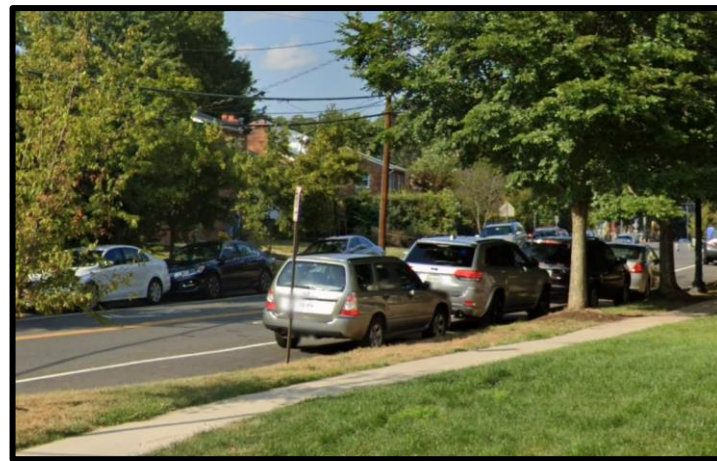




# 2022 On-Street Parking Occupancy Study:

**Clarendon/Virginia Square | Virginia Hospital Center  
Columbia Pike | Richmond Highway/Aurora Highlands**

(provided for the Arlington County Department of Environmental Services)



## Key Findings

- The majority of observations showed an occupancy of 85% or less in all study areas, with many at 60% occupancy or less
- Between 2% and 7% of all observations showed an occupancy higher than 85%; <1% on RPP facilities during RPP restricted hours
- In general, mean occupancy was higher in all study areas than the median indicating a positively skewed distribution which can be explained by high occupancy outliers (i.e. 150% occupancy or greater). High occupancy outliers were most commonly observed on facilities with low capacity (1-3 vehicles), since each additional vehicle on these facilities has a greater potential to skew the occupancy calculation higher
- In majority of study areas, mean occupancy either decreased or stayed the same compared to previous study years; major exception, Columbia Pike area where management type has changed from RPP to unmanaged and occupancy increased

# Terminology

## *Parking Management Types*

- **RPP-restricted parking**: only parkers with RPP (Residential Permit Parking) permits may park during hours of enforcement
- **Metered parking**: parkers must pay for parking during certain hours and may not stay longer than the maximum time posted
- **Time-limited parking**: parkers may not stay longer than the maximum time posted, but no payment is required
- **Unmanaged parking**: parkers may stay up 10 days, the point at which a vehicle is considered abandoned and may be towed





## Terminology

- **Parking facility**: a section of street curb with a single utilization management type (not synonymous with street blocks or block faces; multiple facilities may exist along a block face)
- **Parking capacity**: theoretical maximum number of vehicles that can be accommodated simultaneously on a given facility
- **Parking occupancy**: share of parking spaces on a facility that are actively in use by parked cars, expressed as a percentage (for this study, occupancy = number of parked vehicles divided by capacity)
- **Mean occupancy**: the average of occupancy readings applicable to a certain collection day and/or collection hour



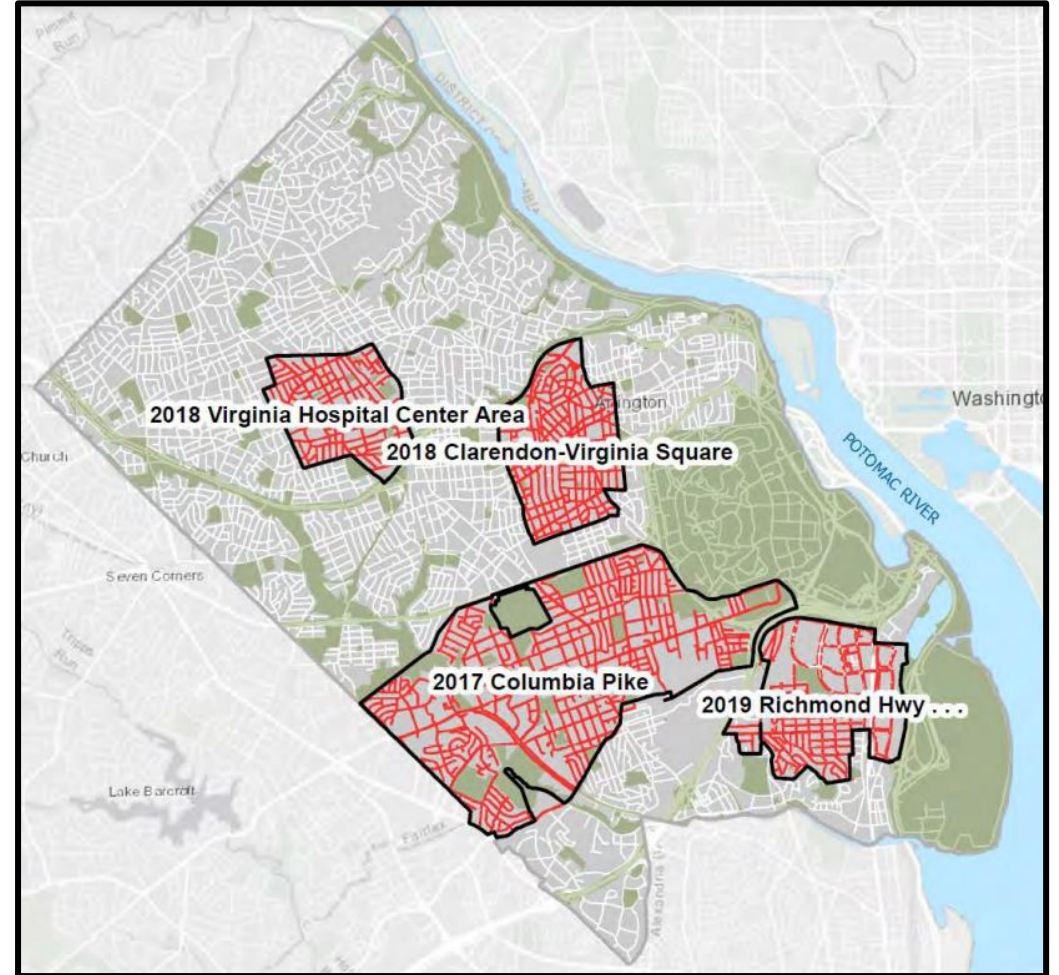
## Terminology

- **Occupancy range:** One of three percentage ranges (0-60%, 61-85%, or >85%) representing thresholds established in the Arlington County Master Transportation Plan
  - 60% is the threshold at or below which the voluntary removal of off-street surface parking in excess of zoning requirements is encouraged
  - 85% represents what most studies show is an ideal on-street parking occupancy in high-demand areas
- **Confidence Level:** Probability with which the estimation of a statistical parameter (e.g. sample mean) is also true for the population
- **Margin of Error:** A statistical amount (usually small) that is allowed for in case of miscalculation or change of circumstances



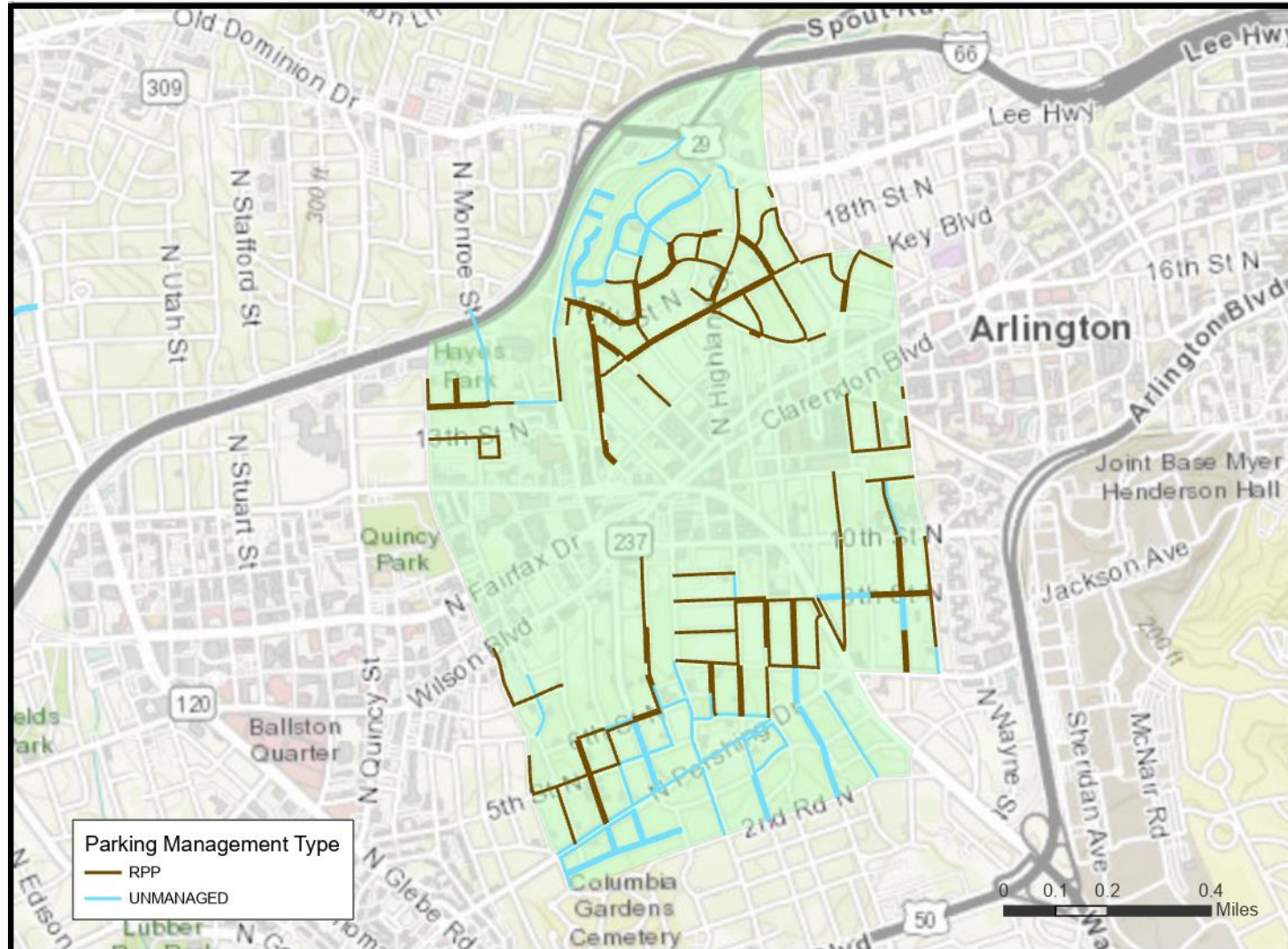
## Study Purpose (2022)

- Supplement data collected under previous on-street parking study implemented 2017-2019 as part of RPP review and compare new dataset to historical dataset
- Collect and analyze parking occupancy and duration data to understand current on-street parking demand in the study areas of interest (see right image)
- Stratified sampling of RPP-restricted and unmanaged parking facilities (see next slides for details); other management types (metered, time-limited) were not evaluated in this study



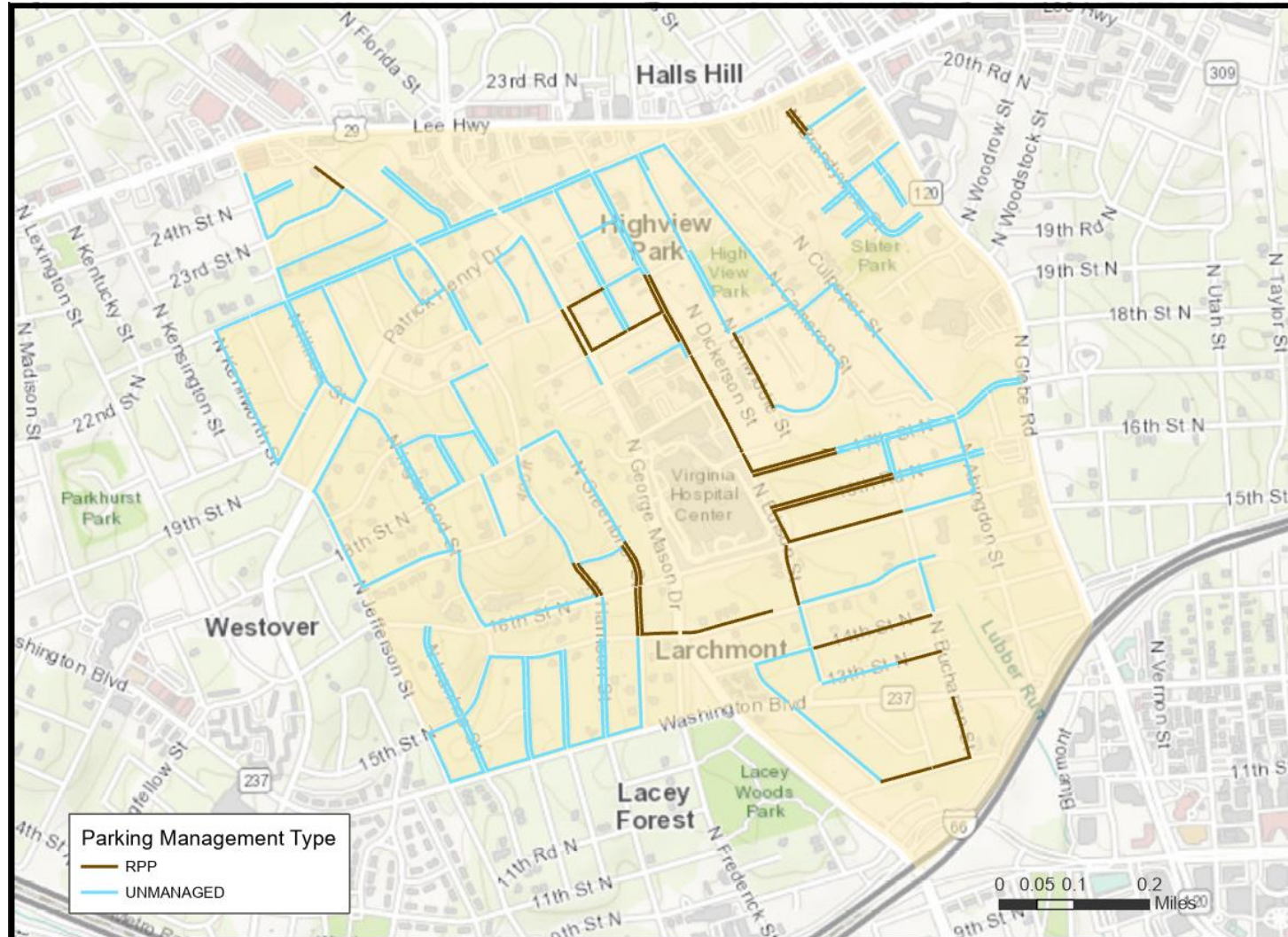


## Clarendon/Virginia Square Study Area





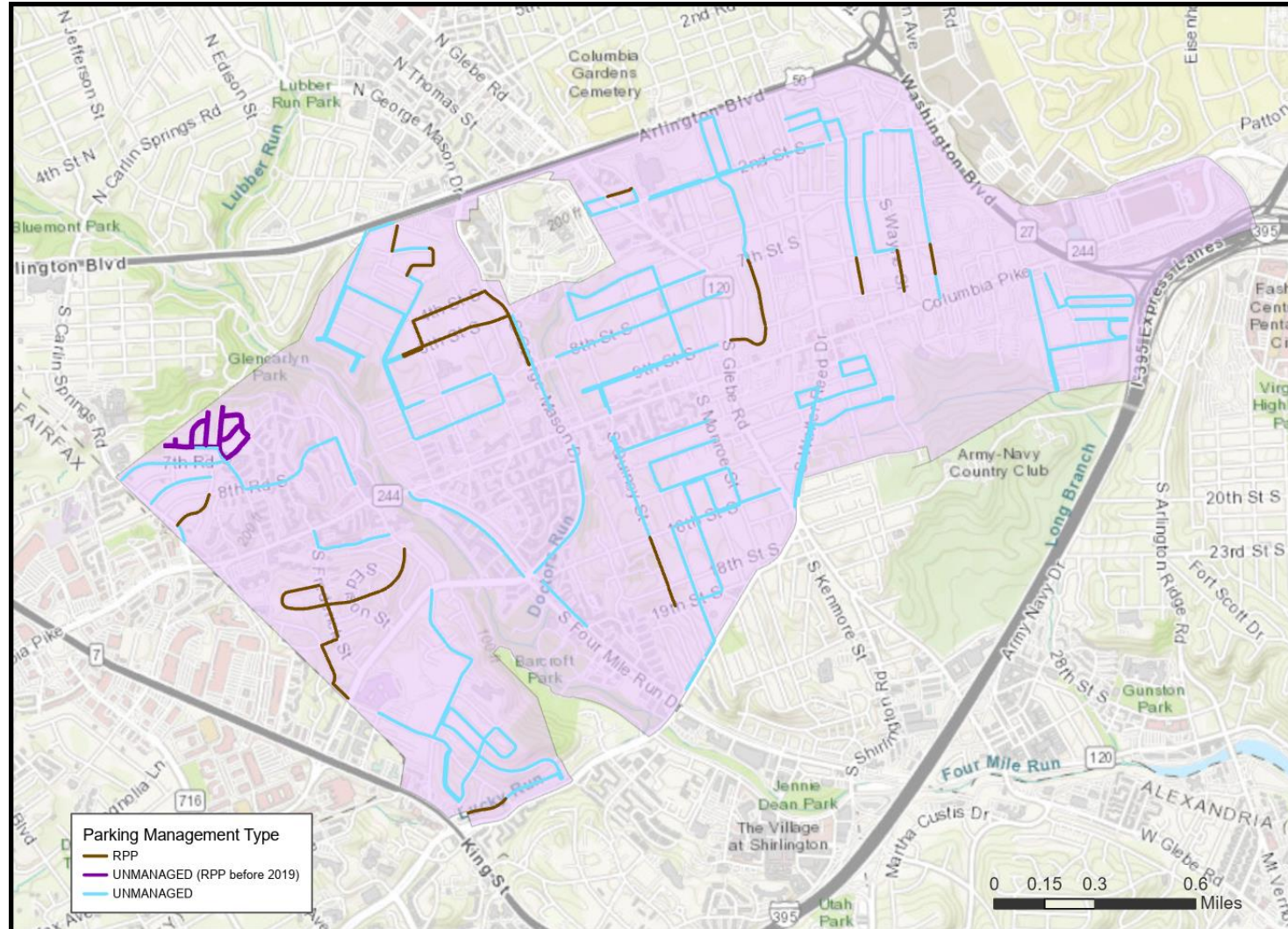
# Virginia Hospital Center Study Area





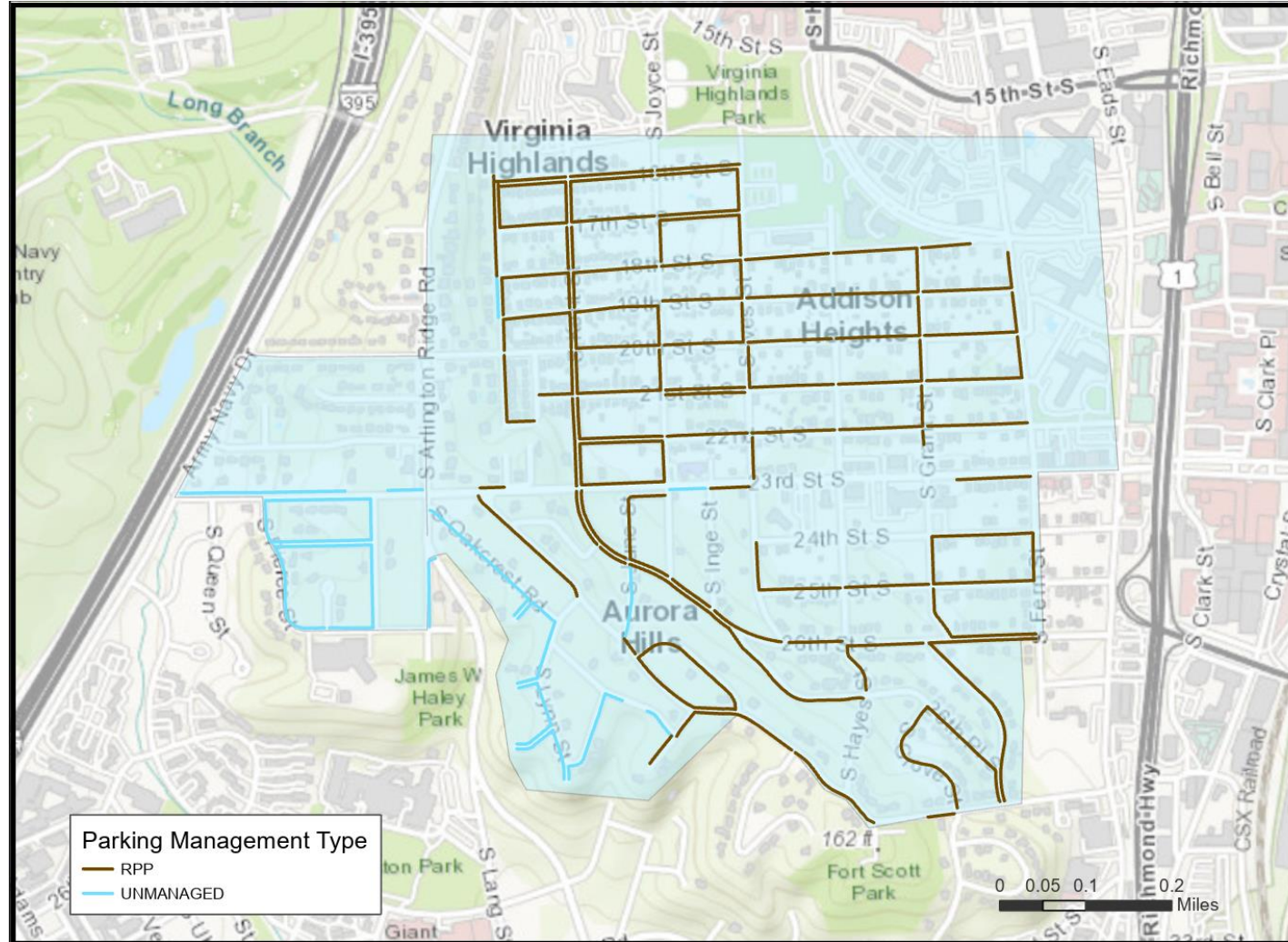


## Columbia Pike Study Area





# Richmond Highway/Aurora Highlands Study Area





### Sample Size Collected by Study Area and Management Type

Neighborhood	Number of RPP Facilities	RPP Facilities Collected	Number of Unmanaged Facilities	Unmanaged Facilities Collected	Total Number of Facilities	Total Facilities Collected
Clarendon	278	150	201	106	479	256
Columbia Pike	188	39	830	234	1018	273
Virginia Hospital	82	34	283	154	365	188
Richmond Highway	186	120	61	33	247	153
Columbia Pike Changes in 2021	0	0	25	25	25	25
<b>Total of all areas</b>	734	343	1,400	552	2,134	895

