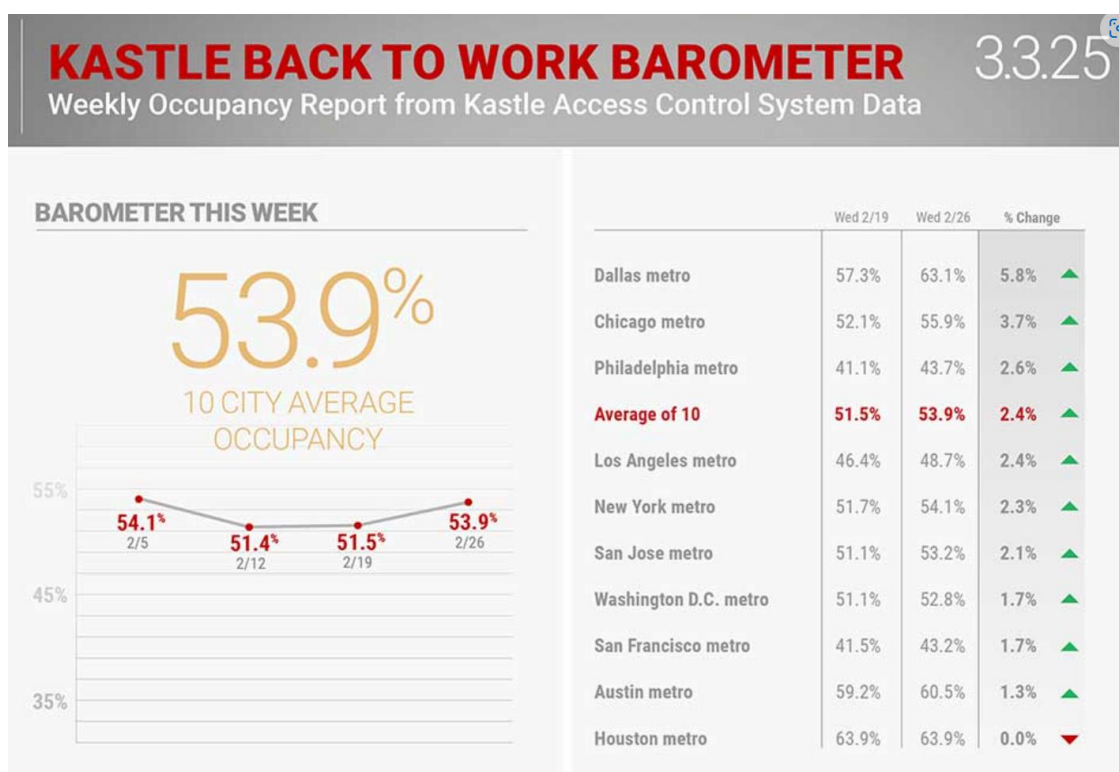
### 2.3.1.1 Broader Context and National Parking Trends

Following the COVID-19 pandemic, the introduction of flexible work schedules and locations have modified the days of the week, times of day, and hourly duration for which vehicular commuters seek parking options.

Universities can serve as a microcosm for broader parking trends. At Stanford University, an increase of staff with remote and hybrid schedules has generated more use of hourly and daily parking options by commuters than monthly or annual permits. The average daily duration of parking has also shortened, as commuters tend to arrive later and leave earlier than their pre-pandemic schedule. At the University of Rochester, pre-pandemic peak parking occupancy rates occurred at 11:00am, and

post-pandemic peak parking occupancy rates have shifted to 3:00pm, suggesting that commuters are entering and leaving later in the workday.

Kastle, a national card access company, collects weekly data on when workers are entering and leaving their offices. Trends indicate that Monday and Friday office access is lower than pre-pandemic rates, but midweek (i.e., Tuesday through Thursday) access has rebounded to its pre-pandemic rates. **Figure 14** presents average office occupancy rates for the ten of the largest metropolitan areas in the country.



**FIGURE 14: KASTLE RETURN-TO-OFFICE TRENDS BY METROPOLITAN AREA, WEEK OF MARCH 3, 2025**

While this office access data reveal that the Washington, D.C. metropolitan area lags behind other cities' office occupancy rates, recent shifts in return-to-office orders for federal workers--and, increasingly, in the private sector as well--suggest that in-person commutes rates may soon begin to rebound closer to pre-pandemic levels. Furthermore, the Commercial Real Estate Development Association observed that, as of 2022, suburban office occupancy rates have exceeded downtown office occupancy rates; this trend suggests that office occupancy rates in the Bethesda PLD may outperform the Washington, D.C. market as a whole.

### 2.3.1.2 Study Area Data Collection

To better understand current parking behavior in the Bethesda PLD itself, three garages and three sets of on-street parking segments were selected for the turnover and duration of stay analysis. The garages and streets were chosen in coordination with the county as representative facilities and are shown in **Figure 15**.



