Agenda

Royal Oak Downtown Development Authority Meeting

Wednesday, June 26, 2024, 4:00 p.m.
City Hall Commission Chambers Room 121
203 South Troy Street
Royal Oak, MI 48067

Anyone planning to attend the meeting who has need of special assistance under the Americans with Disabilities Act (ADA) is asked to contact the city clerk's office at 248-246-3050 at least two (2) business days prior to the meeting.

DOWNTOWN DEVELOPMENT AUTHORITY
CITY COMMISSION CHAMBERS
ROYAL OAK, MICHIGAN
www.romi.gov

Wednesday, May 15, 2024
Regular Meeting
4:00 P.M.

Present
Kyle DuBuc
Michael Keith
Arbor Laclave
Salvatore LoGrasso
Lori London
Michael Sophiea, Chairperson
Mark Wollenweber, Interim City Manager
Mark Vanneste
Gail von Staden
Anthony Yezbick, Vice Chairperson

Absent
Jay Dunstan

Staff
Timothy E Thwing, Executive Director
Daniel Solomon, Downtown Manager

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1. **Call to Order**
2. **Public Comment**
3. **Approval of Meeting Minutes from April 17th, 2024**
4. **Expense Items**
   a. **Monthly Expenses April 2024**
5. **RO Holiday Village – Sponsorship Agreement**
6. **Contract for Holiday Lighting – English Gardens**
7. **FY 24-25 Advertising Plan**
8. **Placer.AI Subscription Adjustment**
9. **Reports**
   a. **Siren Communication and Impact Report March 2024**
   b. **Siren Communication and Impact Report April 2024**
   c. **CC Approval of Parking Rates for 2024 Taco Fest**
   d. **CC Approval of 2024/25 Downtown Outdoor Ice Arena Agreement**

e. Initial Visit Report May 2024 – Placer.Ai

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1. CALL TO ORDER

Chairperson Sophiea called the meeting to order at 4:00 p.m.

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2. PUBLIC COMMENT

Chairperson Sophiea opened Public Comment.
After all public comment was received, public comment was closed.

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3. APPROVAL OF MEETING MINUTES FROM APRIL 17th, 2024

MOVED by Director Laclave
SECONDED by Director Vanneste

To Approve the minutes of the April 17, 2024, regular meeting, as present.

MOTION APPROVED UNANIMOUSLY.

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4. EXPENSE ITEMS

a. Monthly Expenses April 2024

The invoices received and paid for the month of April 2024 were provided as information, no action is required.

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5. RO HOLIDAY VILLAGE – SPONSORSHIP AGREEMENT

MOVED by Director Yezbick
SECONDED by Director Vanneste

Be It Resolved; the Royal Oak Downtown Development Authority hereby approves the sponsorship agreement with Jonathan Witz & Associates (JWA) related to the RO Holiday Village with the following amendments: 1) removing the word “attempt” from paragraph 3, 2) requiring a minimum of three informational meetings with downtown businesses prior to the event and authorizes the Executive Director to execute the amendment agreement.

MOTION APPROVED 7 yeas – 3 nays (Directors London, Laclave and von Staden.

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6. CONTRACT FOR HOLIDAY LIGHTING – ENGLISH GARDENS

MOVED by Director Laclave
SECONDED by Director LoGrasso

Be It Resolved; the Royal Oak Downtown Development Authority hereby approves entering into agreement with English Gardens related to price estimate 3849 & 3493 and authorizes the Executive Director to execute the agreement.

MOTION APPROVED UNANIMOUSLY.

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7. FY 24-25 ADVERTISING PLAN

MOVED by Director Laclave
SECONDED by Director Dubuc

Be it resolved, the DDA Board approves the Downtown Manager's Advertising Plan for the 2024-2025 fiscal year.

Be it resolved, the DDA Board approves the annual purchase agreement with HOUR Media in an amount not to exceed $23,590 annually and authorizes the Executive Director to execute the agreement.

Be it resolved, the DDA Board approves the annual purchase agreement with OUTFRONT in an amount not to exceed $40,000 annually and authorizes the Executive Director to execute the agreement.

Be it resolved, the DDA Board approves the annual purchase of advertising with iHeart Media in an amount not to exceed $60,000 annually and authorizes the Executive Director to execute any necessary agreements or insertion orders.