## Stratified Sampling - Statistical Analysis

- The collected sample is intended to be representative of the total population, to the best extent possible, for each unique study area and management type
- However, all sampling strategies result in a margin of error that must be considered when applying these results to generalize the broader population of interest

**Sample Margin of Error at 90% Level of Confidence for Collected RPP Facilities**

Neighborhood	RPP Facilities				
	Number of RPP Facilities	Collected RPP Facilities (n)	p	FPC	Margin of Error
Clarendon/VA Square	278	150	0.540	0.680	4.6%
Virginia Hospital Center	82	34	0.415	0.770	10.7%
Columbia Pike - No Changes	188	39	0.207	0.893	9.5%
Columbia Pike Changes in 2021	0	0	-	-	-
Richmond Highway	186	120	0.645	0.597	4.3%



## Stratified Sampling - Statistical Analysis

- Margins should result in only modest potential deviations between expected versus actual values for parking occupancy and duration (e.g. a 5% margin of error applied to a facility with a capacity of 20 vehicles would suggest a potential deviation of +/- 1 vehicle when projecting its occupancy)

**Sample Margin of Error at 90% Level of Confidence for Collected Unmanaged Facilities**

Neighborhood	Unmanaged Facilities				
	Number of Unmanaged Facilities	Collected Unmanaged Facilities (n)	p	FPC	Margin of Error
Clarendon/VA Square	201	106	0.527	0.689	5.5%
Virginia Hospital Center	283	154	0.544	0.676	4.5%
Columbia Pike - No Changes	830	234	0.282	0.848	4.1%
Columbia Pike Changes in 2021	25	25	1.000	0.000	0.0%
Richmond Highway	61	33	0.541	0.683	9.7%



## Data Collection

- Data collected using license plate reader (LPR) technology (see right images) on the following dates:
  - Thursday, April 28<sup>th</sup> (Clarendon/VA Square, VA Hospital Center)
  - Saturday, April 30<sup>th</sup> (Clarendon/VA Square, VA Hospital Center)
  - Thursday, May 12<sup>th</sup> (Columbia Pike, Richmond Highway)
  - Saturday, May 14<sup>th</sup> (Columbia Pike, Richmond Highway)
- Routes were driven to capture each desired facility every 3 hours between 8AM and 8PM, providing a total of 7,160 occupancy observations (8 observations for each facility)
- Raw LPR data were post-processed to remove erroneous entries and assign valid entries to the appropriate facility



## Study Results – Clarendon/Virginia Square

- Mean occupancy for RPP facilities ranged from 27-31% (weekday) and 34-40% (weekend)
- Mean occupancy for Unmanaged facilities ranged from 32-40% (weekday) and 31-37% (weekend)

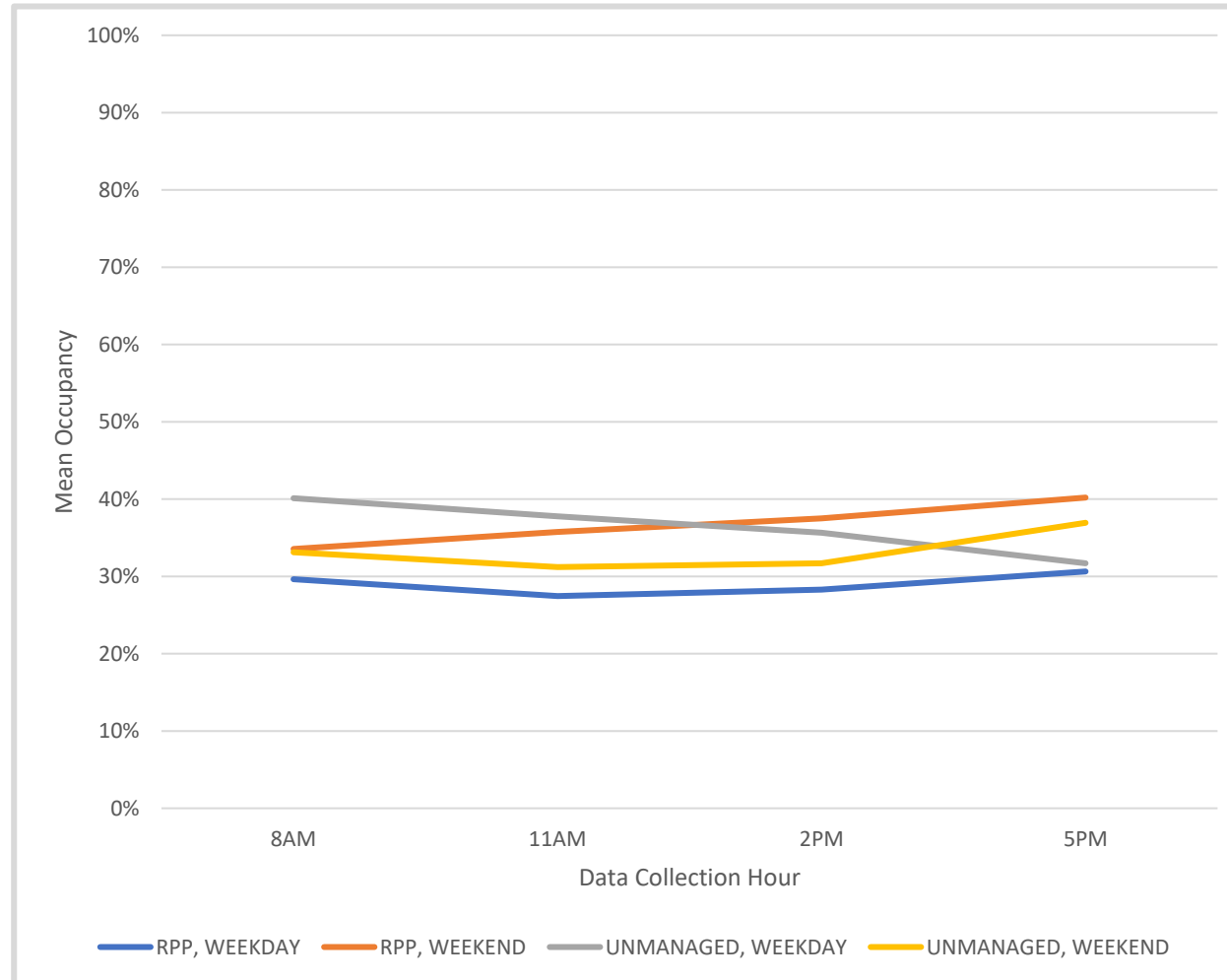
**Mean Parking Occupancy by Data Collection Hour and Day**

Data Collection Hour	Weekday, RPP	Saturday, RPP	Weekday, Unmanaged	Saturday, Unmanaged
8AM	30%	34%	40%	33%
11AM	27%	36%	38%	31%
2PM	28%	38%	36%	32%
5PM	31%	40%	32%	37%



## Clarendon/Virginia Square

### Mean Parking Occupancy by Data Collection Hour and Day





## Observations – Clarendon/Virginia Square

- **85% (1,731) of total observations (2,048) showed an occupancy equal to or less than 60%; 94% (1,935) were equal to or lower than 85% occupied;**
- **6% (113) of total observations showed an occupancy >85%, of which 2% (48) of observations were on RPP managed facilities with <1% (9) of observations during and almost 2% (39) outside of RPP restricted times**
- **Of all 150 RPP facilities sampled, weekday mean occupancy was 31% when RPP restrictions were in effect, and 28% when restrictions were not in effect. On the weekend, mean occupancy was 37% when RPP-restrictions were in effect, and 32% when restrictions were not in effect**

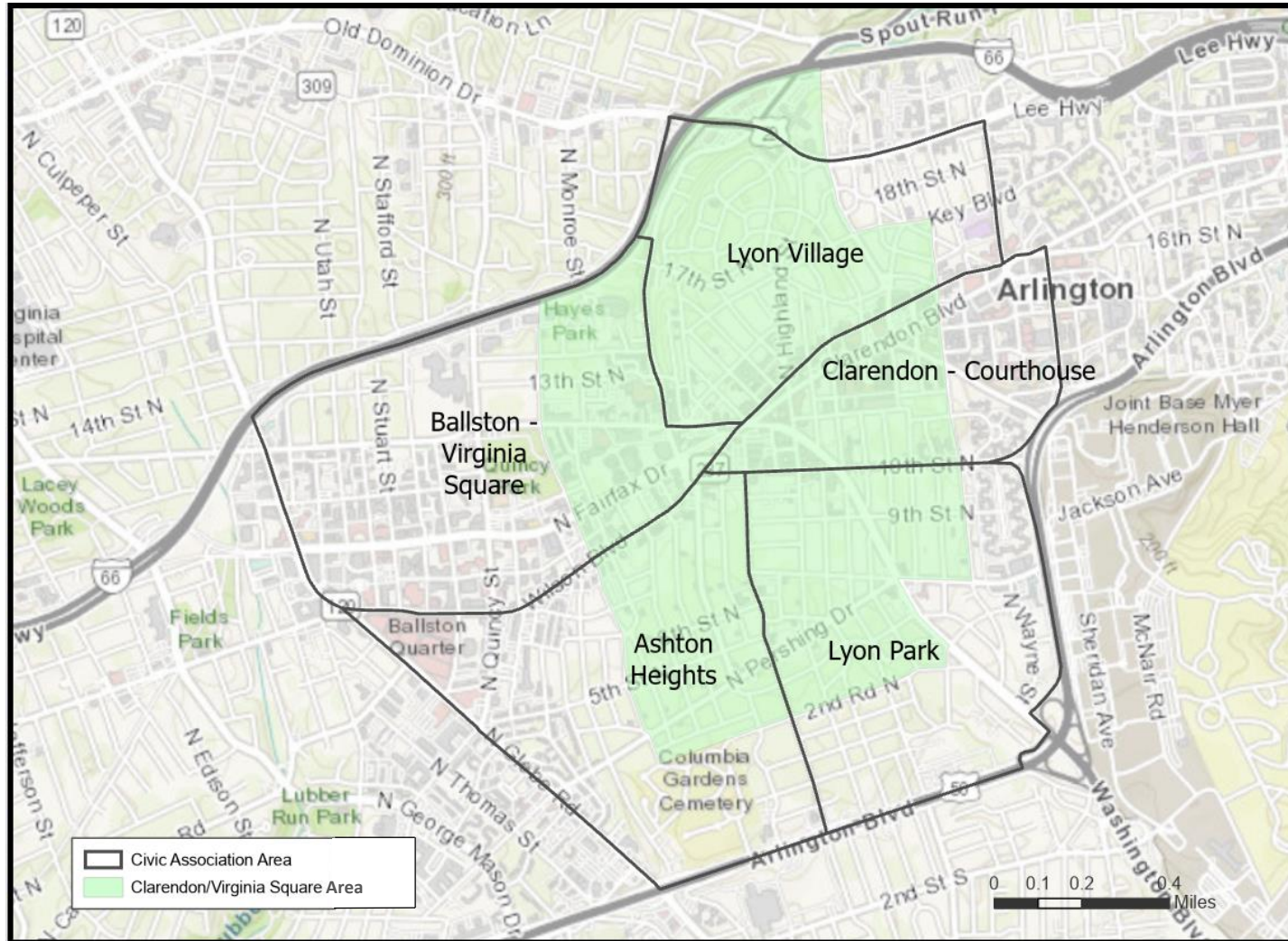


## Observations – Clarendon/Virginia Square

- **Lyon Village area (between Wilson Blvd and US-29; see next slide for map) had the lowest weekday mean occupancy during all observation periods, while the Lyon Park area (along Washington Blvd, south of 10<sup>th</sup> St N and north of US-50) was frequently the most occupied area**
- **Clarendon-Courthouse area experienced the greatest change in mean occupancy between weekday (39%) and weekend (59%) observations; Ballston-Virginia Square was the only civic area to experience a decrease in mean occupancy on the weekend (from 42% to 39%)**



## Clarendon/Virginia Square Study Area Civic Areas



## Historical Comparison – Clarendon/Virginia Square

- Mean occupancy comparison shows very similar results (see table below), with mean occupancy in 2022 being marginally lower (by 5-6%) than in 2018 for RPP facilities, and roughly consistent (within 0-1%) for unmanaged facilities
- A statistical hypothesis test, known as a [two-sample] *t*-test, which is appropriate when comparing the means of two data sets, was used to determine statistical significance of the differences (see next slide for details)

Historical Comparison of Mean Parking Occupancy

STUDY_AREA	COLLECTION_DAY	MANAGE_TYP	2018	2022
Clarendon/VA Square Area	WEEKDAY	RPP	34%	29%
Clarendon/VA Square Area	WEEKEND	RPP	43%	37%
Clarendon/VA Square Area	WEEKDAY	UNMANAGED	37%	36%
Clarendon/VA Square Area	WEEKEND	UNMANAGED	33%	33%

## Historical Comparison – Clarendon/Virginia Square

- For RPP facilities, the results suggest that the decrease was statistically significant on both collection days
- For unmanaged facilities, the difference in mean occupancy was not significant

Two Sample T-Test: Statistical Significance Between Observed Mean Occupancies

MANAGE_TYP, DAY	Pooled Standard Deviation	T-statistic	Significant Difference (90% CI)
RPP, WEEKDAY	0.28834	3.83816	YES
RPP, WEEKEND	0.34740	4.08580	YES
UNMANAGED, WEEKDAY	0.31026	0.43223	NO
UNMANAGED, WEEKEND	0.30687	-0.36193	NO

## Study Results – Virginia Hospital Center

- Mean occupancy for RPP facilities ranged from 25-29% (weekday) and 32-37% (weekend)
- Mean occupancy for Unmanaged facilities ranged from 25-29% (weekday) and 29-33% (weekend)

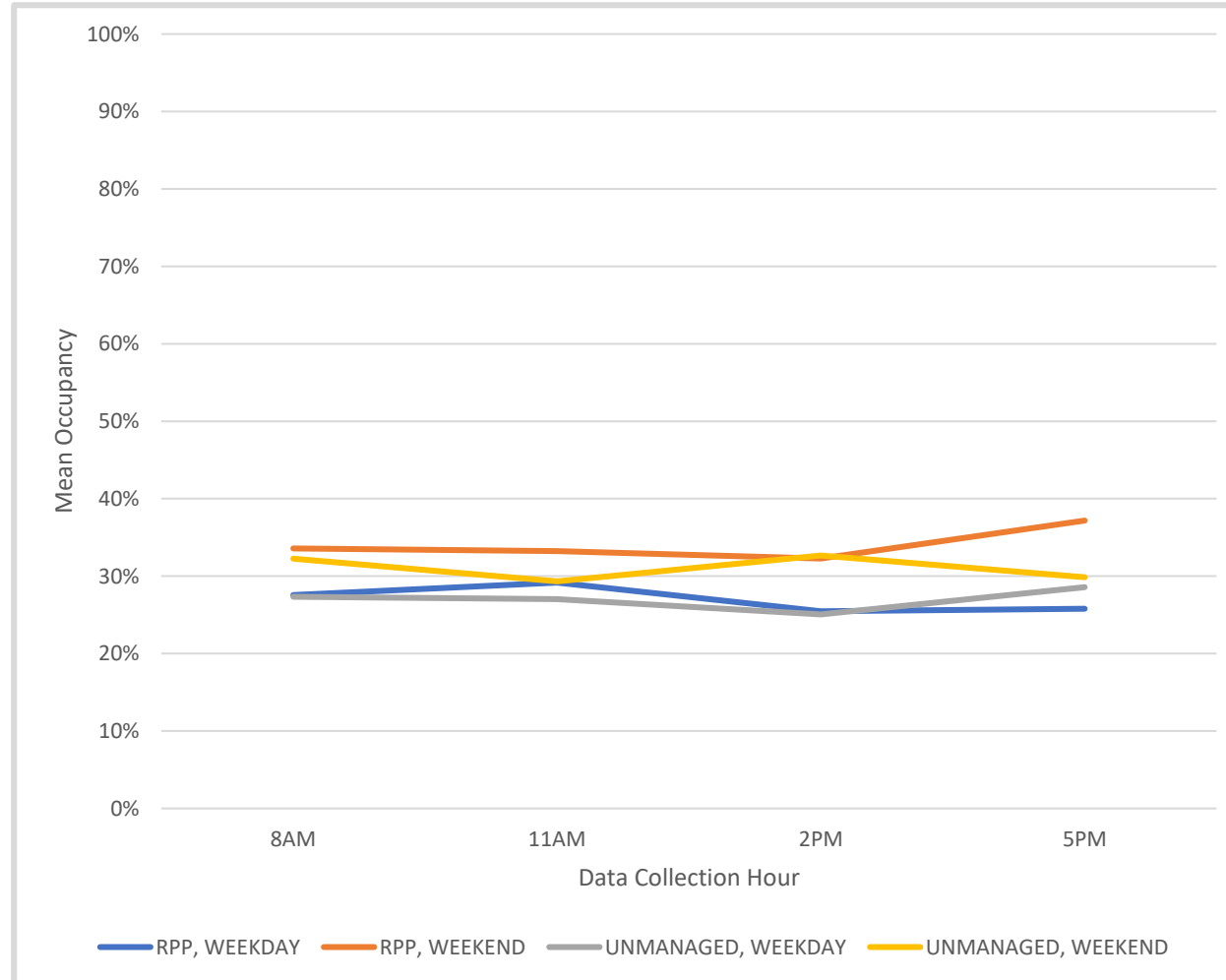
**Mean Parking Occupancy by Data Collection Hour and Day**

Data Collection Hour	Weekday, RPP	Saturday, RPP	Weekday, Unmanaged	Saturday, Unmanaged
8AM	28%	34%	27%	32%
11AM	29%	33%	27%	29%
2PM	25%	32%	25%	33%
5PM	26%	37%	29%	30%