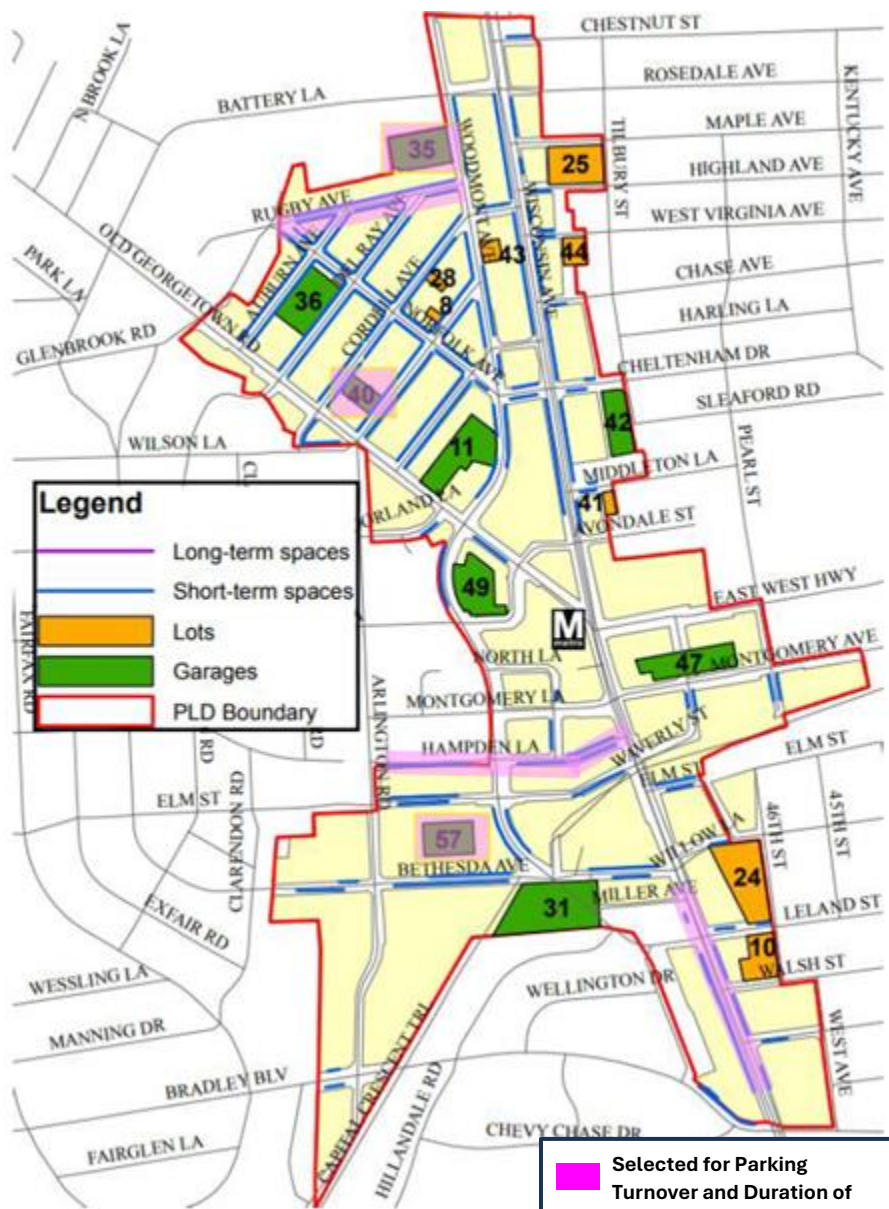


FIGURE 15: ANNOTATED STUDY AREA MAP

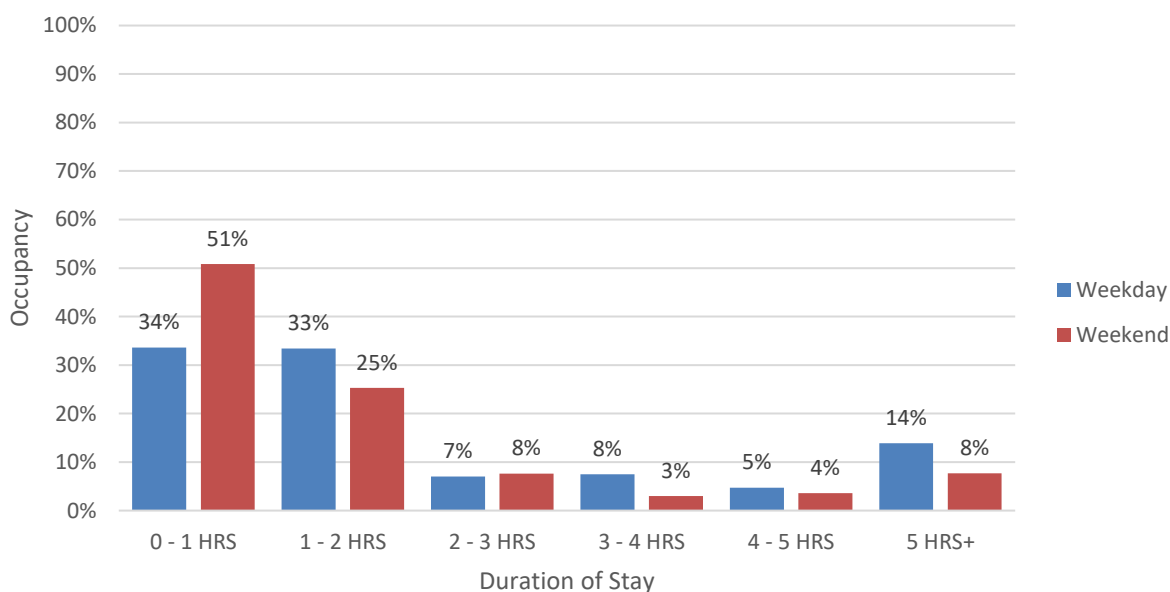
Parking turnover refers to the number of unique vehicles that used a set number of spaces. For example, if there is one curb space available and six unique plates are observed using it, the turnover would be  $(6/1)$  or 6.00. If only one unique plate is observed consistently using the same curb space, turnover would be  $(1/1)$  or 1.00. Hence, the larger the turnover ratio is, the more well utilized the space.

Parking duration refers to the amount of time that the vehicle was observed parking in the same spot. If 1 unique plate is observed consistently throughout the whole observation, duration would be 6 hours. If 6 unique plates are observed over the six-hour period, duration would be 1 hour.

Study area turnover and duration counts were collected on the following dates:

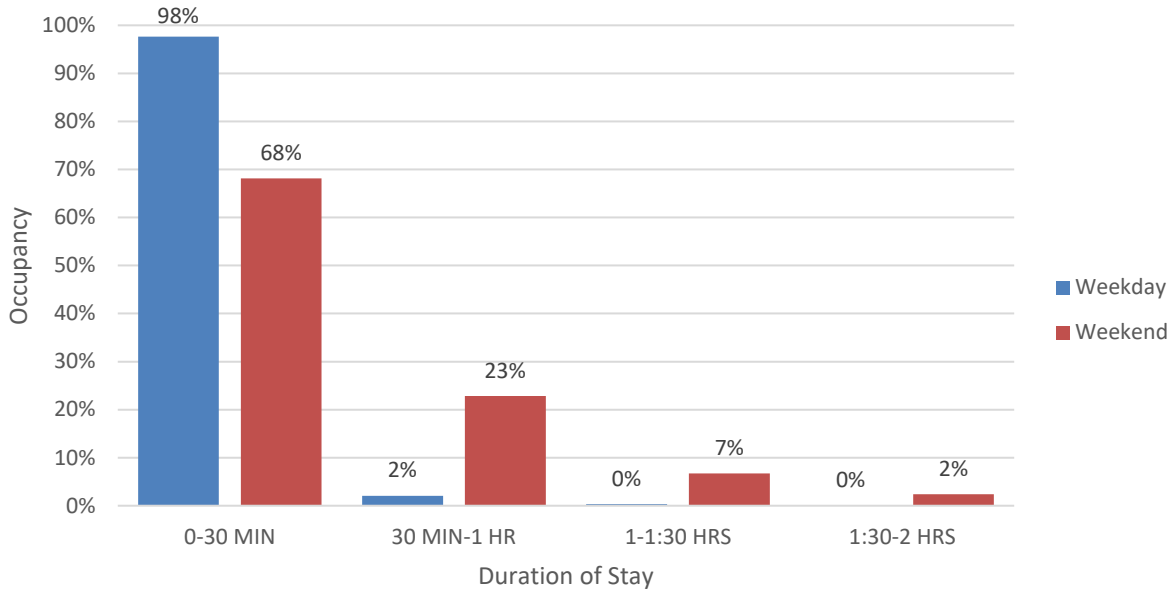
- Tuesday, January 14, 2025
  - On Street: 11:00am – 1:00pm
  - Off Street: 10:00am – 4:00pm
- Saturday, January 18, 2025
  - On Street 1:00pm – 3:00pm
  - Off Street: 11:00am – 5:00pm
- Thursday, February 6, 2025
  - On Street: 11:00am – 1:00pm
  - Off Street: 10:00am – 4:00pm
- Saturday, February 15, 2025
  - On Street 1:00pm – 3:00pm
  - Off Street: 11:00am – 5:00pm