Be it resolved, the DDA Board approves the annual purchase of advertising with effectv in an amount not to exceed $120,000 annually and authorizes the Executive Director to execute any necessary agreements or insertion orders.

Be it resolved, the DDA Board approves the annual purchase of advertising with Community Publishing and Marketing in an amount not to exceed $20,000 annually and authorizes the Executive Director to execute any necessary agreements or insertion orders.

MOTION APPROVED UNANIMOUSLY.

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8. PLACER.AI SUBSCRIPTION ADJUSTMENT

MOVED by Director Keith
SECONDED by Director London

Be it resolved, the DDA Board hereby amends the April 17th resolution for the purchase of Placer.Ai as follows:

Be it resolved, the Downtown Development Authority hereby approves the subscription expense for Placer.Ai in an amount not to exceed **$27,750** annually and authorizes the Executive Director to execute any necessary purchase agreements.

MOTION APPROVED UNANIMOUSLY.

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9. REPORTS

a. Siren Communications and Impact Report March 2024
Provided for information no action necessary.

b. Siren Communications and Impact Report April 2024
Provided for information no action necessary.

c. CC Approval of Parking Rates for 2024 Taco Fest
Provided for information no action necessary.

d. CC Aproval of 2024/25 Downtown Outdoor Ice Arena Agreement
Provided for information no action necessary.

e. Initial Visit Report May 2024 – Placer.Ai
Provided for information no action necessary.

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There being no further business to bring before the Royal Oak Downtown Development Authority, the following motion was made:

MOVED by Director Laclave
SECONDED by Director LoGrasso

To Adjourn the May 15, 2024, DDA regular meeting at 5:40 p.m.

MOTION APPROVED UNANIMOUSLY.

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Timothy E. Thwing,
Executive Director

DOWNTOWN DEVELOPMENT AUTHORITY
ROOM 122
ROYAL OAK, MICHIGAN
www.romi.gov

Wednesday, May 23, 2024
Special Meeting
4:00 P.M.

Present
Jay Dunstan
Arbor Laclave
Salvatore LoGrasso
Lori London
Michael Sophiea, Chairperson
Mark Wollenweber, Interim City Manager
Gail von Staden
Anthony Yezbick, Vice Chairperson

Absent
Kyle DuBuc
Michael Keith
Mark Vanneste

Staff
Timothy E Thwing, Executive Director

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1. **Call to Order**
2. **Public Comment**
3. **Letter of Engagement – Professional Services Agreement – Plante & Moran**

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1. CALL TO ORDER

Chairperson Sophiea called the meeting to order at 4:00 p.m.

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2. PUBLIC COMMENT

Chairperson Sophiea opened Public Comment.
After all public comment was received, public comment was closed.

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3. LETTER OF ENGAGEMENT – PROFESSIONAL SERVICES AGREEMENT – PLANTE & MORAN PLLC

MOVED by Director Wollenweber
SECONDED by Director Dunstan

Be it resolved, the Downtown Development Authority, hereby approves the Professional Services Agreement with Plante & Moran, not to exceed $15,000, without further authorization, with payments made pursuant to the city account payable calendar and authorizes the Executive Director to execute said agreement.

MOTION APPROVED UNANIMOUSLY.

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There being no further business to bring before the Royal Oak Downtown Development Authority, the following motion was made:

MOVED by Director Laclave
SECONDED by Director LoGrasso

To Adjourn the May 23, 2024, DDA special meeting at 4:25 p.m.

MOTION APPROVED UNANIMOUSLY.

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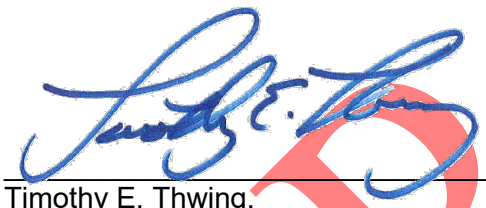


Timothy E. Thwing,
Executive Director

Royal Oak DOWNTOWN DEVELOPMENT AUTHORITY

Meeting Date: 6/26/2024

211 Williams Street
Royal Oak, MI 48067
Phone: (248) 246-3280
downtownroyaloak.org

MEMORANDUM

DATE: June 20, 2024

TO: MEMBERS OF THE DOWNTOWN DEVELOPMENT AUTHORITY

SUBJECT: **EXPENSE ITEMS - MONTHLY**

Listed below are the invoices for the month(s) of May 2024 that were received and paid.