## Virginia Hospital Center

### Mean Parking Occupancy by Data Collection Hour and Day



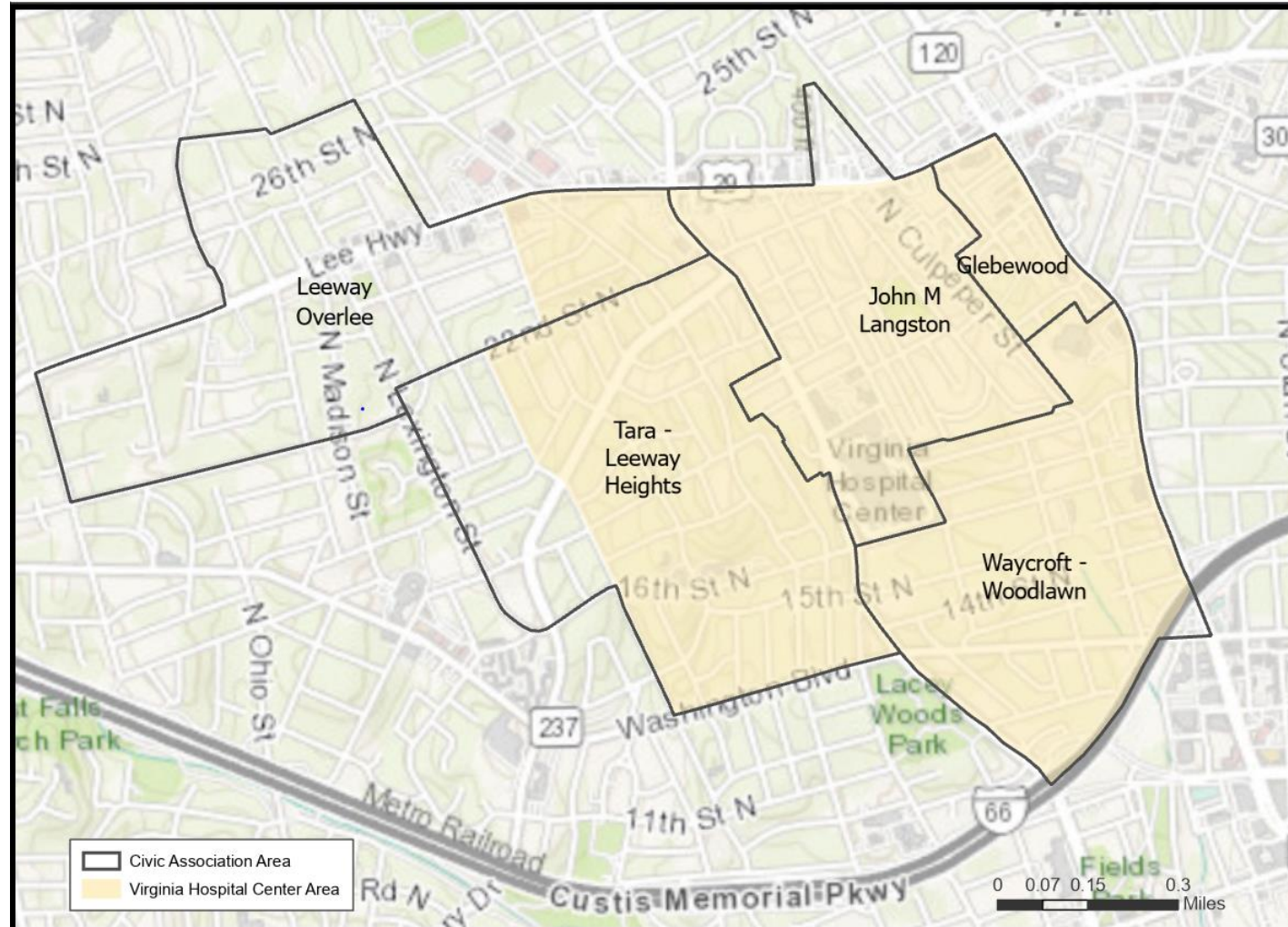
## Observations – Virginia Hospital Center

- During both collection days, most facilities (1,457 out of 1,504 observations) had an occupancy equal to or below 85% among which most (1,342) were equal to or below 60% occupied
- Only 3% (47) of all observations showed > 85% occupancy, with 1% (16) on RPP managed streets and most (13) outside of RPP restricted times.
- Highest occupied facilities were all in the GlebeWood civic area (see next slide for map) , with a mean occupancy of 76% on weekdays and 77% on weekends—far higher than the study area as a whole
- Of the 34 RPP facilities sampled, weekday mean occupancy was 27% when RPP restrictions were in effect, and 26% when restrictions were not in effect. On the weekend, RPP restrictions are never in effect for this study area, and the mean occupancy was 34%





## Virginia Hospital Center Study Area Civic Areas



## Historical Comparison – Virginia Hospital Center

- Mean occupancy comparison shows very similar results (see table below), with mean occupancy in 2022 being marginally higher (by 2-6%) than in 2018 for both RPP-restricted and unmanaged facilities
- The largest increase in mean occupancy (from 25% to 31%) was observed for unmanaged facilities during the weekend collection period
- The [two-sample] *t*-test was used to determine statistical significance of the differences (see next slide for details)

Historical Comparison of Mean Parking Occupancy

STUDY_AREA	COLLECTION_DAY	MANAGE_TYP	2018	2022
VA Hospital Center Area	WEEKDAY	RPP	25%	27%
VA Hospital Center Area	WEEKEND	RPP	32%	34%
VA Hospital Center Area	WEEKDAY	UNMANAGED	25%	27%
VA Hospital Center Area	WEEKEND	UNMANAGED	25%	31%



## Historical Comparison – Virginia Hospital Center

- For RPP facilities, the results suggest that there was not a statistically significant difference between the two datasets on either collection day
- For unmanaged facilities, the increase in mean occupancy during the weekend collection runs was found to be statistically significant, but not during the weekday runs

### Two Sample T-Test: Statistical Significance Between Observed Mean Occupancies

MANAGE_TYP, DAY	Pooled Standard Deviation	T-statistic	Significant Difference (90% CI)
RPP, WEEKDAY	0.24379	-0.75153	NO
RPP, WEEKEND	0.28418	-0.74024	NO
UNMANAGED, WEEKDAY	0.23363	-1.41773	NO
UNMANAGED, WEEKEND	0.23441	-5.74768	YES

## Study Results – Columbia Pike (No Changes)

- Mean occupancy for RPP facilities ranged from 19-36% (weekday) and 40-46% (weekend)
- Mean occupancy for Unmanaged facilities ranged from 35-40% (weekday) and 41-44% (weekend)

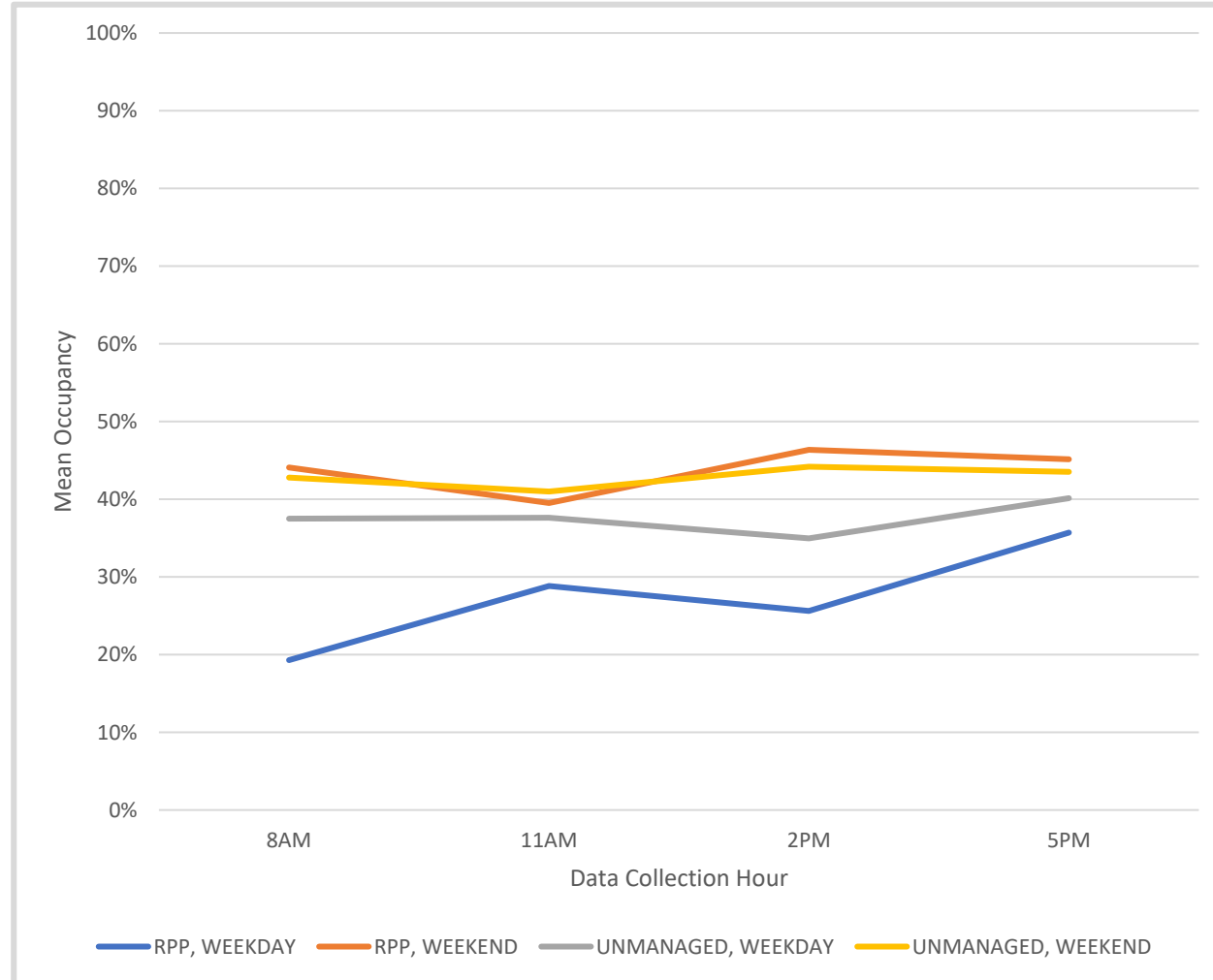
**Mean Parking Occupancy by Data Collection Hour and Day**

Data Collection Hour	Weekday, RPP	Saturday, RPP	Weekday, Unmanaged	Saturday, Unmanaged
8AM	19%	44%	37%	43%
11AM	29%	40%	38%	41%
2PM	26%	46%	35%	44%
5PM	36%	45%	40%	44%



## Columbia Pike (No Changes)

### Mean Parking Occupancy by Data Collection Hour and Day

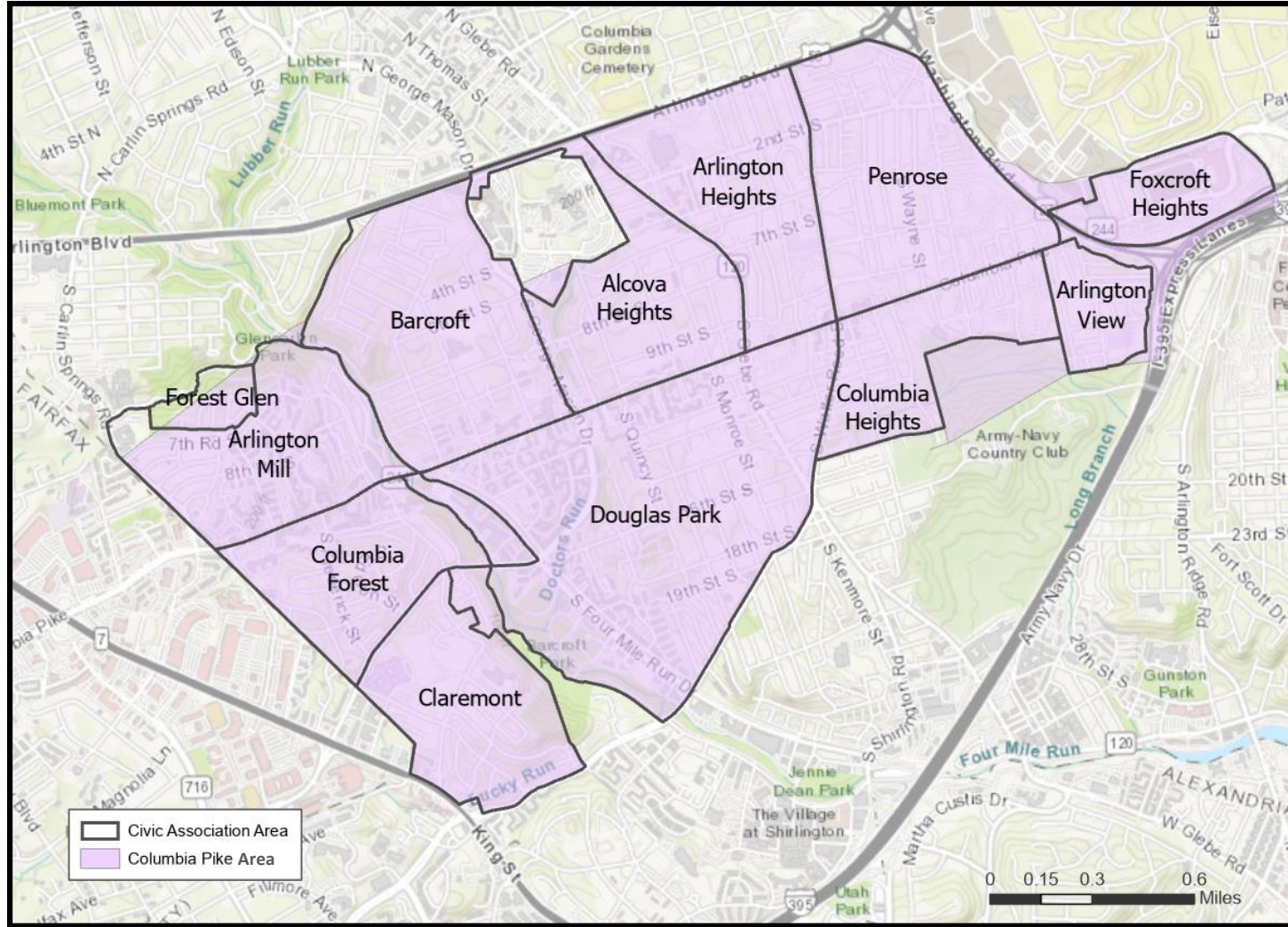


## Observations – Columbia Pike (No Changes)

- Out of 2,185 observations, 81% (1,762) found an occupancy equal or smaller than 60%; 93% (2,026) equal or smaller than 85% occupied
- 7% (158) demonstrated a >85% occupancy, with 24 observations made on RPP managed streets and almost all outside of RPP enforced hours
- Highest occupied facilities were located in the Arlington Mill, Arlington View, and Columbia Forest civic areas (see next slide for map), with weekday/weekend mean occupancies of 56%/63%, 54%/61%, and 55%/57%, respectively
- One of the largest civic areas—Barcroft—had nearly the lowest weekday and weekend mean occupancies of 25% and 28%, respectively



## Columbia Pike Study Area Civic Areas





## Observations – Columbia Pike (No Changes; cont.)

- Utilization of RPP-restricted facilities was particularly low for most weekday collection runs, with mean occupancy as low as 19% (during the 8AM collection run)
- Of the 39 RPP facilities sampled, weekday mean occupancy was 24% when RPP restrictions were in effect, and 31% when restrictions were not in effect. On the weekend, mean occupancy was 38% when RPP-restrictions were in effect, and 44% when restrictions were not in effect





## Study Results – Columbia Pike (RPP to Unmanaged)

- Mean occupancy ranged from 27-41% (weekday) and 41-50% (weekend)

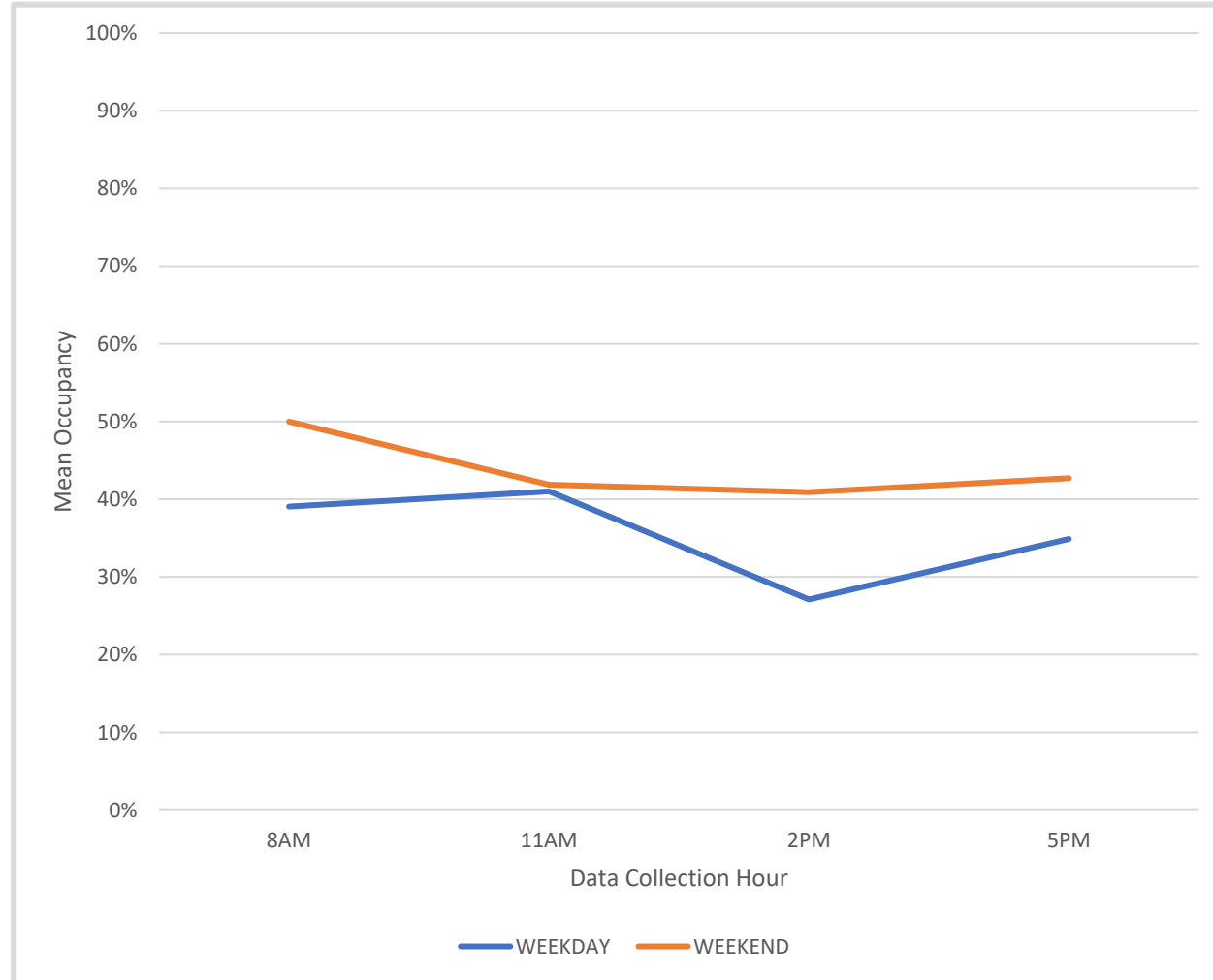
**Mean Parking Occupancy by Data Collection Hour and Day**

<b>Data Collection Hour</b>	<b>Weekday, Unmanaged (RPP 2017)</b>	<b>Saturday, Unmanaged (RPP 2017)</b>
8AM	39%	50%
11AM	41%	42%
2PM	27%	41%
5PM	35%	43%



## Columbia Pike (RPP to Unmanaged)

### Mean Parking Occupancy by Data Collection Hour and Day





## Observations – Columbia Pike (RPP to Unmanaged)

- **96% of all observations (192 out of 200) on unmanaged streets in this area demonstrate an equal to or lower than 85% occupancy, with most (172) being equal to or lower than 60% occupied; 4% (8) have an occupancy >85%**
- **Peak mean occupancy for these 25 unmanaged facilities occurred during the 11AM and 8AM collection intervals for the weekday and weekend period, respectively, which contrasts with the remaining unmanaged facilities sampled for Columbia Pike (where mean occupancy peaked during the afternoon runs)**
- **See next slide for comparison of current data (unmanaged) with the previous data (RPP-restricted)**