**Figure 16** illustrates the duration of stay distribution across all counted garages. Notably, the majority of vehicles stay between 1 – 2 hours (67% weekday and 76% weekend) in their respective facilities.



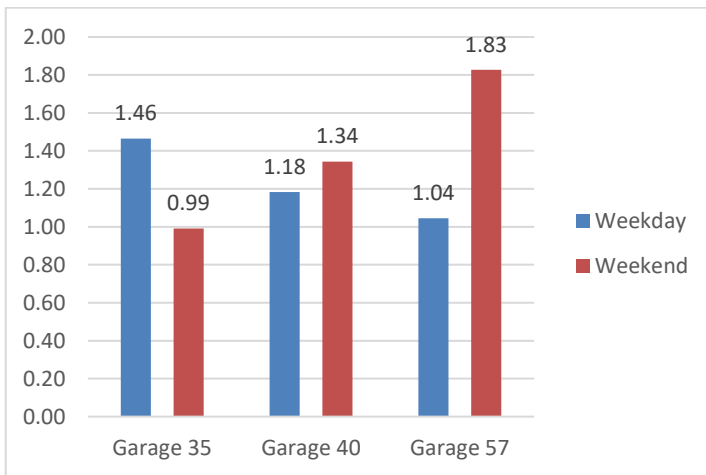
**FIGURE 16: PERCENTAGE OF VEHICLES BY DURATION OF STAY (IN GARAGES)**

On street facilities had an even more dramatic proportion of vehicles staying for a shorter duration, as shown in **Figure 17**.

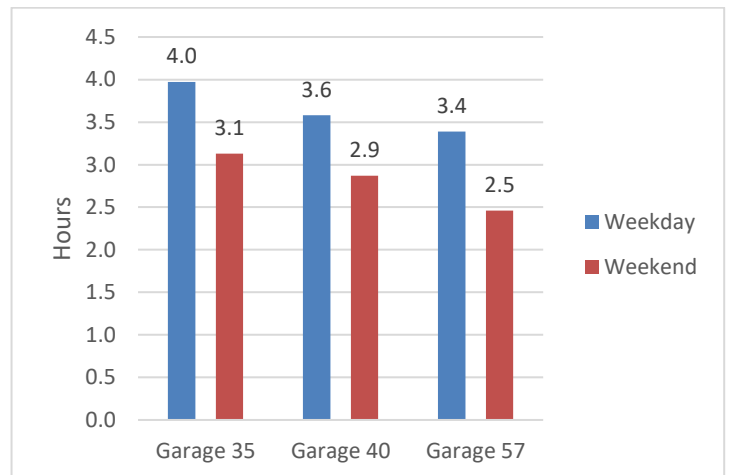


**FIGURE 17: PERCENTAGE OF VEHICLES BY DURATION OF STAY (ON-STREET)**

Garage 57 having the lowest turnover for the weekday (1.04), but the highest for the weekend (1.83), as shown in **Figure 18**. Due to the higher weekend turnover ratios, the average vehicle stay within these garages are lower than the weekday durations as shown in **Figure 19**.

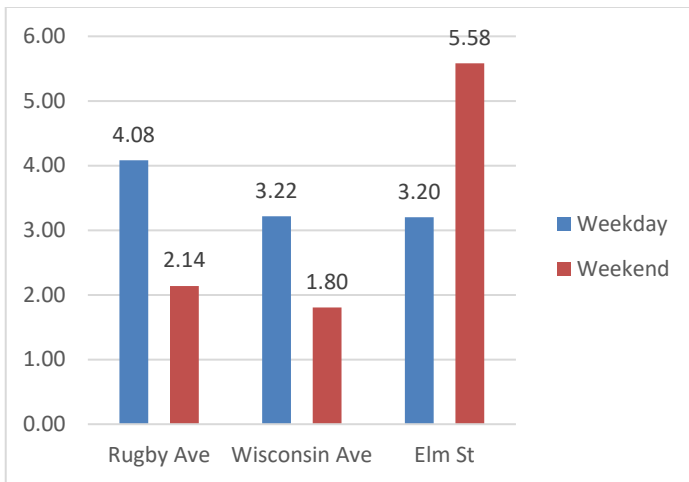


**FIGURE 18: TURNOVER BY GARAGE (VEHICLES PER SPACE)**

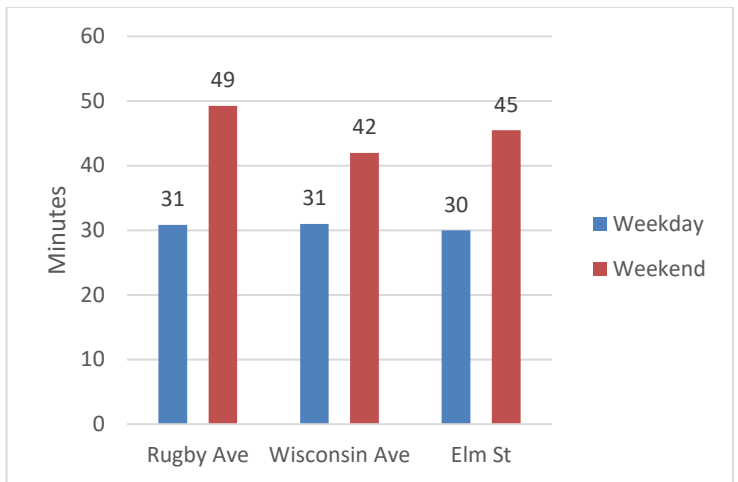


**FIGURE 19: AVERAGE DURATION OF STAY FOR VEHICLES BY GARAGE (LENGTH OF STAY IN HOURS)**

Overall, turnover ratios for the on-street parking are higher than the ratios for garages, as shown in **Figure 20**. Similarly, the average vehicle duration of stay for on-street parking is shorter than for garages as shown in **Figure 21**.