Vendor	Payment Detail	Amount
Hafeli Staran & Christ PC	Legal Services	$277.50
Dbusiness	Sponsored Content social media	$1,500.00
Outfront	Billboard Ads April NFL Draft	$8,625.00
Image Printing	Drawing & Art Contest-Lyft cards	$373.49
Pulp Media-Bureau	Photo/Video April & May	$13,000.00
Worry Free Inc	CBD Maintenance April 9-May 5	$13,200.00
Lyft Inc	After Draft NFL Promo	$257.07
Worry Free Inc	CBD Maintenance May 6-12	$13,200.00
MI Red Sox	Banner	$1,000.00
Big D Locks	DPS Exp – Trash Receptacles	$2,035.00
Worry Free Inc	CBD Maintenance May 13-19	$13,200.00
RO Restaurant Association	Wine Stroll 2024 Sponsorship	$10,000.00
Jenna Brown Clover	Balance PACT Memorial	$1,250.00
Farmers Market	RO Historical Society Pancake	$2,550.00
Worry Free Inc	CBD Maintenance May 20-26	$13,200.00
Jonathan Witz & Associates	2024 Taco Fest #1	$20,000.00
Meta	Instagram After Draft NFL Promo	$83.74
iHeart Media	April Radio Ads/Draft Radio Ads	$6,625.40
Fleis & Vandenbrink	5th Street Design Services	$9,240.00

Thwing, Tim

From:	jay dunstan.me <jay@dunstan.me>
Sent:	Friday, June 14, 2024 11:07 AM
To:	Thwing, Tim; Solomon, Daniel; Michael L. Sophiea (barguy112@aol.com)
Cc:	anthony@yezbicklaw.net; Mark C. Vanneste; Mike Keith
Subject:	June 26th DDA Meeting
Attachments:	Screenshot 2024-06-14 at 10.54.23 AM.png; Screenshot 2024-06-14 at 10.53.40 AM.png

Good Morning,

I wanted to propose a few things at our next full meeting on the 26th but I wanted to get some feedback from all of you prior.

•Resolution to recommend to the CC that we start charging $5 after 5pm in the garages once again.

•Resolution to recommend to the CC that we start charging $60 up from $50 for monthly parking passes. I've attached a couple screen grabs of Ann Arbor's and Birmingham's monthly rates, Even with a 20% increase we're still less than either of those cities. Ferndale is $45 per month.

•Resolution to recommend the city/CC work with the DDA on putting out an RFP for developing the "old half" of the Center Street Structure. The CC was prepared to give Boji a one-year exclusive to come up with a plan for that site but they withdrew it this past Monday night. I don't know if it makes sense for us to demo the garage first and then put it out for bid or make the demo a part of the bidding requirement. Looking to Tim for guidance on that.

•Restructure our façade program, our come up with a separate program, to help businesses physically alter their building in order to increase business. As it stands now Kal's at the Farmers Market wasn't eligible for a façade grant because his project wasn't considered a beautification improvement. I know there is that document floating around that I put together during my first run on the DDA that pretty much addresses this.

Please let me know if any of this does/doesn't make sense.

Thanks,

Monthly Parking Rate Increase to Offset Essential Garage Repairs

After six years of consistent monthly parking rates at the City of Birmingham's parking structures, on Monday, May 8, 2023, the City Commission approved a monthly rate increase to help offset the cost of essential repairs and improvements.

Effective July 1, 2023, the following rates will be in effect:
Chester Garage: $70 per month
N. Old Woodward, Park & Peabody Garages: $90 per month
Pierce Garage: $100 per month

Current and upcoming capital improvement projects to improve the efficiency and maintenance of the parking facilities include: upgraded parking equipment, concrete repairs, ADA compliance upgrades, installation of LED lights, EV charging compatibility and more.

For more information, contact the parking office at parking@bhamgov.org

PCI offers multiple monthly parking solutions to fit your parking needs. Contact our office for more information.