## Historical Comparison – Columbia Pike

- There is no distinct trend for the Columbia Pike (No Changes) area. For RPP facilities, mean occupancy in 2022 was marginally lower (by 3%) than in 2017 during the weekday, and marginally higher (by 5%) on the weekend. Occupancy was consistent (within 0-1%) for unmanaged facilities
- Mean occupancy notably increased (by 6% during the weekday collection period, and by 13% on the weekend) in 2022 for facilities that were recently converted from RPP to unmanaged

**Historical Comparison of Mean Parking Occupancy**

STUDY_AREA	COLLECTION_DAY	MANAGE_TYP	2017	2022
Columbia Pike Area	WEEKDAY	RPP	30%	27%
Columbia Pike Area	WEEKEND	RPP	39%	44%
Columbia Pike Area	WEEKDAY	RPP 2017_ Now Unmanaged	30%	36%
Columbia Pike Area	WEEKEND	RPP 2017_ Now Unmanaged	31%	44%
Columbia Pike Area	WEEKDAY	UNMANAGED	38%	38%
Columbia Pike Area	WEEKEND	UNMANAGED	42%	43%

## Historical Comparison – Columbia Pike (No Changes)

- The [two-sample] *t*-test was used to determine statistical significance of the differences (see table below)
- For both RPP and unmanaged facilities, there was no statistically significant difference in mean occupancy for either collection day

**Two Sample T-Test: Statistical Significance Between Observed Mean Occupancies**

MANAGE_TYP, DAY	Pooled Standard Deviation	T-statistic	Significant Difference (90% CI)
RPP, WEEKDAY	0.25901	1.13378	NO
RPP, WEEKEND	0.36054	-1.60128	NO
UNMANAGED, WEEKDAY	0.31563	0.05812	NO
UNMANAGED, WEEKEND	0.31928	-0.53732	NO



## Historical Comparison – Columbia Pike (RPP to Unmanaged)

- The results suggest that on both collection days, the increase in mean occupancy was statistically significant (see table below)

### Two Sample T-Test: Statistical Significance Between Observed Mean Occupancies

MANAGE_TYP, DAY	Pooled Standard Deviation	T-statistic	Significant Difference (90% CI)
RPP 2017_Now Unmanaged, WEEKDAY	0.22572	-2.30764	YES
RPP 2017_Now Unmanaged, WEEKEND	0.25172	-4.60302	YES

## Study Results – Richmond Highway/Aurora Highlands

- Mean occupancy for RPP facilities ranged from 19-31% (weekday) and 30-33% (weekend)
- Mean occupancy for Unmanaged facilities ranged from 15-26% (weekday) and 18-20% (weekend)

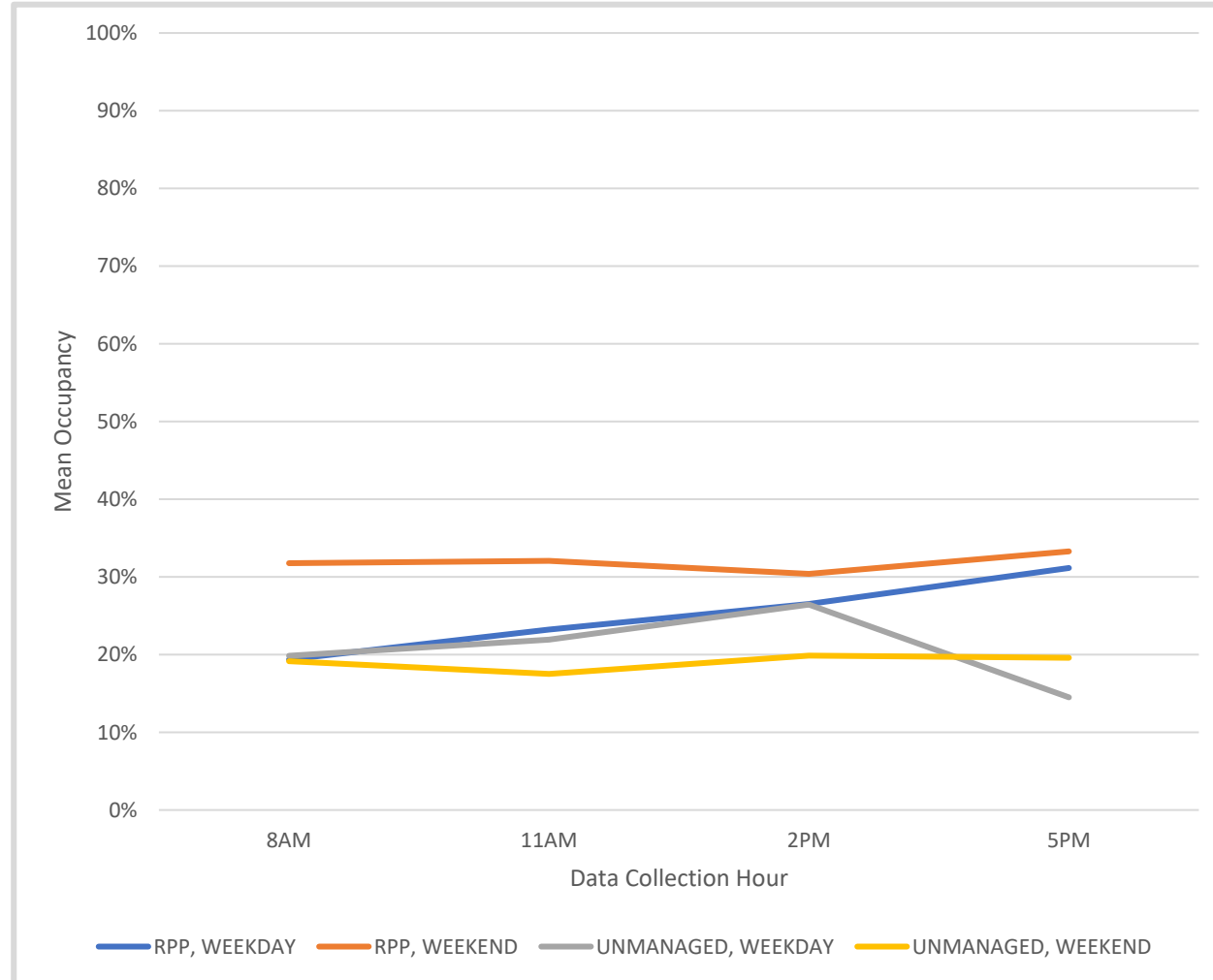
**Mean Parking Occupancy by Data Collection Hour and Day**

Data Collection Hour	Weekday, RPP	Saturday, RPP	Weekday, Unmanaged	Saturday, Unmanaged
8AM	19%	32%	20%	19%
11AM	23%	32%	22%	18%
2PM	27%	30%	26%	20%
5PM	31%	33%	15%	20%



## Richmond Highway/Aurora Highlands

### Mean Parking Occupancy by Data Collection Hour and Day



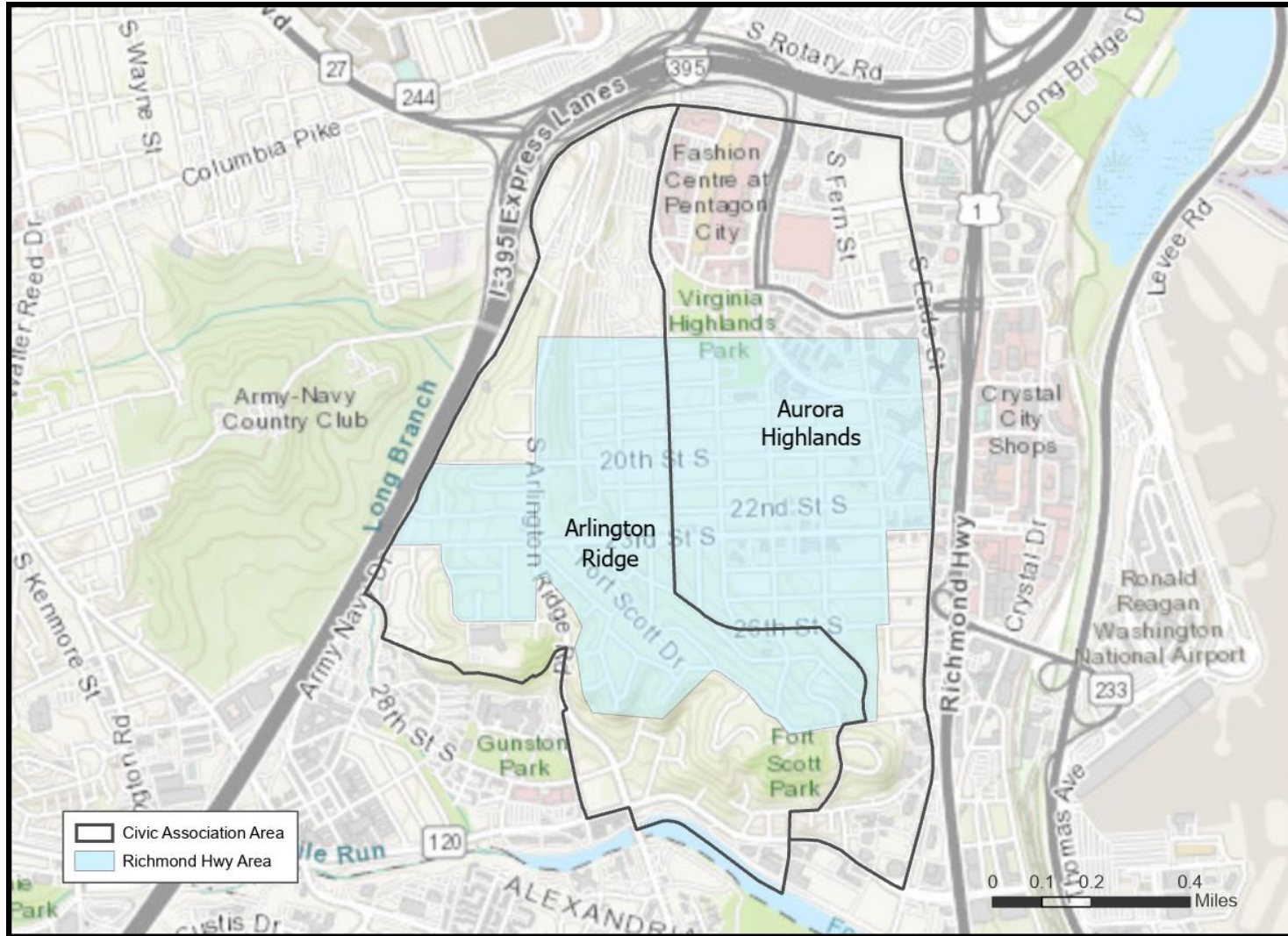


## Observations – Richmond Highway/Aurora Highlands

- Out of all 1,224 observations in this area, 98% (1,200) were at or below 85% occupied, and most (1,129) showed an occupancy of 60% or less. Only 2% (24) had an occupancy of >85% with most of them (19) being on RPP streets outside of RPP enforced hours
- RPP-restricted facilities had consistently higher occupancy than unmanaged facilities, particularly during the weekend collection period when average occupancy for RPP facilities was at least 11% higher
- Mean occupancy for the Aurora Highlands civic area (predominantly RPP; see next slide for map) ranged from 35% to 44% across all runs, while mean occupancy for the Arlington Ridge civic area (unmanaged) ranged from 20% to 27%
- Of the 120 RPP facilities sampled, weekday mean occupancy was 23% when RPP restrictions were in effect, and 30% when restrictions were not in effect. On the weekend, mean occupancy was 45% when RPP-restrictions were in effect, and 31% when restrictions were not in effect



# Richmond Highway/Aurora Highlands Study Area Civic Areas



## Historical Comparison – Richmond Highway/Aurora Highlands

- For RPP facilities, mean occupancy in 2022 was notably lower (by 7%) than in 2019 during the weekday collection period, and notably higher (by 6%) on the weekend (see table)
- For unmanaged facilities, mean occupancy in 2022 was notably lower (by 5-6%) than in 2019 for both the weekday and weekend collection periods

**Historical Comparison of Mean Parking Occupancy**

STUDY_AREA	COLLECTION_DAY	MANAGE_TYP	2019	2022
Richmond Hwy/Aurora Highlands Area	WEEKDAY	RPP	32%	25%
Richmond Hwy/Aurora Highlands Area	WEEKEND	RPP	26%	32%
Richmond Hwy/Aurora Highlands Area	WEEKDAY	UNMANAGED	27%	21%
Richmond Hwy/Aurora Highlands Area	WEEKEND	UNMANAGED	24%	19%

## Historical Comparison – Richmond Highway/Aurora Highlands

- The [two-sample] *t*-test was used to determine statistical significance of the differences (see table below)
- For both RPP and unmanaged facilities, the results suggest that on both collection days, the decrease and the increase in mean occupancy were statistically significant

**Two Sample T-Test: Statistical Significance Between Observed Mean Occupancies**

MANAGE_TYP, DAY	Pooled Standard Deviation	T-statistic	Significant Difference (90% CI)
RPP, WEEKDAY	0.24787	5.39177	YES
RPP, WEEKEND	0.27043	-4.05229	YES
UNMANAGED, WEEKDAY	0.23867	3.03204	YES
UNMANAGED, WEEKEND	0.22021	2.63000	YES

# Figure A-1

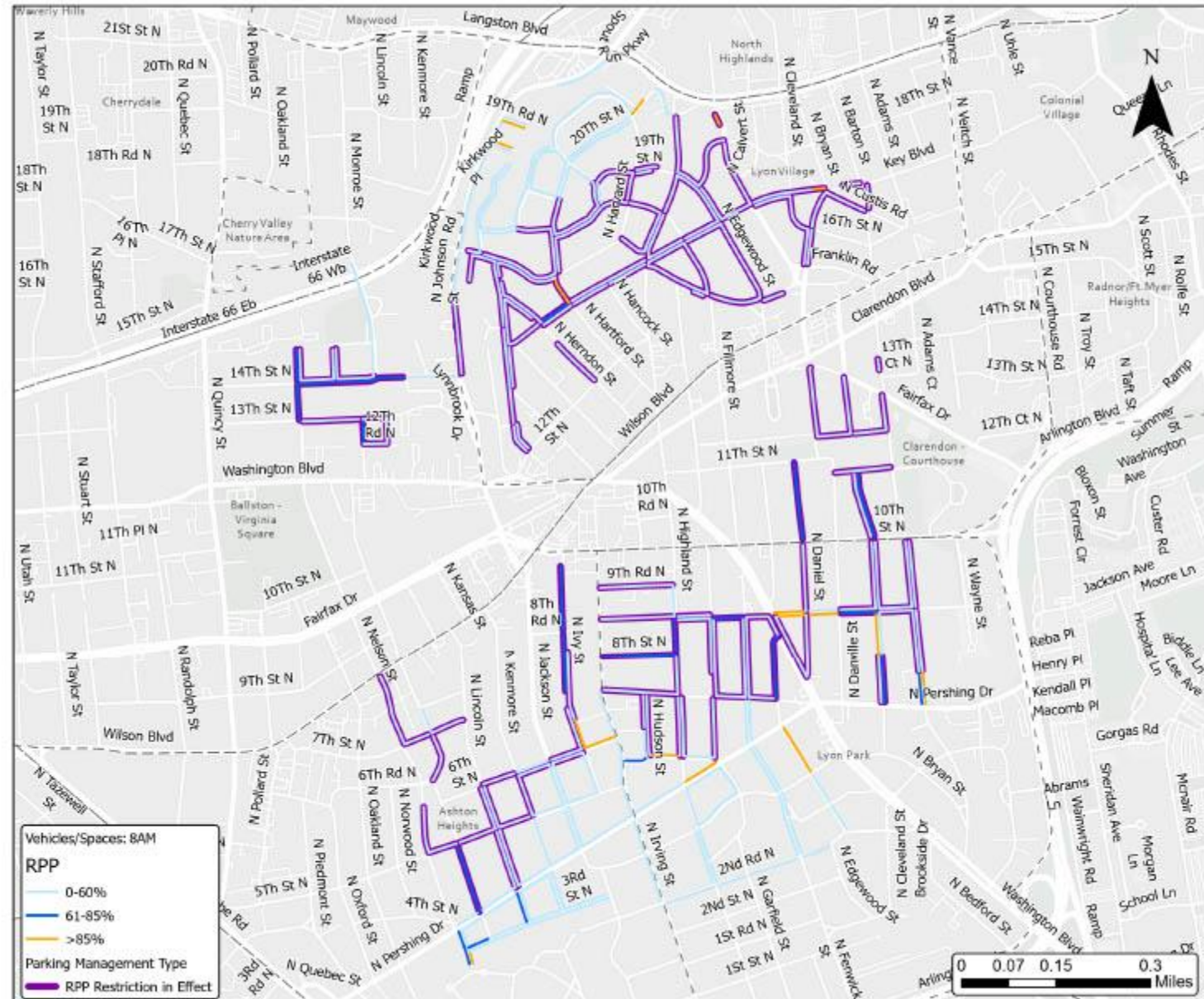
Share of Parking Spaces  
Used by Vehicles at

8AM

on

Weekday

Study Area: Clarendon/VA  
Square Area  
Study Period: June 2022



## Figure A-2

Share of Parking Spaces  
Used by Vehicles at

11AM

on

Weekday

Study Area: Clarendon/VA  
Square Area

Study Period: June 2022



# Figure A-3

Share of Parking Spaces Used by Vehicles at

2PM

on

Weekday

Study Area: Clarendon/VA Square Area  
Study Period: June 2022



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Esri Community Maps Contributors, DOGIS, Fairfax County, VA, VGIN, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