**FIGURE 20: TURNOVER BY STREET (VEHICLES PER SPACE)**



**FIGURE 21: AVERAGE DURATION OF STAY FOR VEHICLES BY STREET (LENGTH OF STAY IN MINUTES)**

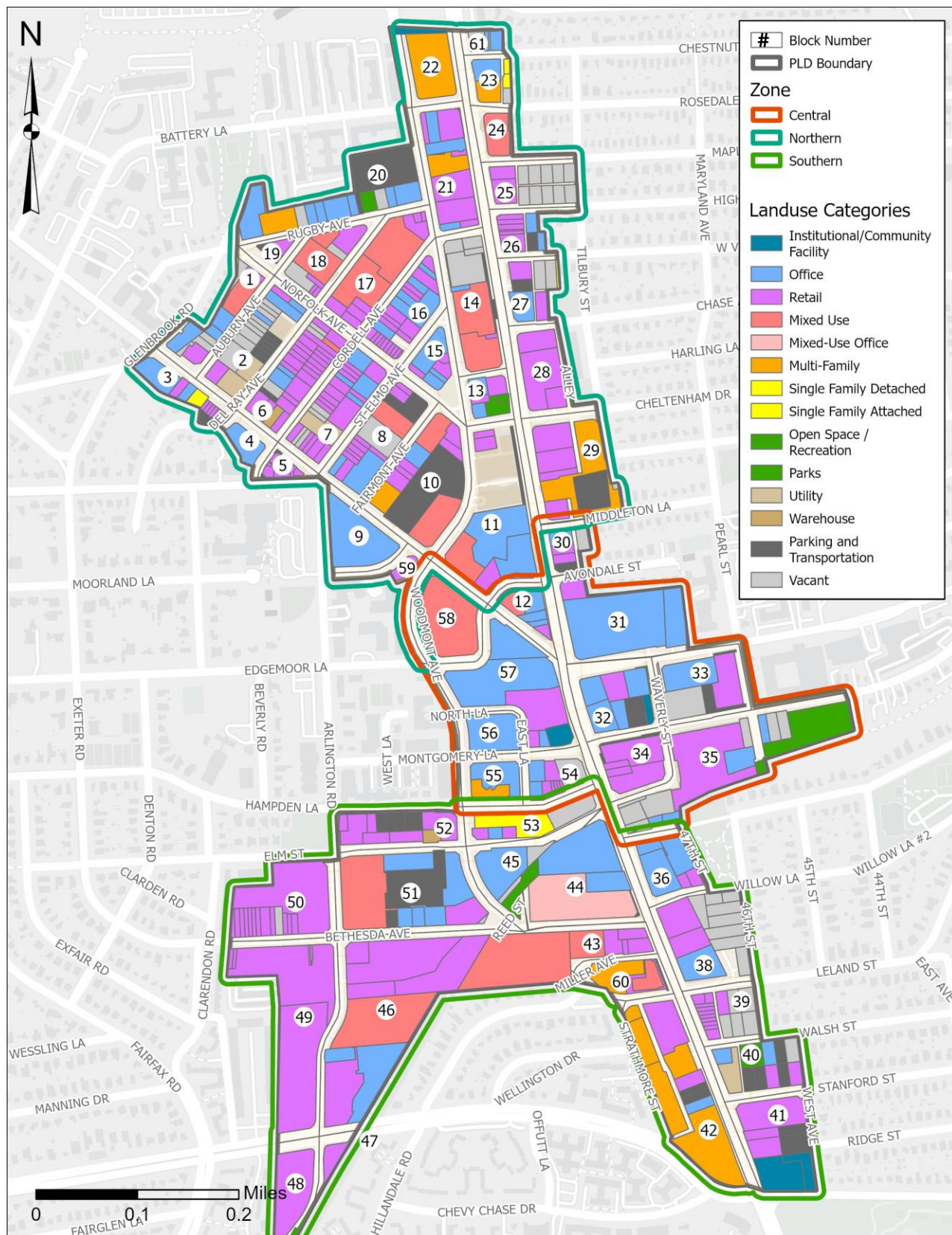
Within the study area, data collection reveals that parking turnover is high in many County-owned parking facilities and vehicles are staying in spaces for a shorter period of time compared to pre-pandemic parking behavior.

## 2.4 Existing Land Use-Based Parking Demand

To better understand the adequacy of the existing and future parking supply within the study area, parking ratios were developed based on land uses within the study area. This relationship reveals what land uses have higher parking demands than others. Land-use parking ratios are an industry standard method of measuring potential demand and supply when developing or redeveloping an area. These ratios are per-unit measures of peak hour parking generation.

Using the existing land use data as well as the observed peak demand for a weekday and a weekend, the parking activity associated with those developments can be estimated. Kimley-Horn summarized the existing land use data by parcel as provided by the County into study area blocks and zones, as shown in **Figure 22** and **Table 4** respectively.





**TABLE 4: EXISTING LAND USE BY ZONE**

Zone	Office gsf	Retail gsf	Mixed Use gsf	Residential Units	Residential gsf	Industrial gsf	Other gsf	Total gsf
<b>Northern</b>	2,021,888	844,433	3,571,725	4,346	1,623,855	1,860	413,196	6,853,102
<b>Central</b>	4,341,319	102,033	370,308	662	81,703	-	1,069,526	5,883,186
<b>Southern</b>	2,503,606	896,065	1,815,529	1,700	553,525	4,260	32,872	5,252,332
<b>Total</b>	<b>8,866,813</b>	<b>1,842,531</b>	<b>5,757,562</b>	<b>6,708</b>	<b>2,259,083</b>	<b>6,120</b>	<b>1,515,594</b>	<b>17,988,620</b>

Kimley-Horn summarized these land uses as either office, retail, mixed use, residential, industrial, or other, as categorized in the land use data provided by the County. The study area has a total of nearly 18 million square feet of development, with 8.8 million square feet of office space, 5.7 million square feet of mixed use, and 2.2 million square feet of residential. The mixed-use category accounts for land uses that shared residential and retail on the same parcel. By incorporating a mixed-use land use category, the parking ratios generated better reflect the mix of parking demand and travel behaviors associated with that land use type.