Open Lot Parking	Monthly Rate	Reserved Rate	Limited Rate
1st & William	$180	Not Available	Not Available
415 W Washington	$150	Not Available	Not Available
South Ashley	Not Available	Not Available	Not Available

Structure Parking	Monthly Rate	Reserved Rate	Limited Rate
4th & Washington	Not Available	Not Available	Not Available
1st & Washington	$225	Not Available	$35
Maynard	$225	$310	Not Available
Forest	$225	Not Available	$35
4th & William	$225	$310	$35
Liberty Square	$225	$310	$35
Ann Ashley	$225	$310	$35
Library Lane	$225	Not Available	$35

Prices are subject to change. Please call the Downtown Development Authority at (734) 997-1310 for current rates. Submit this online form. Or you

Office of the City Manager
203 South Troy Street
Royal Oak, MI 48067
www.romi.gov

Downtown Parking Report Update and Recommendations

March 10, 2023

The Honorable Mayor Fournier and
Members of the City Commission:

At the February 27, 2023, city commission meeting, a motion was approved directing the city manager and city attorney to continue negotiating with Municipal Park Systems, Inc. (MPS) on a terms agreement outlining changes to the existing services agreement with this provider. As a matter of background, at the January 23, 2023, city commission meeting, a motion was made on implementing solutions as outlined in the Rich and Associates presentation (Attachment 1). As reported previously, requests were forwarded to MPS, the downtown manager, and parking manager about a variety of topics. This is a summary of the information received from those requests and is provided to the city commission in order to keep everyone fully updated on all aspects of this issue.

Any of the proposed changes are predicated on the cooperation of MPS, as the city is obligated to follow the parking service agreement. City administration has had a number of meetings with the chief executive officer of MPS, Joe Caldwell, and his executive leadership team. We have reached an understanding and agreement of outstanding issues. Staff recommends directing the city manager and city attorney to finalize an amended agreement for final approval and implementation. The rest of this report is to again review the materials that have been assembled as background information.

The fundamental consideration of modifications and changes to the parking system were introduced through the Rich and Associates downtown parking assessment report (Attachment 2). This was first presented to the city commission at the January 23, 2023, city commission meeting after it was presented to the downtown development authority board (DDA) at their previous meeting on January 18, 2023. Subsequently, the DDA's infrastructure and marketing committees met and conferred about the recommendation and passed a resolution (Attachment 3) at the DDA's February 15, 2023, meeting. Just to recap, the report's study area encompassed 32 blocks and over 5,700 parking spaces, both public and privately controlled. The study was not just comprehensive in its volume, but in content analyzing types and usage of parking and has resulted in eight (8) categories of recommendations from Rich and Associates:

Handicap Accessibility: Provide two handicap accessible spaces on West Second Street near the point where the handicap accessible ramp begins. Provide appropriate curb cuts to provide patron access and stall length to accommodate handicap vehicles.

Reverse Angle Parking: Continue the reverse angle parking on Washington Avenue and Center Street.

Parking Rates: Maintain the rate premium for pre 5:00p.m. and after 5:00p.m. parking in on-street spaces and off-street lots. Maintain the policy of charging a higher rate for on-street parking compared to off-street parking and the policy of the first two-hours of free parking in the city-owned parking garages. These policies are consistent with best practices and incentives to use the garages.

Parking Time Limits (three part): (a) Maintain the two-hour limit for on-street parking to encourage turnover. (b) Discourage the moving of a vehicle to a new on-street space. This is still taking an on-street parking space away from another customer. Longer term parkers should be directed to off-street lots (if under four hours) or to one of the parking garages. (c) Extend the grace period to 15-minutes. While some trips will benefit from the short term free parking, the average length of stay for most patrons means that they still will need to pay for parking when using on-street spaces.

Parking Lot Upgrade: It is being assumed that these lots are in the process of being upgraded. However, if possible, the rates and time limits should be adjusted to be consistent with other downtown off-street parking.

Enforcement (Reverse Angle): In addition to receiving a fine for not paying for parking (if incurred), the driver should also be cited for improper parking carrying a significantly higher fine ($50.00) for improper parking. The higher fine would be intended to discourage this practice due to the increased potential for an accident and/or injury due to a passing driver not expecting a vehicle (that they may not see) to be backing out of a reverse angle parking space.

Parking System Marketing (three part): (a) The pay stations should have a sign or some other indication mounted on top stating that they are pay stations. This should be of a consistent shape and color and this information included on the city webpage. (b) The webpage should highlight that the pay stations look like meters and that this is where payment should be made. (c) It may help if the webpage would show video both interacting with the smart meters to make payment what the user would see as well as the interactions with the app for users who choose this route. This should be highlighted on the webpage as well encourage pay when you go.