# Figure A-4

Share of Parking Spaces  
Used by Vehicles at

5PM

on

Weekday

Study Area: Clarendon/VA  
Square Area  
Study Period: June 2022



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# Figure A-5

Share of Parking Spaces  
Used by Vehicles at

8AM

on

Weekend

Study Area: Clarendon/VA  
Square Area  
Study Period: April 2022



# Figure A-6

Share of Parking Spaces  
Used by Vehicles at

11AM

on

Weekend

Study Area: Clarendon/VA  
Square Area

Study Period: April 2022



## Figure A-7

Share of Parking Spaces  
Used by Vehicles at

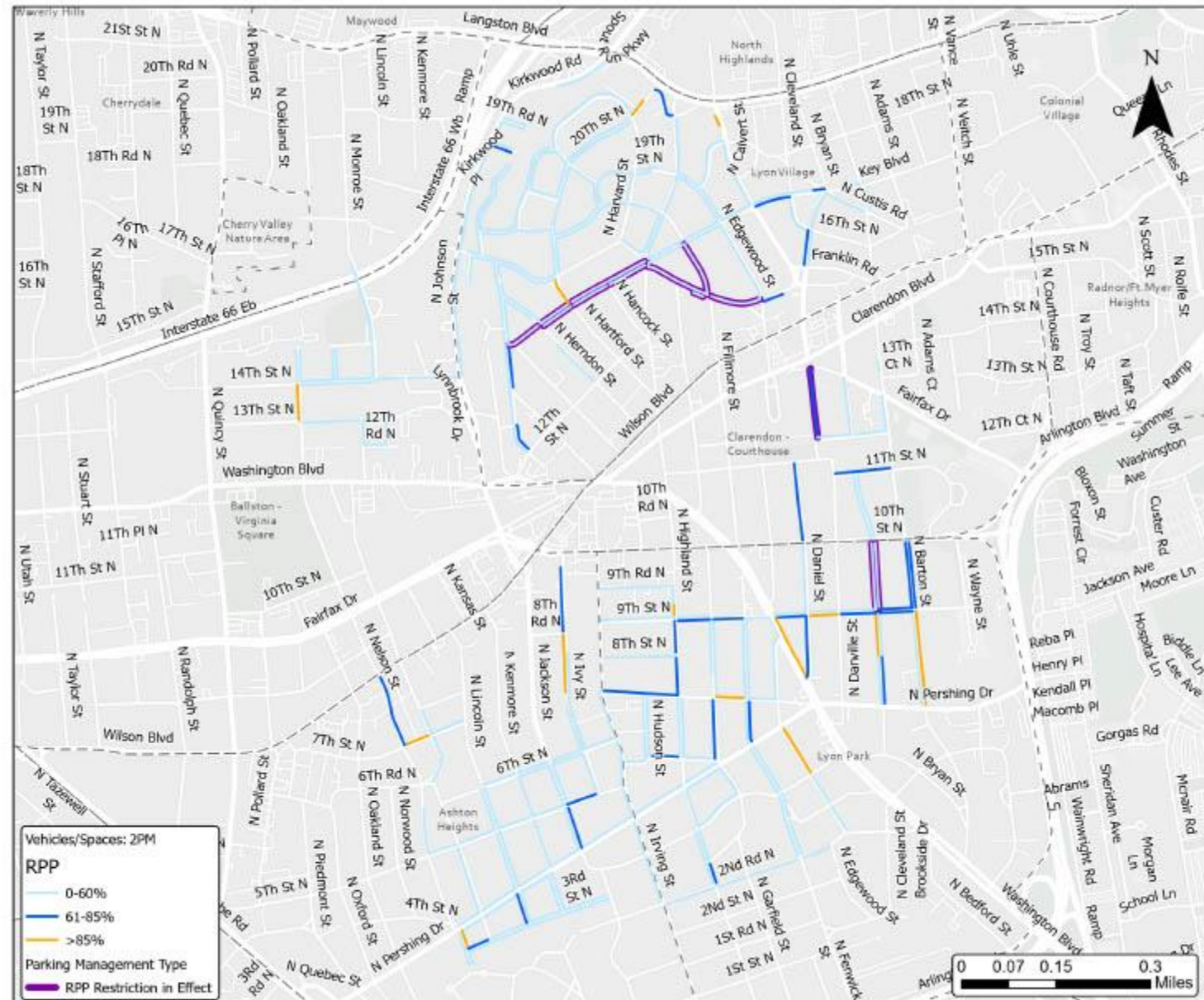
2PM

on

Weekend

Study Area: Clarendon/VA  
Square Area

Study Period: April 2022



# Figure A-8

Share of Parking Spaces  
Used by Vehicles at

5PM

on

Weekend

Study Area: Clarendon/VA  
Square Area

Study Period: April 2022



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# Figure A-9

Share of Parking Spaces  
Used by Vehicles at

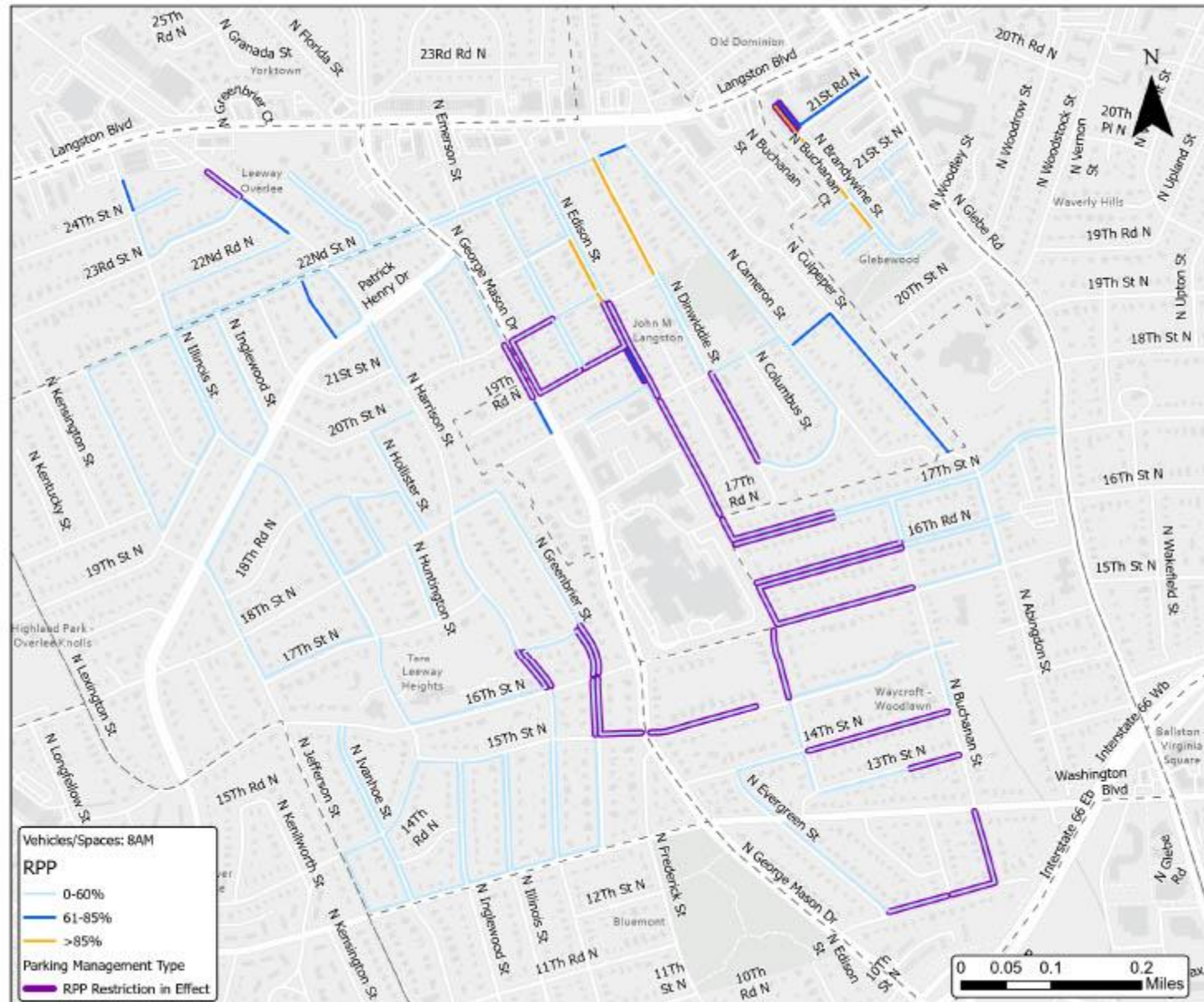
**8AM**

on

**Weekday**

Study Area: VA Hospital  
Center Area

Study Period: April 2022



## Figure A-10

Share of Parking Spaces  
Used by Vehicles at

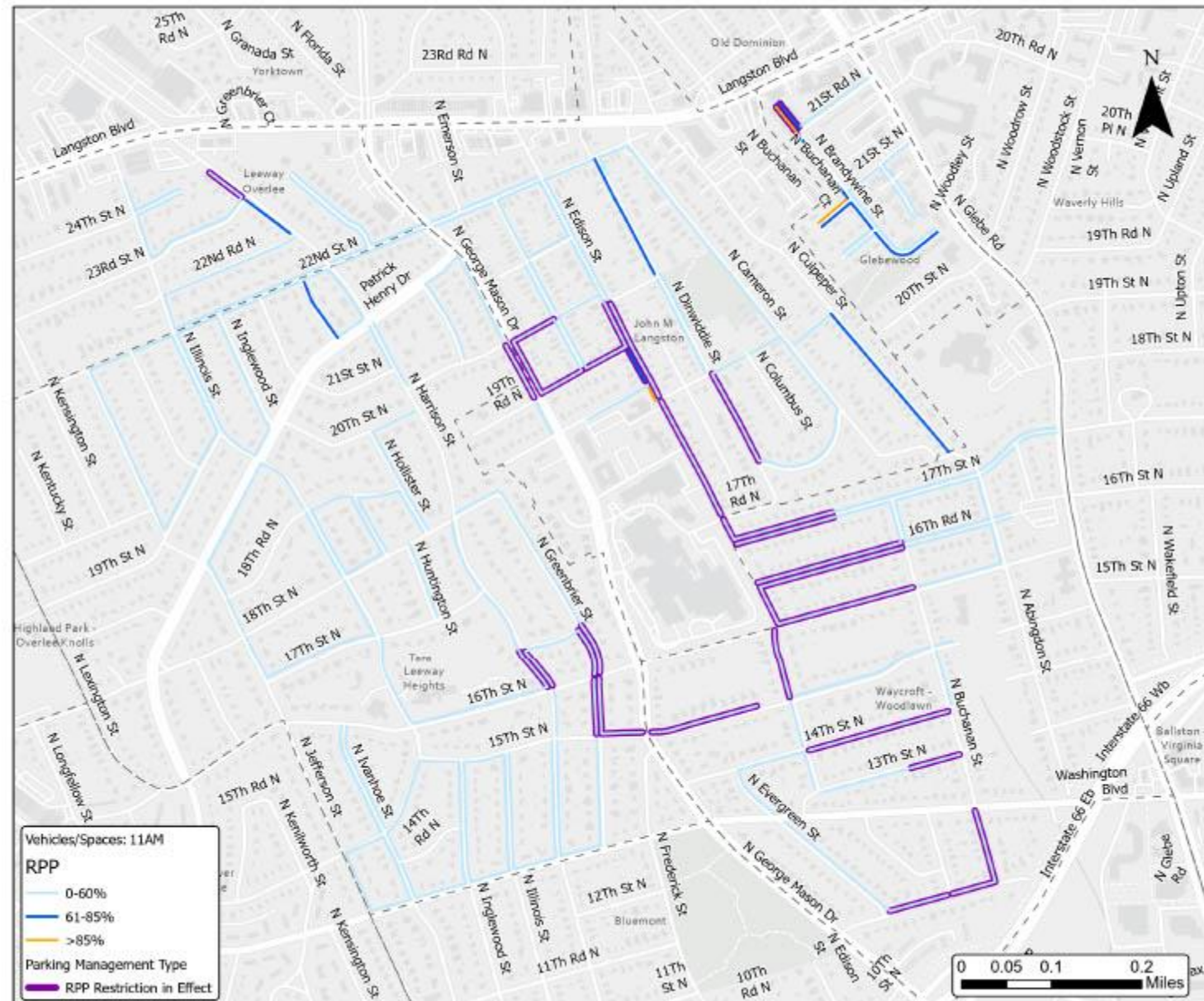
11AM

on

Weekday

Study Area: VA Hospital  
Center Area

Study Period: April 2022



# Figure A-11

Share of Parking Spaces Used by Vehicles at

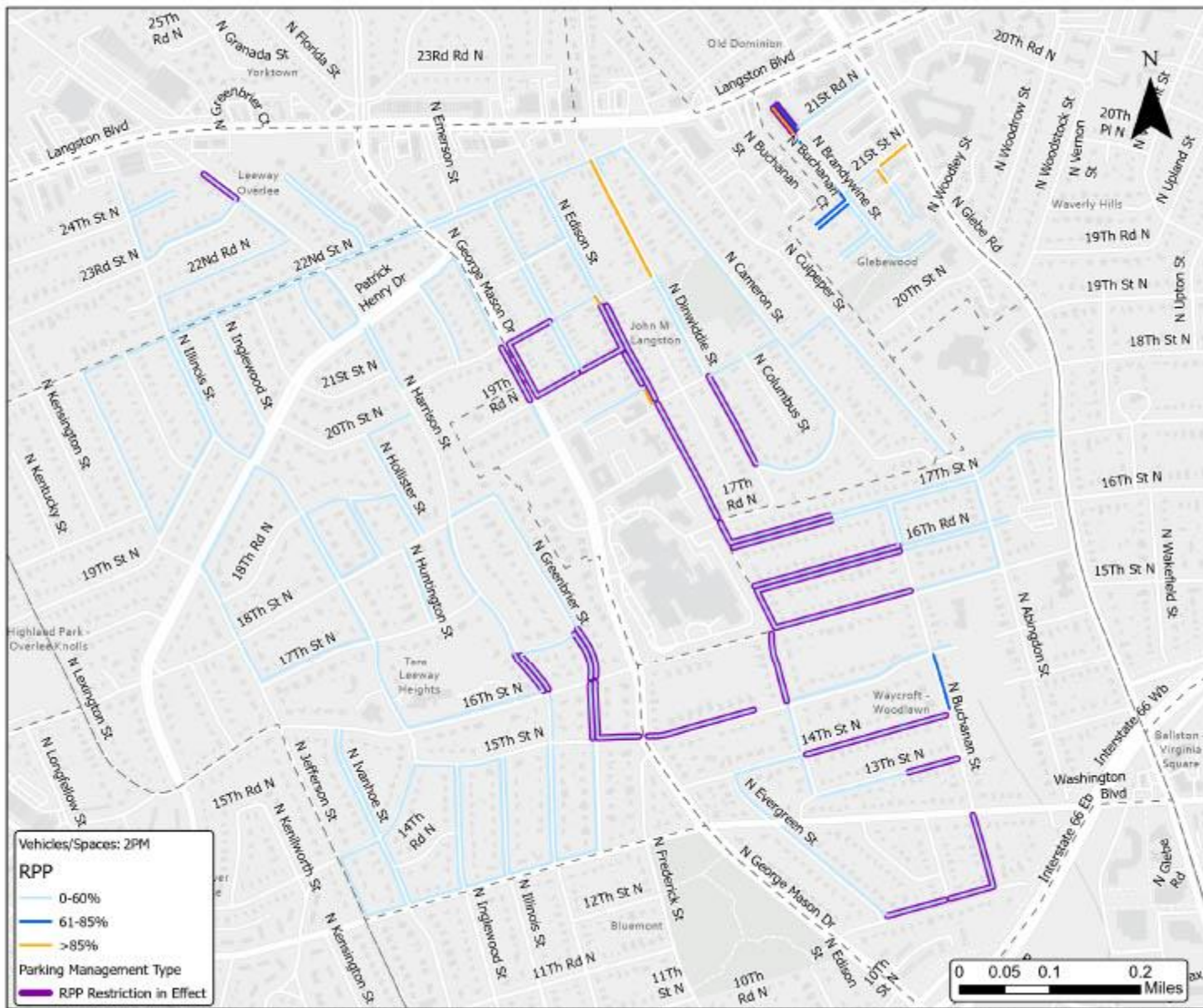
2PM

on

Weekday

Study Area: VA Hospital Center Area

Study Period: April 2022