Based on the summarization of land use as well as the peak parking demand observed for each block, Kimley-Horn developed parking ratios for both a typical weekday and weekend in Bethesda. These parking ratios can be seen in **Table 5**.

**TABLE 5: PROPOSED PARKING RATIOS (PER 1,000 SF)**

Peak Period	Office gsf	Retail gsf	Mixed Use gsf	Residential units	Residential gsf	Industrial gsf	Other gsf
<b>Weekday</b>	0.3	0.25	0.41	-	-	0.5	0.02
<b>Weekend</b>	0.1	0.5	0.35	-	-	0.5	0.02

These ratios represent the proposed public/non-restricted parking spaces needed during each peak period for the respective land use. For example, for each occupied 1 square foot of retail space within the study area today, approximately 0.25 parking spaces would be need during a typical weekday and 0.5 spaces would be needed during the weekend to satisfy the parking demand generated by this land use. It is important to note that exclusively residential parking ratios were not developed as those were assumed to be addressed by private, restricted parking and any visitor parking is assumed to be captured in the parking ratios developed for mixed use.

#### 2.4.1 Comparison to Industry Parking Ratios

The parking ratios developed and presented in **Table 5** above were compared to the previous Lot 10 and Lot 24 parking study completed in 2022, the Urban Land Institute Share Parking Manual, 3<sup>rd</sup> Edition, and the Institute of Transportation Engineers Parking Generation Manual, 6<sup>th</sup> Edition. Based

on applicable land uses, the parking ratios generated above are less than those in the 2022 Bethesda Parking study, the ULI parking ratios, and the ITE parking ratios for office and retail uses. The mixed-use parking ratios are identical to those present in ULI and ITE, as shown in **Table 6** below.

**TABLE 6: PARKING RATIO COMPARISON (PER 1,000 SF)**

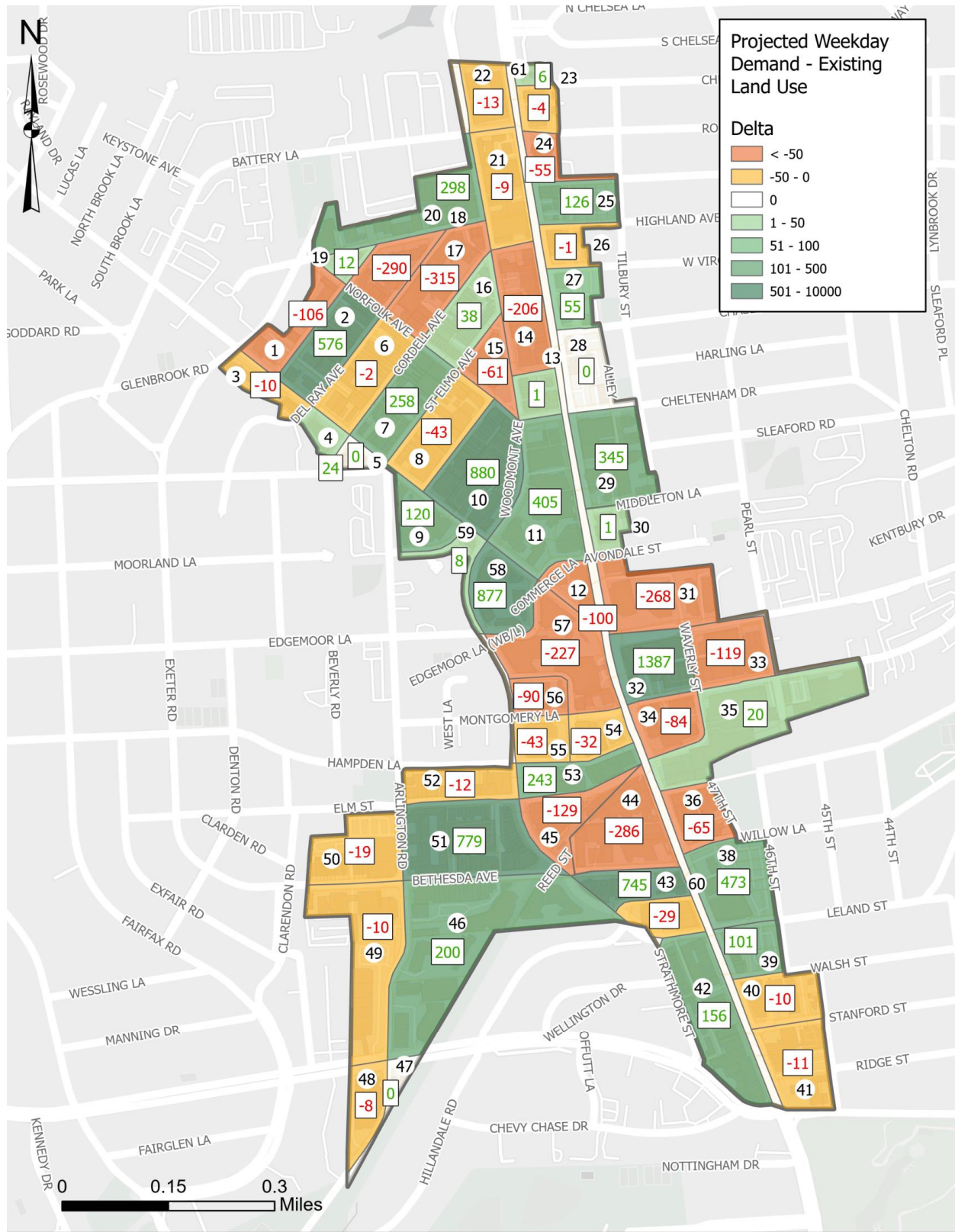
Source	Peak Period	Office gsf	Retail gsf	Mixed Use gsf	Residential units	Industrial gsf	Other gsf
<b>Current</b>	<b>Weekday</b>	<b>0.3</b>	<b>0.25</b>	<b>0.41</b>	<b>-</b>	<b>0.5</b>	<b>0.02</b>
	<b>Weekend</b>	<b>0.1</b>	<b>0.5</b>	<b>0.35</b>	<b>-</b>	<b>0.5</b>	<b>0.02</b>
County Zoning Code*	-	2.4	5.0	-	1.0	1.5	-
Previous Study	Weekday	0.82	1.1	-	1.2	-	-
	Weekend	0.1	3.3	-	1.5	-	-
ULI (Urban)	Weekday	3.8	3.6	0.41	1.0	-	-
	Weekend	0.38	4.0	0.35	1.01	-	-
ITE (General Urban/Suburban)	Weekday	1.58	2.77	0.41	1.14	0.67	-
	Weekend	-	2.4	0.35	1.34	-	-