Electric Vehicle (EV) Charging Stations: There is not enough data yet to inform planners as to the appropriate number and location of EV stations in a public parking system. We encourage the city to actively monitor current utilization / occupancy levels of existing charging stations. As utilization / occupancy increases, consideration should be given to increasing the number of stations.

Information Gathering

Questions were forwarded to MPS asking for basic data about violations; zip codes of parkers, those with multiple violations, high utilization areas, phone mobile app, etc. In addition (Attachment 4), MPS responded to inquiries and suggestions about re-engineering the system to improve the parking experience. MPS was accommodating in providing basic information, but reluctant to make changes to its system.

At the previous city commission meeting, there was general interest in learning more about the opinions of the downtown restaurants and shops along Washington Avenue. Daniel Hill, the downtown manager, gathered information based on interviews and straw polls from the retail stakeholders. An informative report (Attachment 5) gives feedback about parking orientation on South Washington Avenue. Also included is data (Attachment 6) from the city engineer about crashes in that vicinity.

Interviews were conducted with 41 individuals who reviewed tickets (Attachment 7) about the circumstances and the finding by either the police department's parking division and/or MPS. This reaffirms why a longer grace period would have minimized the number of people who received a violation. It also confirms the same anecdotal information or concerns that have been expressed by multiple visitors.

Lastly, additional information about the number of visitors to the parking garages (Attachment 8) and the duration of their stay and a copy of analytics from Oakland County Main Street (Attachment 9) shared by the downtown manager, is provided. This gives the city commission information about the total number of visitors to downtown over the last five years. Information is provided about destinations and activities in aggregate detail.

Conclusion and Recommendations

Based on the information and the evaluation conducted by the DDA's parking consultant, city administration recommends the following for the city commission's consideration:

Recommendation Number	Recommendation Type	Recommendation
1	Handicap Spaces	Concur with the Rich & Assoc. recommendation about the spaces at the post office. City manager to work with city engineer to explore additional on-street parking spaces.
2	Reverse Angle Parking	Concur with consultant's recommendation, or change parking to parallel.
3	Parking Rates	City manager to work with finance director on possible modifications.
3A	Parking Rates	Agree with consultant's recommendation.
3B	Parking Rates	Agree with maintain two-hours free in parking decks.
4	Parking Time Limits	Negotiate with MPS to have the ability to increase to three hours with possible rate modification for the third hour.
4A	Parking Time Limits	Concur with consultant's recommendation.
4B	Parking Time Limits	Recommend immediate change to 15-minute grace period should be implemented.
5	Parking Lot Upgrades	Concur with consultant's recommendation.
6	Enforcement	If reverse angle remains, I agree with the consultant.
7	Parking System Marketing	Some sort of flag or obvious indicator needs to be installed.
7A	Parking System Marketing	Agree with this recommendation.
7B	Parking System Marketing	City can assist with this recommendation.
8	PEV Charging	City has SEMCOG grant that will carry out this evaluation.
8A	PEV Charging	Concur with this recommendation. This information should be forwarded to the master plan consultant.

It is recommended that the city commission direct the city manager and city attorney to continue negotiating with MPS and to provide a status update by the second meeting in March. If the city commission agrees with this course of action, the following resolution is offered for adoption.

> **Be it resolved**, the city commission approves the city managers recommendations of the Rich and Associates downtown parking assessment report as recommended by the reported dated March 10, 2023; and

Be it finally resolved, the city commission directs the city attorney to draft the approved amendments to be included in an final agreement to be executed at a future city commission meeting.