## Figure A-12

Share of Parking Spaces  
Used by Vehicles at

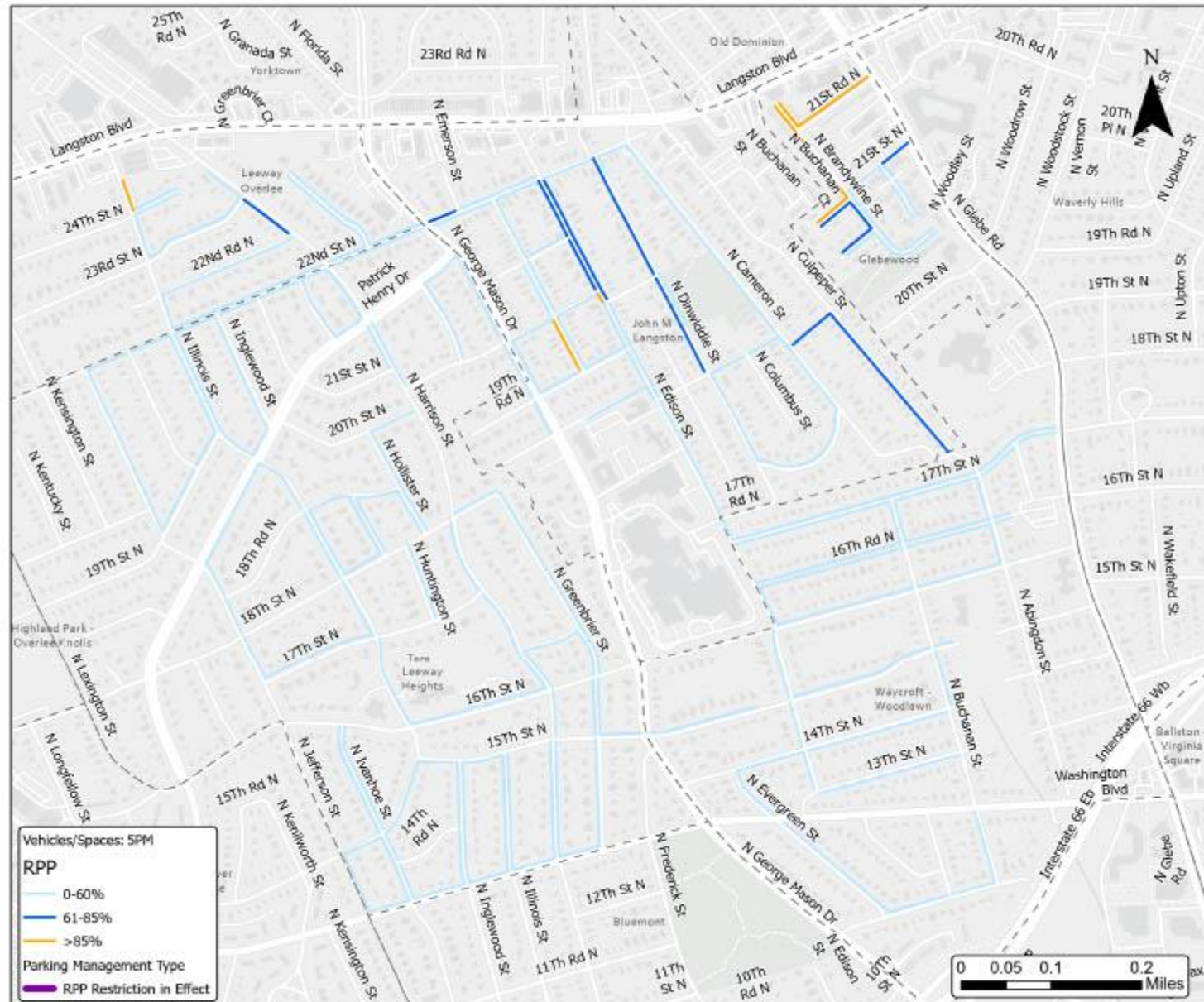
5PM

on

Weekday

Study Area: VA Hospital  
Center Area

Study Period: April 2022



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# Figure A-13

Share of Parking Spaces Used by Vehicles at

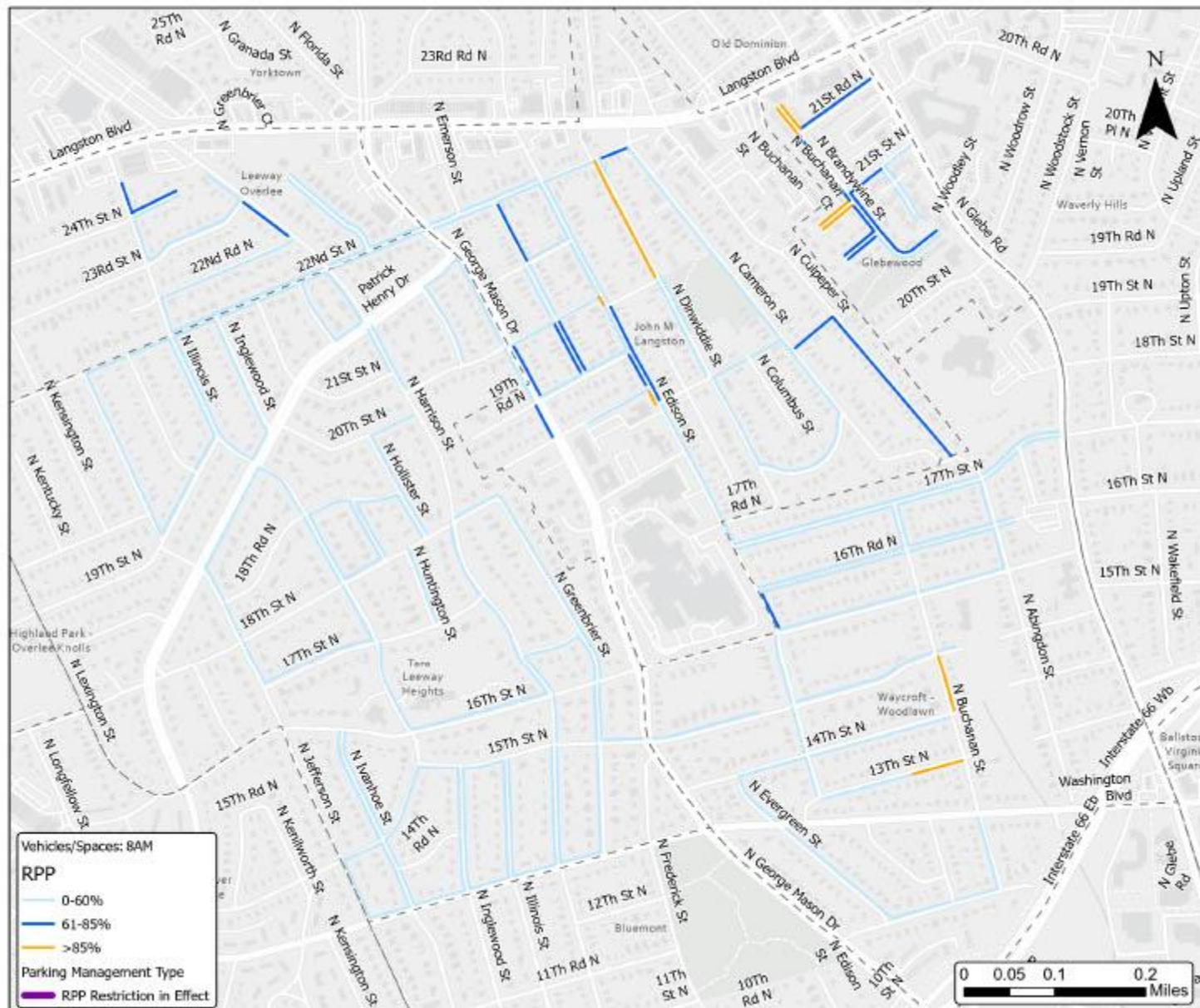
8AM

on

Weekend

Study Area: VA Hospital Center Area

Study Period: April 2022



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# Figure A-14

Share of Parking Spaces  
Used by Vehicles at

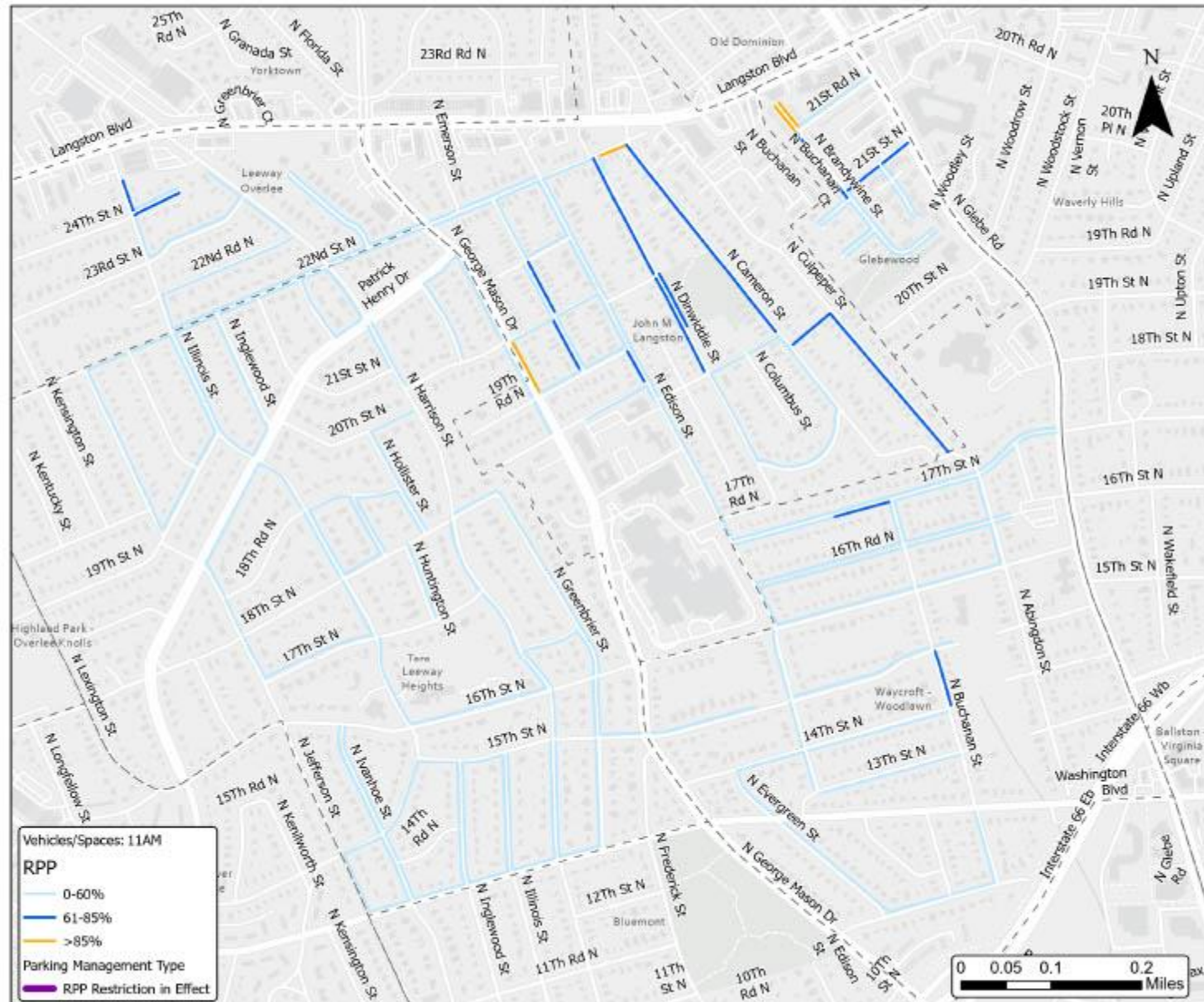
11AM

on

Weekend

Study Area: VA Hospital  
Center Area

Study Period: April 2022



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# Figure A-15

Share of Parking Spaces Used by Vehicles at

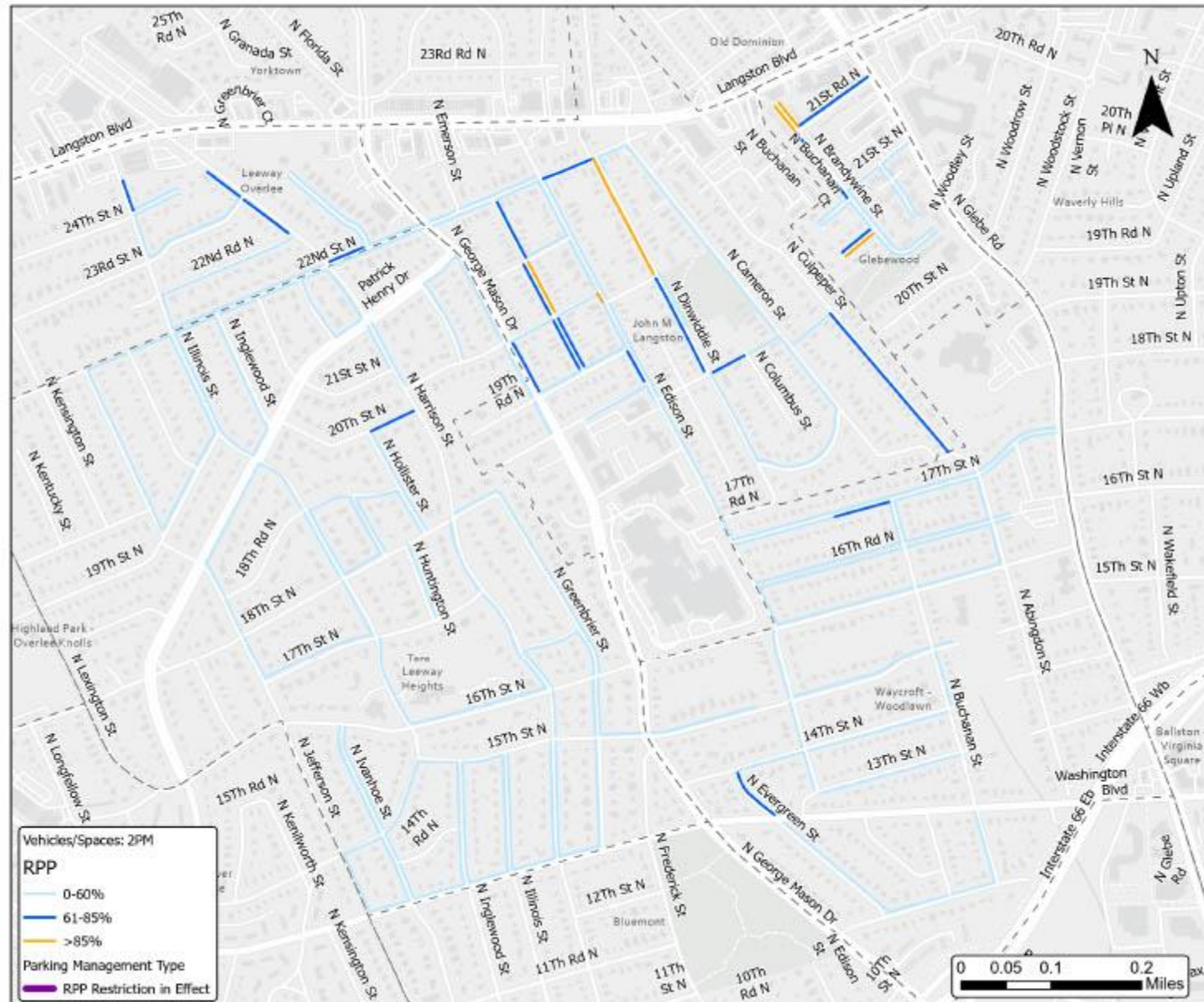
2PM

on

Weekend

Study Area: VA Hospital Center Area

Study Period: April 2022



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# Figure A-16

Share of Parking Spaces  
Used by Vehicles at

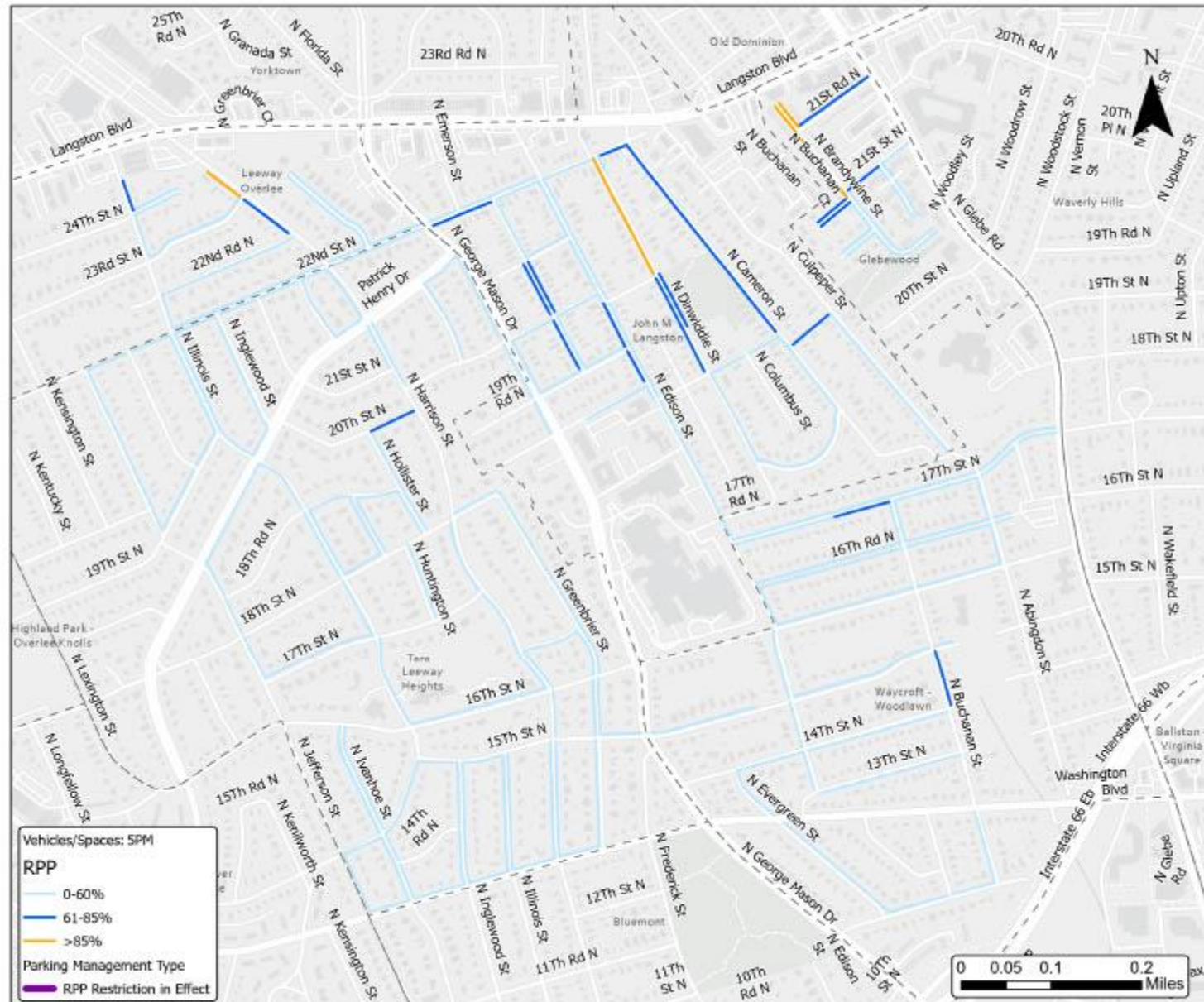
5PM

on

Weekend

Study Area: VA Hospital  
Center Area

Study Period: April 2022



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# Figure A-17

Share of Parking Spaces Used by Vehicles at

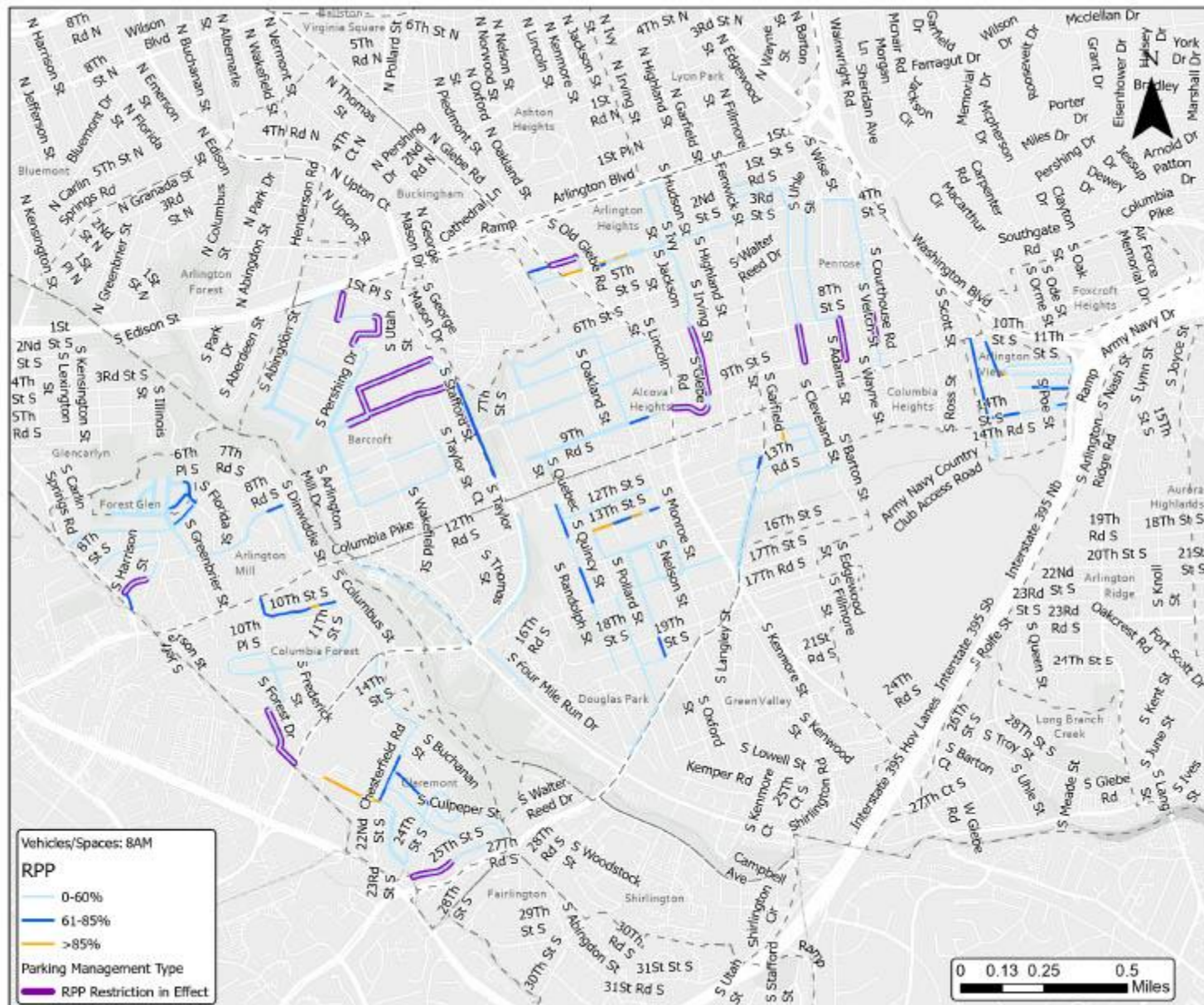
8AM

on

Weekday

Study Area: Columbia Pike Area

Study Period: May 2022



# Figure A-18

Share of Parking Spaces Used by Vehicles at

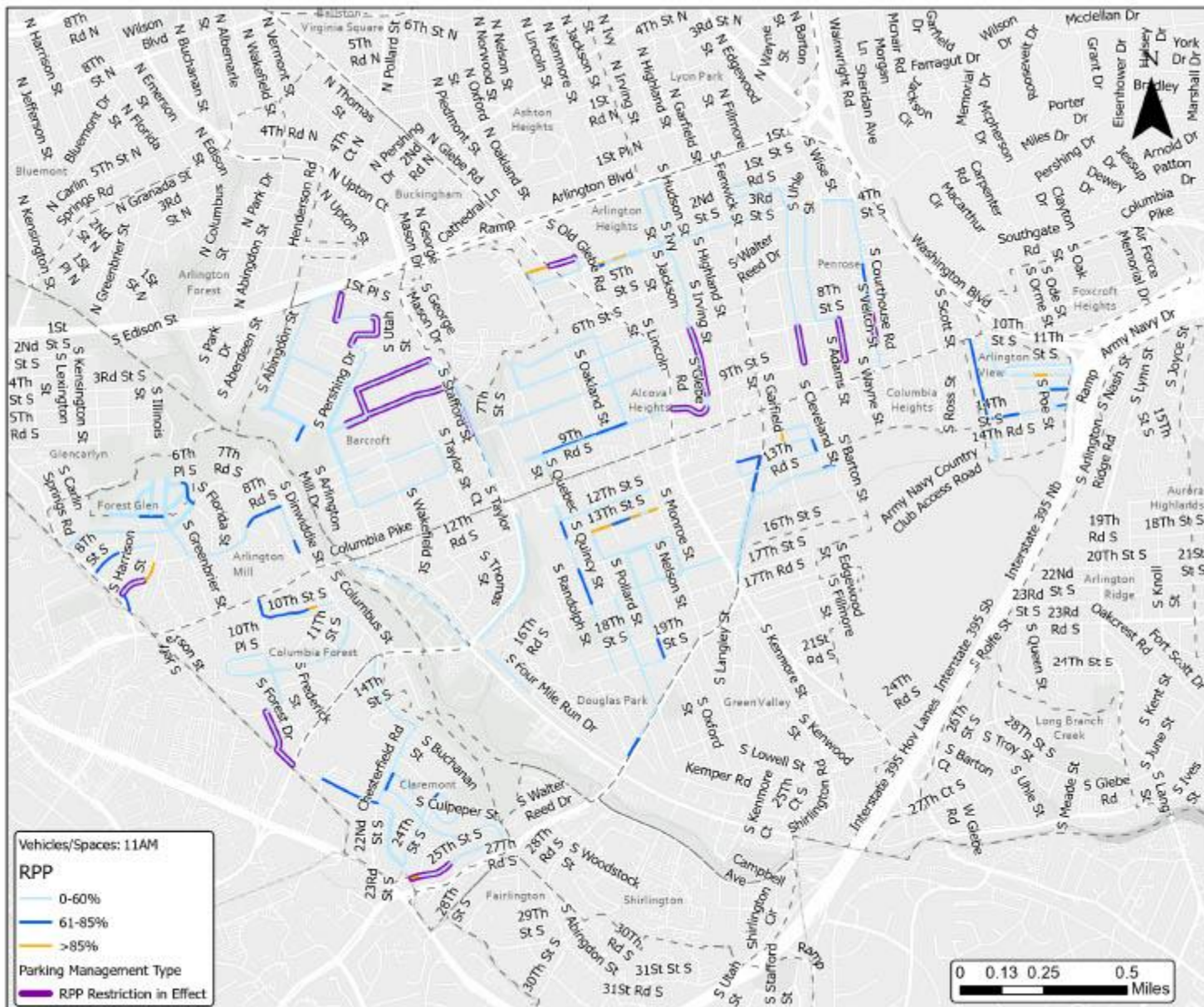
11AM

on