*\*Approximate rates based on Article 59-E of the Montgomery County Zoning Code. Credits and provisions are applicable to bring these ratios down and more closely match land use within the PLD.*

While the parking ratios developed as part of this study are lower than parking ratios presented in industry standards, more teleworking and less in-office time can explain the lower parking need. Additionally, the dense urban character of the Bethesda PLD as well as the close proximity to transit further support the lower parking demand reflected in the developed parking ratios. Lastly, land use square footages are based on parcel zoning data, where previously they were based on data from CoStar which may have more accurately captured building uses and gsf. All these considerations provide justifications for why parking rates appear lower based on study data and parking occupancy rates in Fall 2024.

Using these parking ratios, Kimley-Horn calculated the potential surplus and deficit of parking spaces based on future demand of these existing land uses compared to the existing supply. The weekday surplus and deficit on a block-by-block level can be seen in **Figure 23** below.



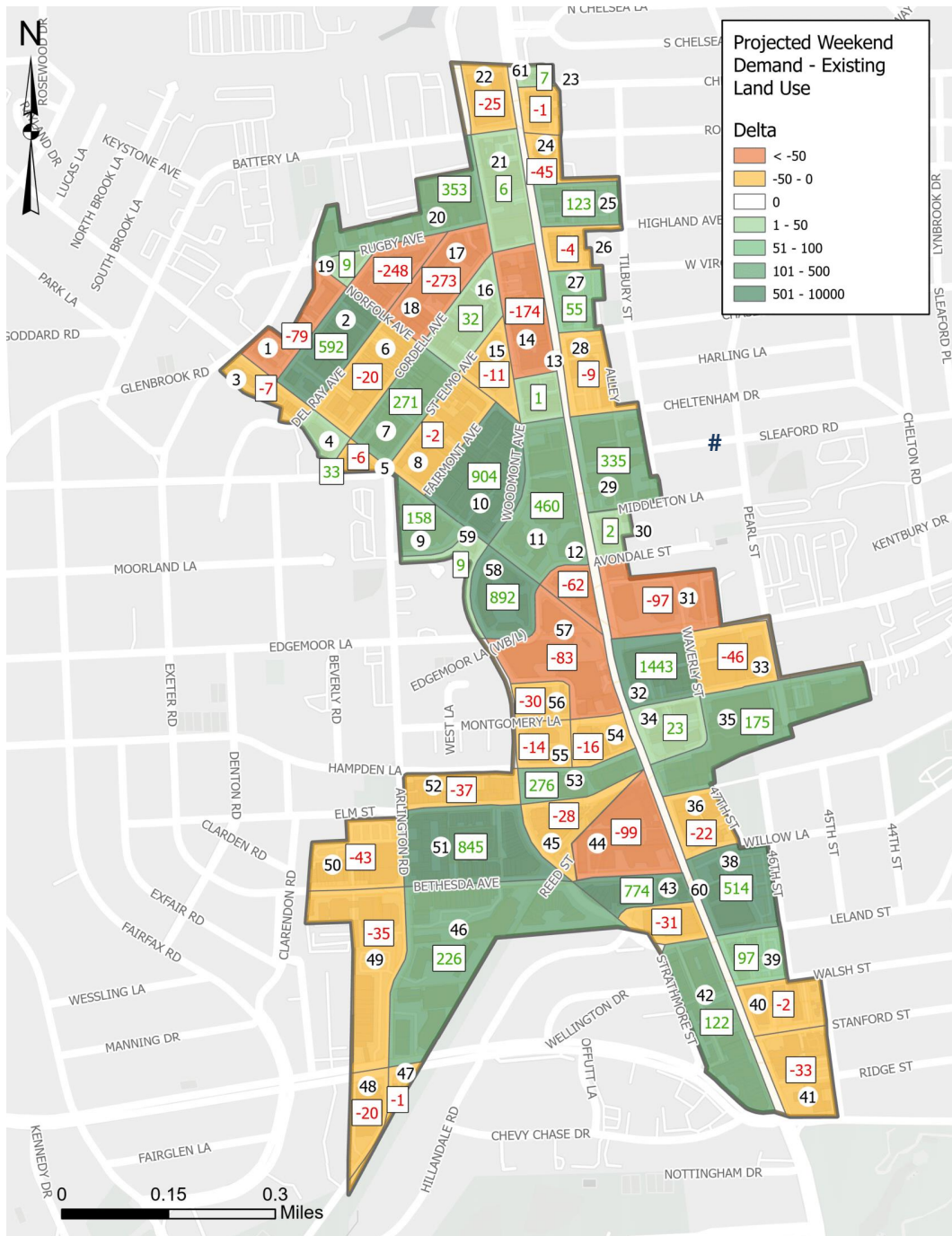


**FIGURE 23: WEEKDAY SURPLUS/DEFICIT - EXISTING LAND USE**



While there is anticipated to be a 5,477-space surplus overall, a block-by-block analysis demonstrates localized parking deficits. For example, block 18 in the northern zone experiences a deficit of 290 spaces. However, across the street in block 2 there is a surplus of 576 spaces. This example highlights that while there may be major deficits in one block, nearby blocks may provide the parking supply needed to meet the demand.

**Figure 24** below summarizes block-by-block surplus and deficits for the weekend future demand.



**FIGURE 24: WEEKEND SURPLUS/DEFICIT - EXISTING LAND USE**

During the weekend scenario, the study area has a systemwide surplus of 7,134 spaces. This is largely due to an increase in surplus parking throughout the study area. For example, block 10 has a surplus of 880 spaces during a typical weekday and a surplus of 904 parking spaces during the weekend. The results of the existing land use analysis indicates that no additional public parking is needed to satisfy the overall demand within the study area. However, to mitigate potential challenges and frustrations with block level deficits wayfinding and signage can help direct people into available parking blocks.

### 3 Future Land Use-Based Parking Demand

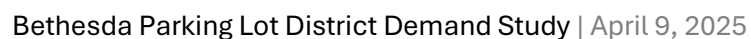
To understand the impact of future developments on the parking supply and demand within the study area, a similar exercise was completed using the ratios developed in the existing parking demand model with future land uses. Kimley-Horn summarized future new developments per block as shown in **Table 7** below.

**TABLE 7: FUTURE DEVELOPMENTS**

Project	Residential		Parking Supply	Office gsf	Retail gsf	Industrial gsf	Other gsf	Mixed Use gsf
	unit	gsf						
The Claiborne	84	67,200	73	-	5,000	0	0	72,200
St. Elmo Apartments	279	223,200	230	-	6,000	0	0	229,200
Metro Tower	366	292,800	233	-	11,000	0	0	303,800
7340 Wisconsin Avenue	308	246,400	157	-	3,075	0	0	249,475
Hampden East	150	120,000	336	300,000	10,000	0	0	
7749 Old Georgetown Rd	240	192,000	148	-	6,000	0	0	198,000
8000 Wisconsin Ave	441	352,800	311	-	20,000	0	0	372,800
PLD Lot 25 Redevelopment	227	181,600	248	-	-	0	0	
PLD Lot 44 & 4702 W. Virginia Ave	53	42,400	99	-	-	0	0	
7126 Wisconsin Ave	330	264,000	261	-	9,000	0	0	273,000
8280 Wisconsin Ave	-	-	99	175,000	-	0	0	
Lot 10 Redevelopment	-	-	-	-	-	-	-	-
Lot 24 Redevelopment	300	234,800	400		34,000	0	0	268,800

The parking supply column is the estimated number of parking spaces to be built by the development. These were all assumed to be private, restricted parking serving the residential uses of the developments. However, with the redevelopment of Lot 25 and Lot 24, an additional 148 and 200 parking spaces will be available to the public, respectively. The redevelopment of Lot 25 and Lot 44 results in a loss of 192 public parking spaces from the total supply. Additionally, the redevelopment of Lot 10 and Lot 24 also result in a loss of 306 parking spaces from the total supply.

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**Table 8** below summarizes the future land uses by zone.

**TABLE 8: FUTURE LAND USE BY ZONE**

Zone	Office	Retail	Mixed Use	Residential		Industrial	Other	Total
	gsf	gsf	gsf	Units	gsf	gsf	gsf	gsf
Northern	2,196,888	844,433	4,443,925	5,670	1,847,855	1,860	413,196	7,065,102
Central	4,641,319	112,033	619,783	1,120	201,703	-	1,069,526	6,196,261
Southern	2,503,606	896,065	2,661,129	2,696	553,525	4,260	32,872	5,272,332
<b>Total</b>	<b>9,341,813</b>	<b>1,852,531</b>	<b>7,724,837</b>	<b>9,486</b>	<b>2,603,083</b>	<b>6,120</b>	<b>1,515,594</b>	<b>18,473,620</b>

When compared to table 4 in the existing parking demand model, the northern and central zones will have an increase in office, retail, and residential uses. The southern zone will have an increase in retail and residential uses. The overall increase in total new development is 485,000 sf. Based on this increase in development, it is expected that the future parking demand will be higher than existing, leading to larger deficits on a block level.

Using the same methodology as the existing parking demand model, future parking demand based on future land uses was calculated. The weekday and weekend surplus and deficits can be seen in **Figure 26** and **Figure 27**, respectively.