Weekday

Study Area: Columbia Pike Area

Study Period: May 2022



# Figure A-19

Share of Parking Spaces  
Used by Vehicles at

2PM

on

Weekday

Study Area: Columbia Pike  
Area

Study Period: May 2022



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# Figure A-20

Share of Parking Spaces  
Used by Vehicles at

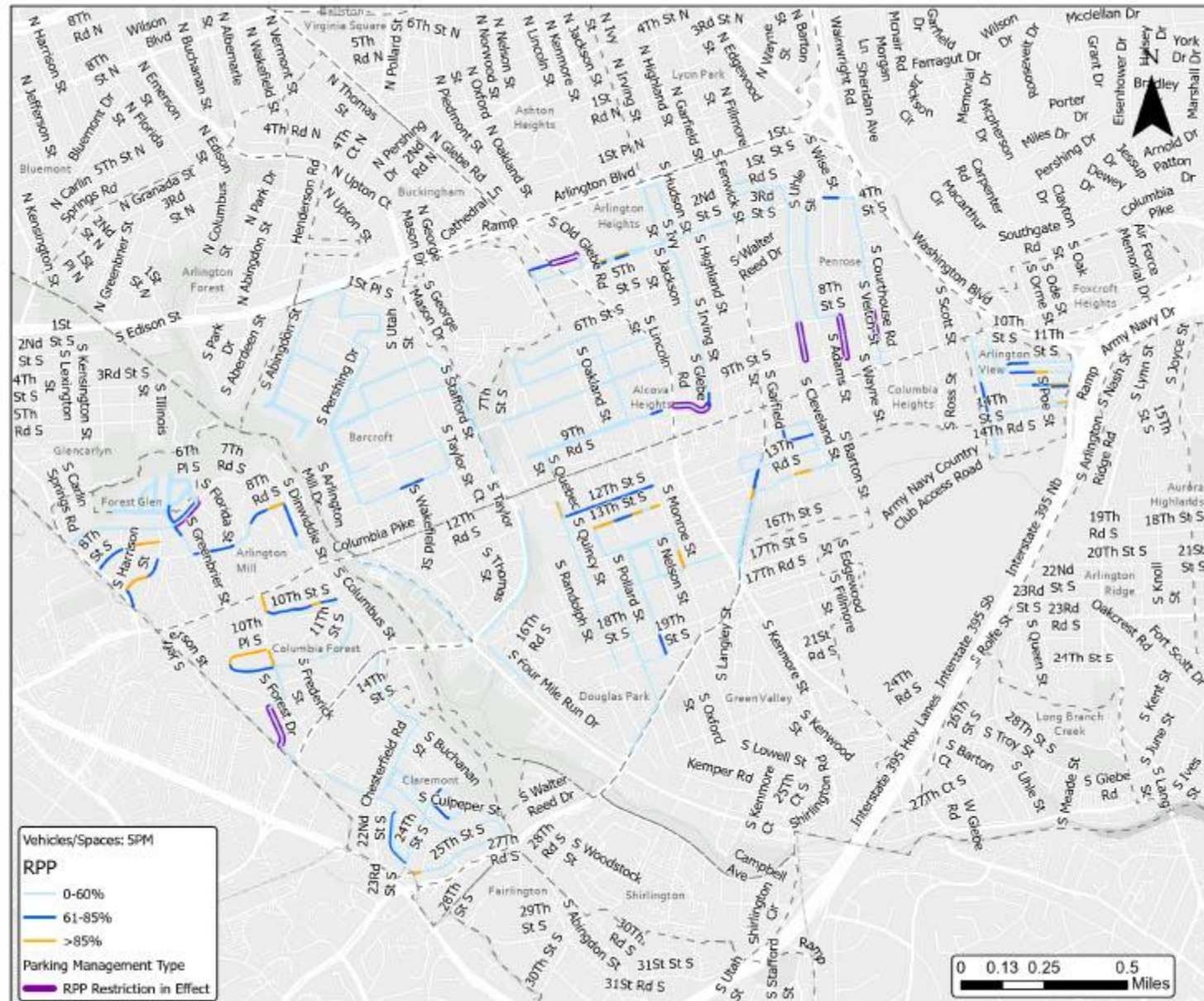
5PM

on

Weekday

Study Area: Columbia Pike  
Area

Study Period: May 2022





# Figure A-21

Share of Parking Spaces Used by Vehicles at

8AM

on

Weekend

Study Area: Columbia Pike Area

Study Period: May 2022



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# Figure A-22

Share of Parking Spaces Used by Vehicles at

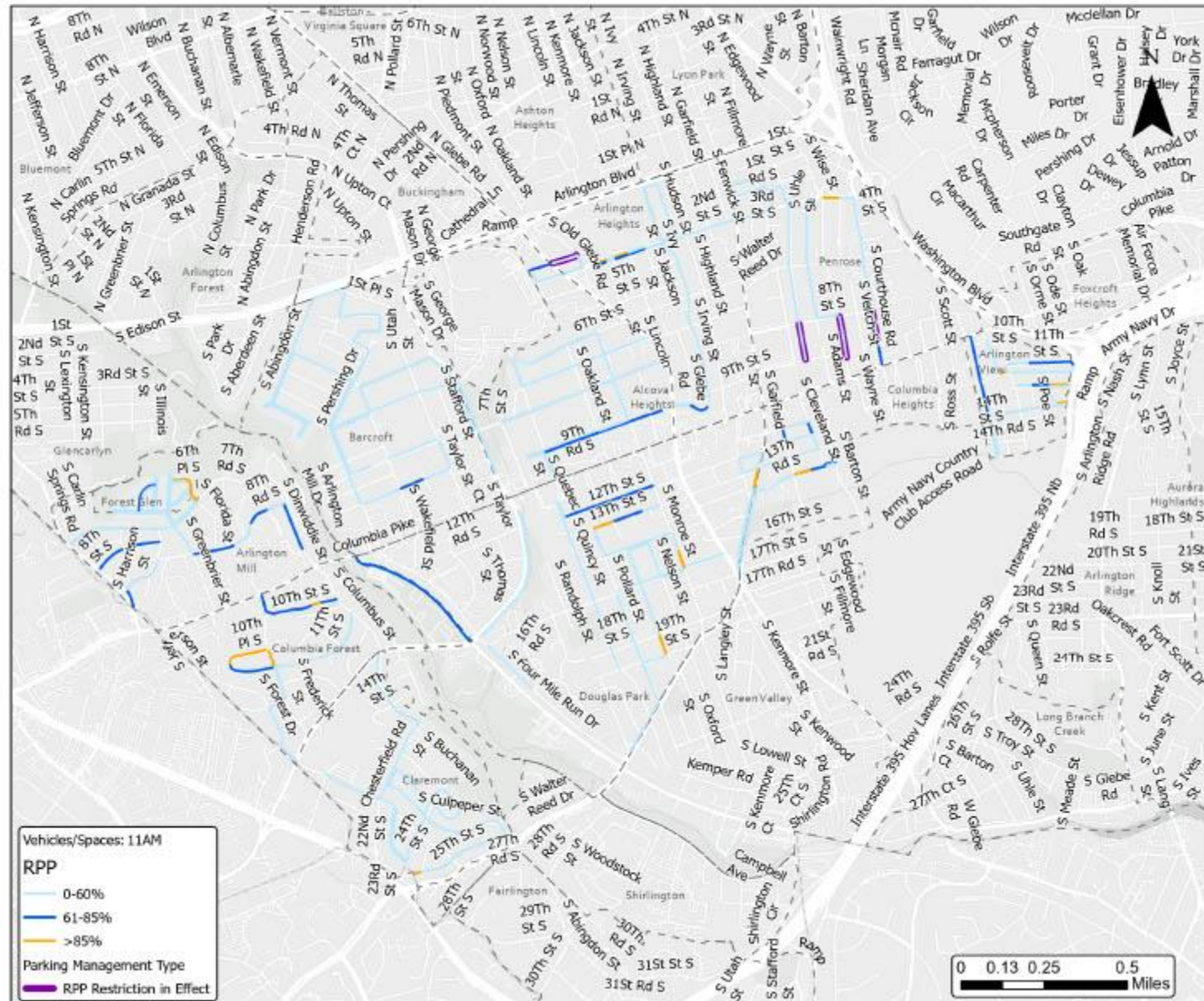
11AM

on

Weekend

Study Area: Columbia Pike Area

Study Period: May 2022



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# Figure A-23

Share of Parking Spaces Used by Vehicles at

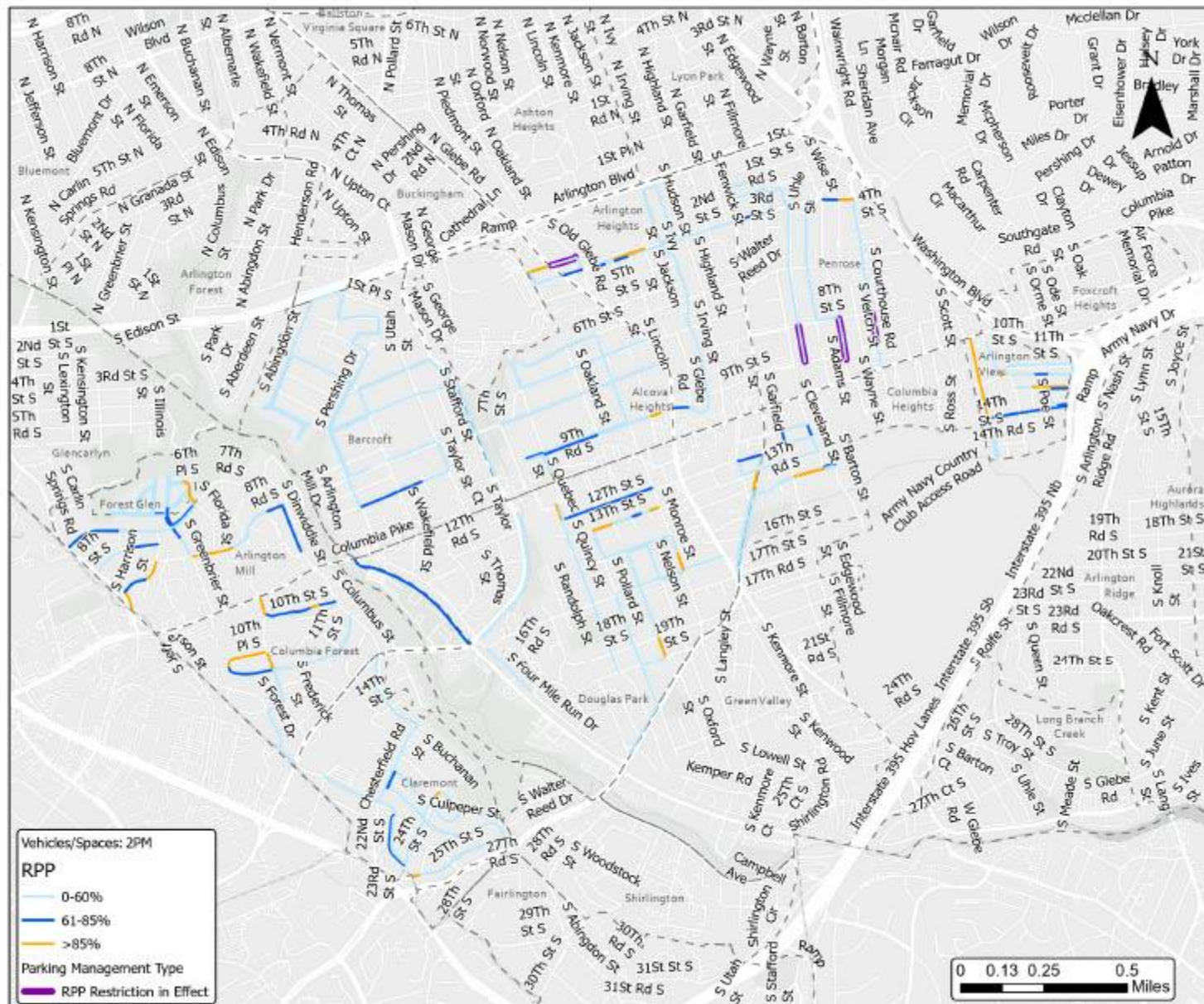
2PM

on

Weekend

Study Area: Columbia Pike Area

Study Period: May 2022



# Figure A-24

Share of Parking Spaces Used by Vehicles at

5PM

on

Weekend

Study Area: Columbia Pike Area

Study Period: May 2022



# Figure A-25

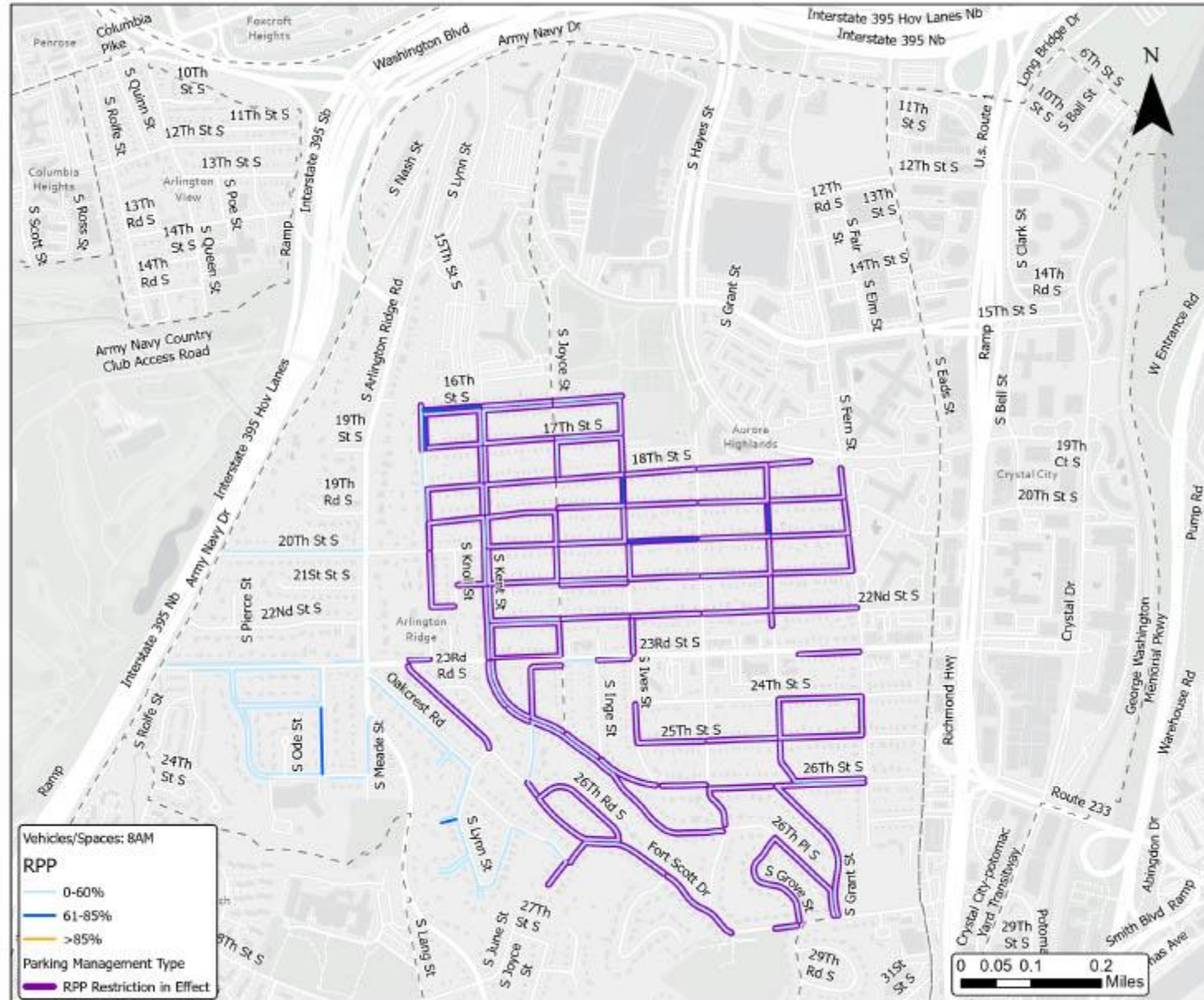
Share of Parking Spaces Used by Vehicles at

8AM

on

Weekday

Study Area: Richmond Hwy/  
Aurora Highlands Area  
Study Period: May 2022



# Figure A-26

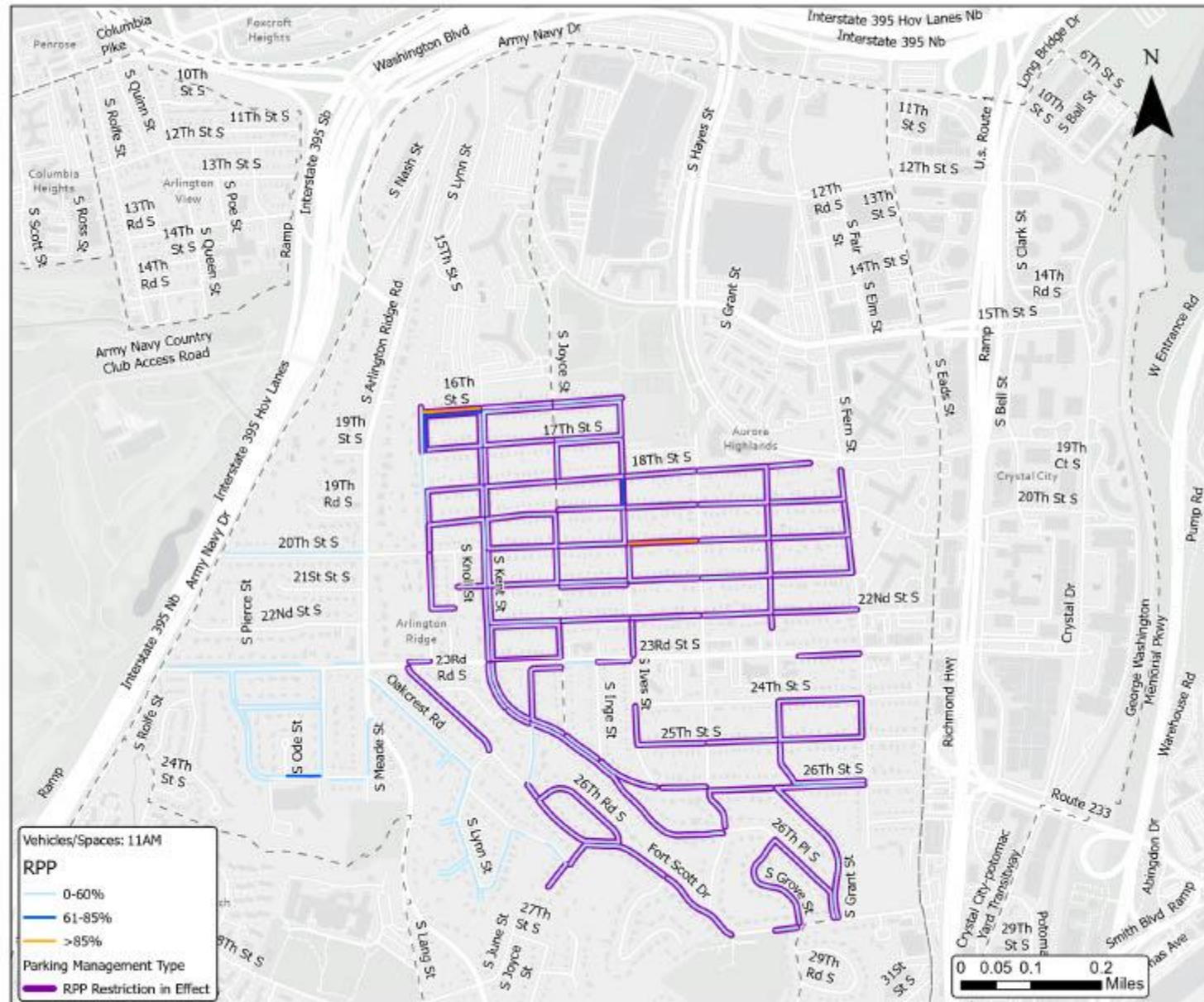
Share of Parking Spaces Used by Vehicles at