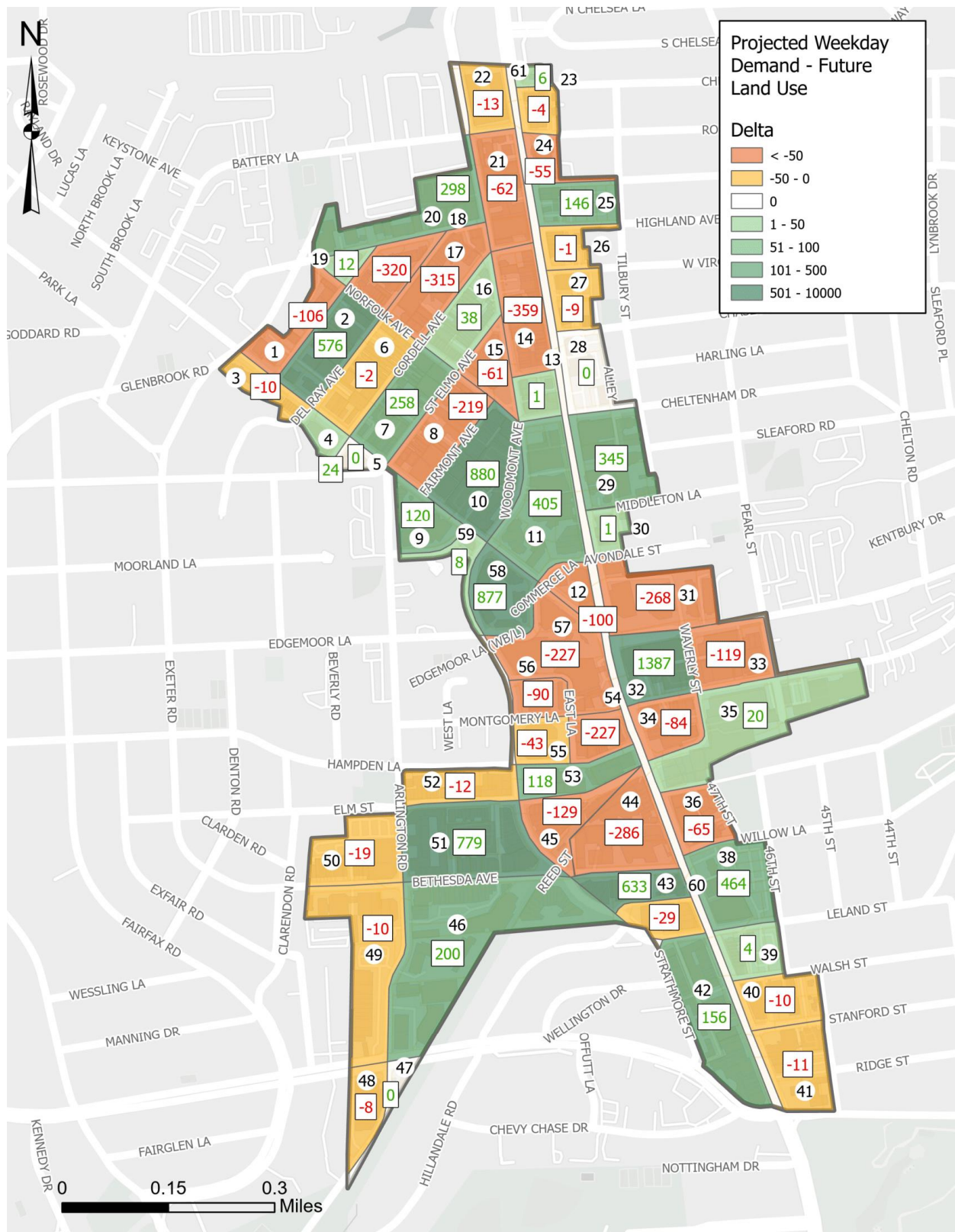


FIGURE 26: WEEKDAY SURPLUS/DEFICIT - FUTURE LAND USE

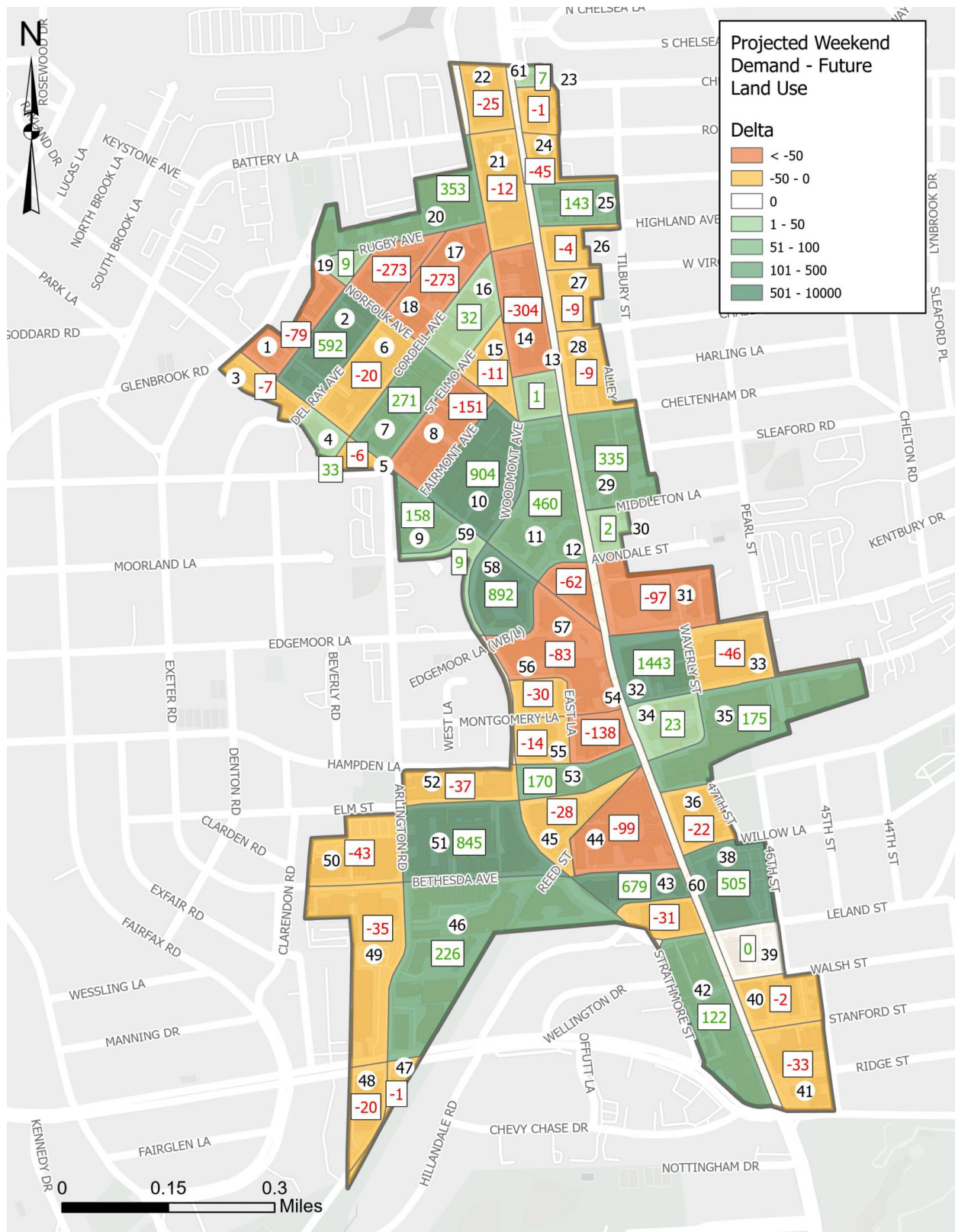


FIGURE 27: WEEKEND SURPLUS/DEFICIT - FUTURE LAND USE

The overall system surplus during the weekday is 4,483 parking spaces and the overall system surplus during the weekend is 6,339 parking spaces. These surpluses are 994 and 795 parking spaces lower than the existing scenarios, respectively. These decreases are due to the loss of public parking spaces as a result of Montgomery County Parking Lot redevelopments. Additionally, in the future there will be an increase parking demand generated due to the increase in office and retail land uses. Like the existing land use demand model, the future land use model also shows block-by-block deficits and surpluses, which can be managed with appropriate wayfinding measures.

## 4 Conclusions

The purpose of this study was to evaluate existing and future parking availability and demand within the Bethesda Parking Lot District (PLD). The findings of this study will be used to recommend future parking management strategies to the County to better utilize existing resources to address parking needs and behaviors. The findings of this study will also be used to inform whether additional public parking supply is needed to support the potential future demand within the PLD.

Based on observed parking demand and turnover in both public and privately-owned facilities, parking demand during a typical weekday is 45.3% and 46.8% during a typical weekend, which suggests that existing facilities are well utilized. Additionally, on-street parking is the most utilized within the PLD, with an occupancy rate of 81% during the weekday and 90% during the weekend. While these trends indicate that COVID-19 is no longer a major influence on parking demand behavior, turnover data collected indicates that patrons are still parking shorter than pre-pandemic levels.

Using peak parking demand information, the total parking supply, and existing/future land uses, a parking demand model was developed to approximate the future parking demand within the PLD. The results of these models indicate to the County where there are surpluses and deficits of parking supply throughout the study area. Analyses of existing and future land use parking demands indicate that there is no systemwide deficit of parking, meaning that no additional public parking supply is needed to satisfy parking demand generated. However, block-by-block trends indicate large deficits depending on the location within the PLD.

To better increase awareness of parking availability throughout the PLD, it is recommended that the County implement dedicated wayfinding and signage to direct patrons to additional facilities. These may include static signs or dynamic parking availability for lots and garages.