11AM

on

Weekday

Study Area: Richmond Hwy/  
Aurora Highlands Area  
Study Period: May 2022



# Figure A-27

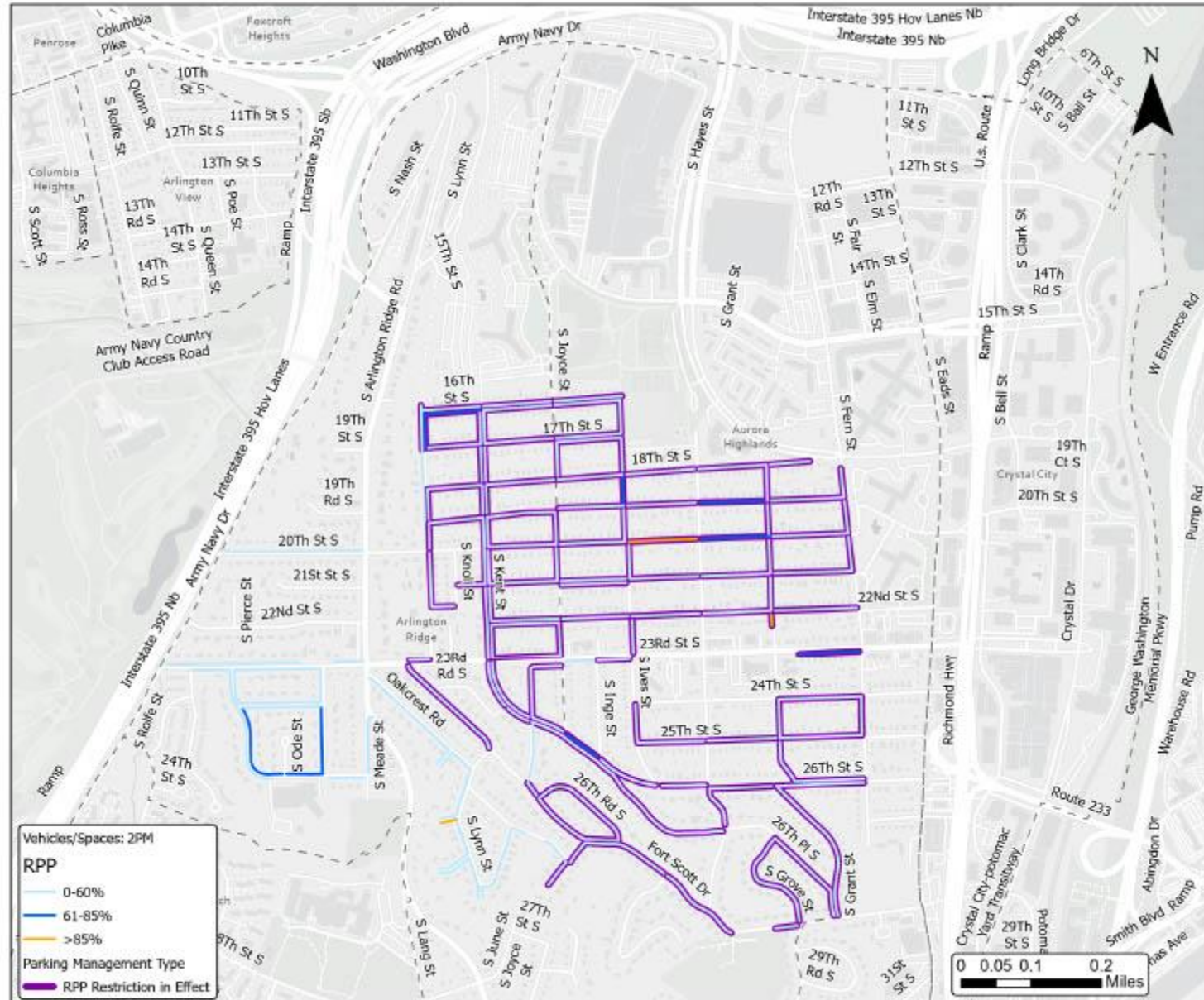
Share of Parking Spaces Used by Vehicles at

2PM

on

Weekday

Study Area: Richmond Hwy/  
Aurora Highlands Area  
Study Period: May 2022



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# Figure A-28

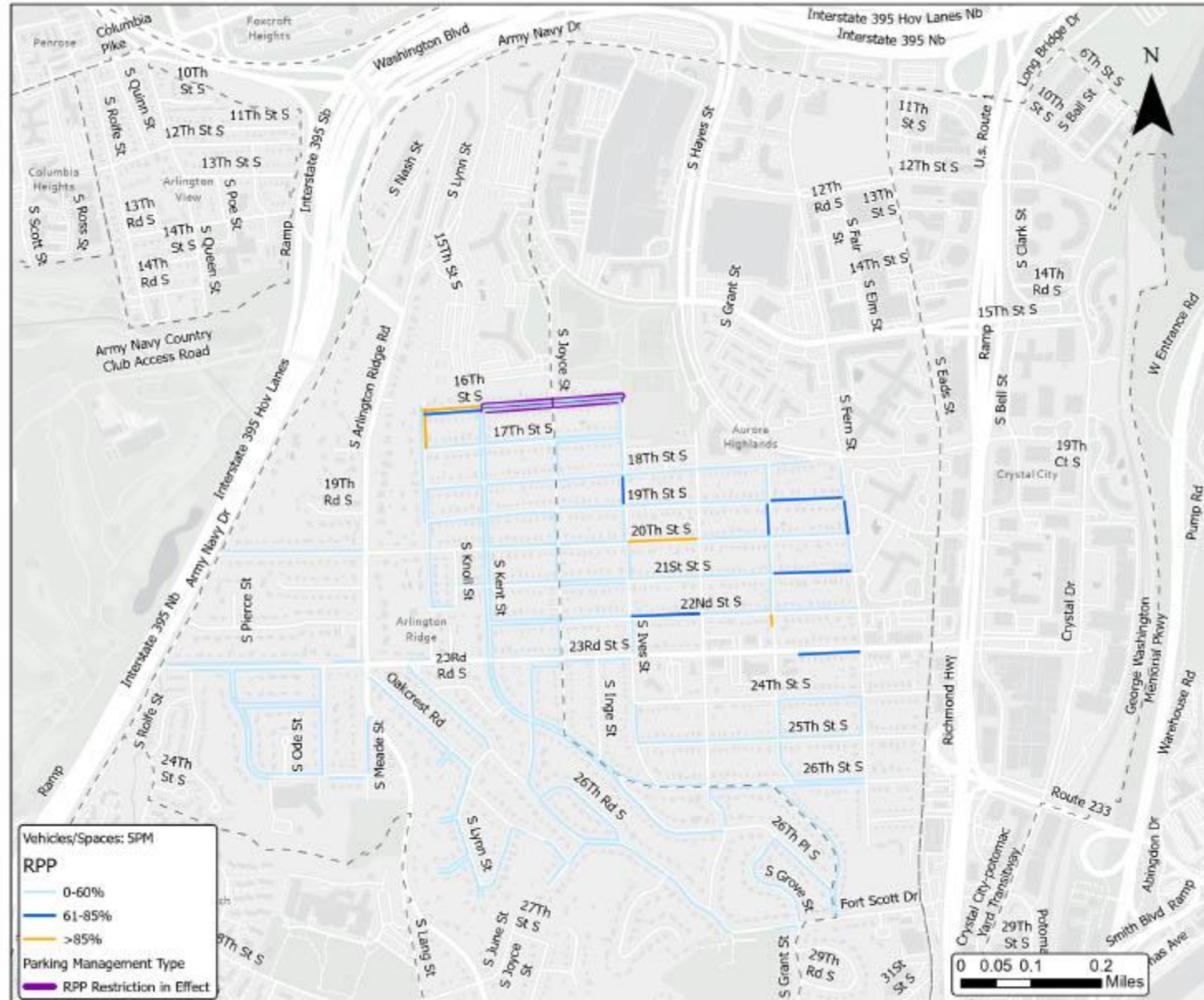
Share of Parking Spaces  
Used by Vehicles at

5PM

on

Weekday

Study Area: Richmond Hwy/  
Aurora Highlands Area  
Study Period: May 2022





# Figure A-29

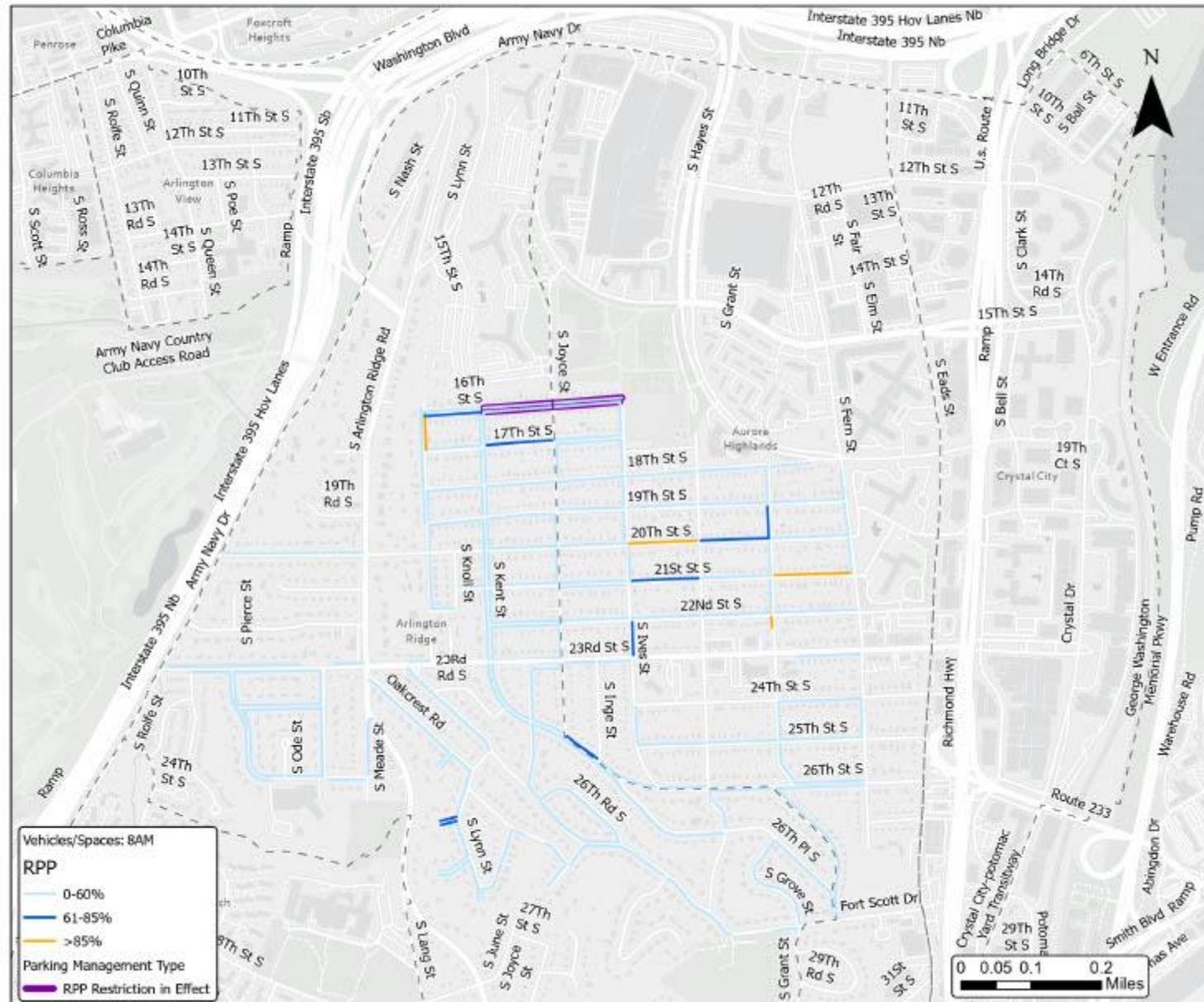
Share of Parking Spaces Used by Vehicles at

8AM

on

Weekend

Study Area: Richmond Hwy/  
Aurora Highlands Area  
Study Period: May 2022



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# Figure A-30

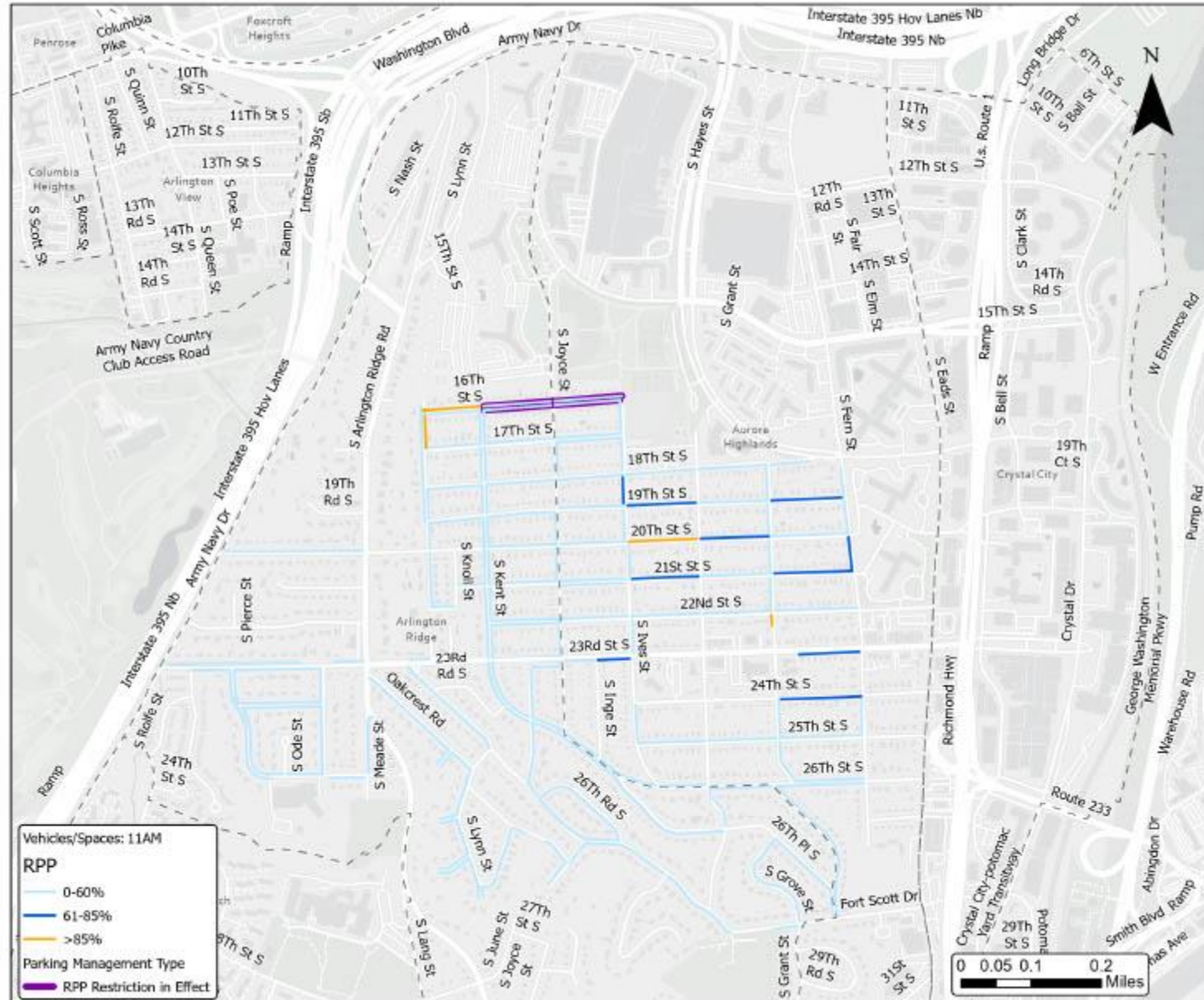
Share of Parking Spaces Used by Vehicles at

11AM

on

Weekend

Study Area: Richmond Hwy/  
Aurora Highlands Area  
Study Period: May 2022



# Figure A-31

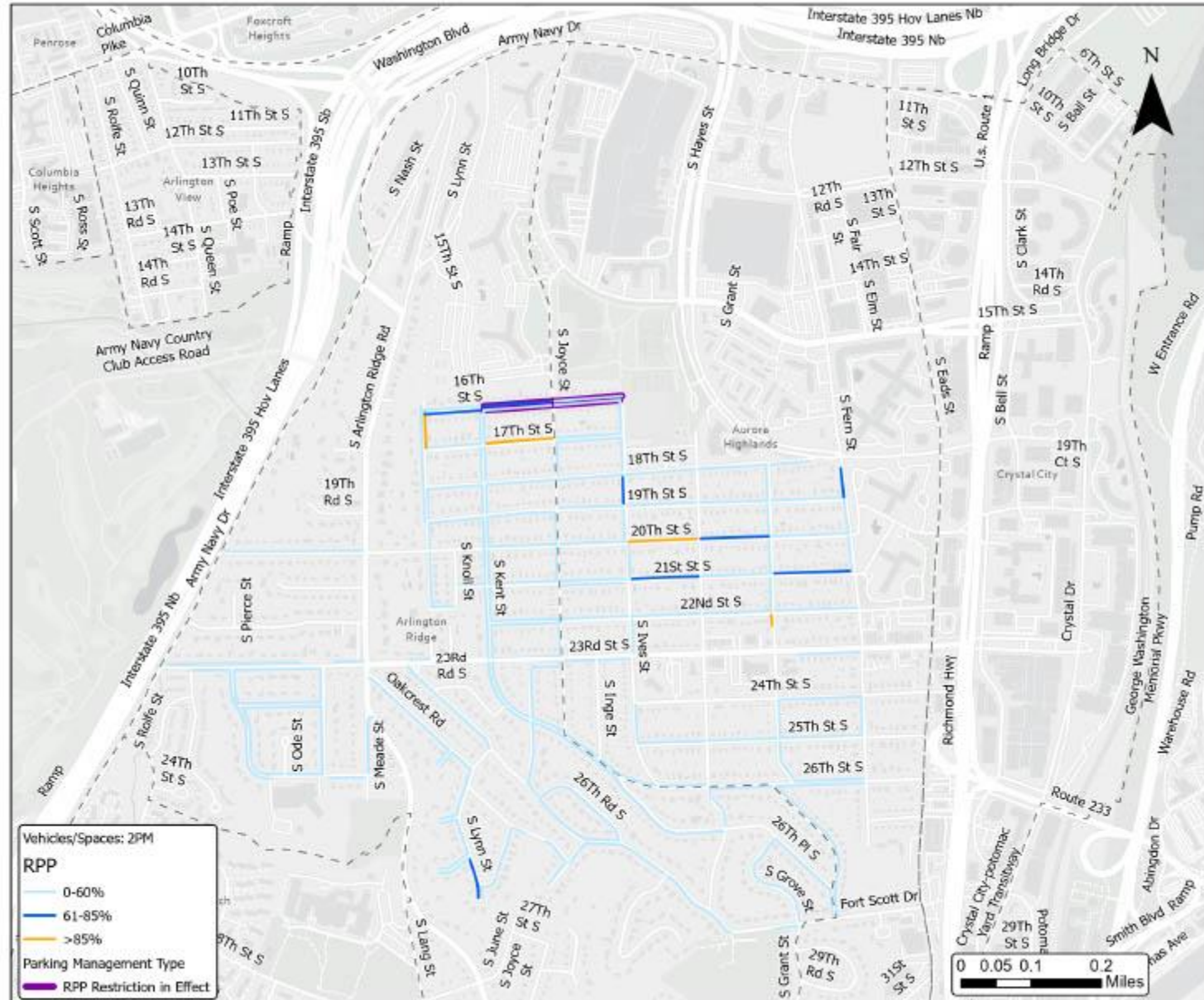
Share of Parking Spaces  
Used by Vehicles at

2PM

on

Weekend

Study Area: Richmond Hwy/  
Aurora Highlands Area  
Study Period: May 2022



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# Figure A-32

Share of Parking Spaces  
Used by Vehicles at

5PM

on

Weekend

Study Area: Richmond Hwy/  
Aurora Highlands Area  
Study Period: May 2022