Respectfully Submitted,

Paul J. Brake, ICMA-CM, CEcD
City Manager

9 Attachments

City of Royal Oak

Downtown Parking Assessment Presentation
to
Royal Oak City Commission

January 23, 2023

RICH & ASSOCIATES
PARKING CONSULTANTS

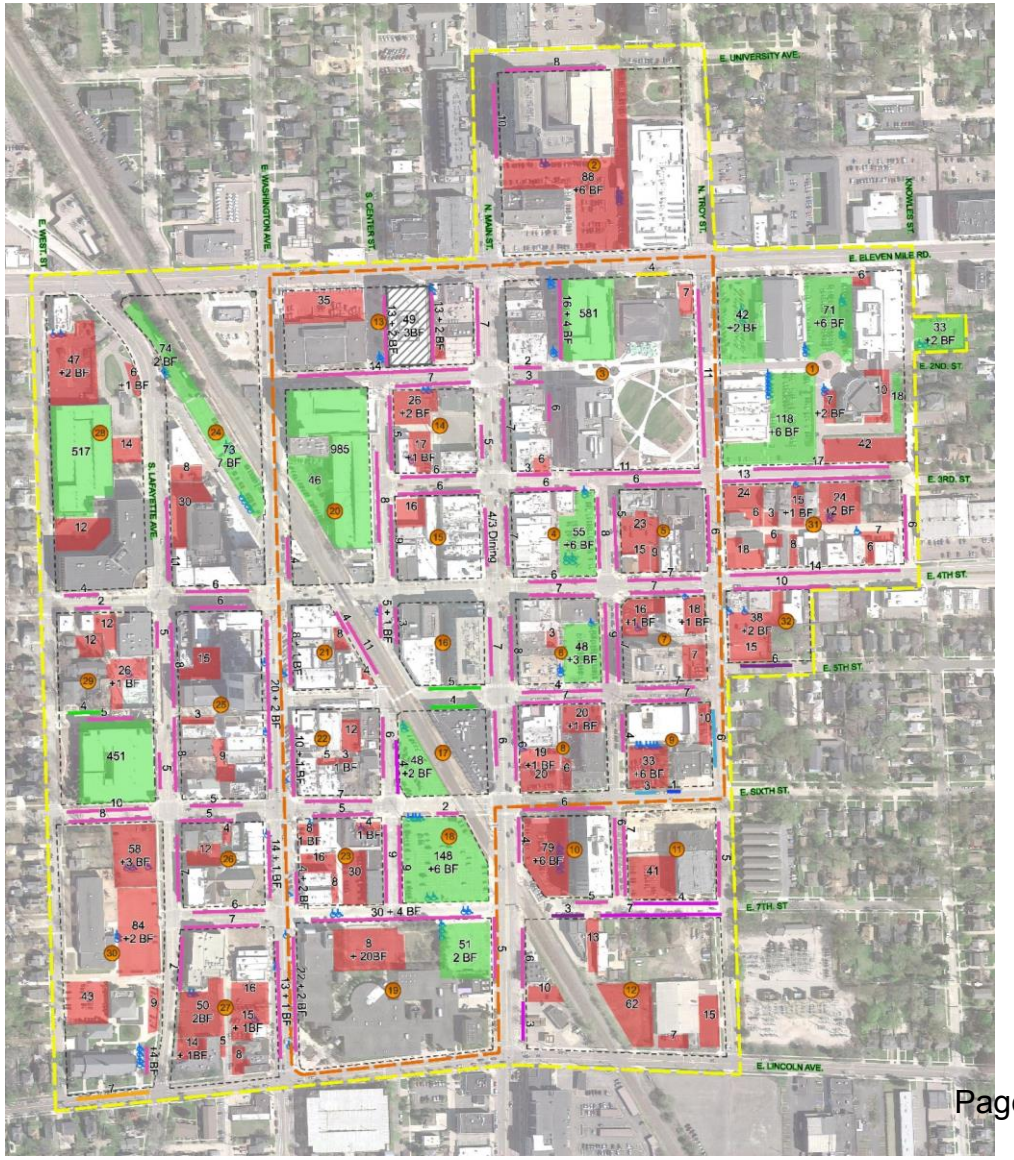
Project Goals

- Understand Current Parking Utilization by Time of Day
  - Public vs. Private Occupancy
  - Assess use of on and off-street parking
  - Assess use of handicap accessible parking spaces
  - Understand role of parking garages
- How do parking rates influence utilization
- How is the MPS system functioning
  - Manage compliance
- Recommendations regarding parking system

Methodology

- Detailed Parking Supply
  - Ownership (Public vs. Private)
  - On-Street vs. Off-Street
- Three Days of Occupancy Counts in August 2022 (Wed 17, Thu 18, Sat 27)
  - Separated for public / private parking
  - On-Street and Off-Street
  - Handicap Accessible
  - Reverse Angle
- Review of MPS statistics covering 7 months

Parking Supply – Study Area



Total All Blocks

	Private		Public		Total	
	On-Street	Off-Street	On-Street	Off-Street	On-Street	Off-Street
2022	14	1,603	769	3,403	783	5,006
	0.9%	99.1%	18.4%	81.6%	13.5%	86.5%
	1,617		4,172		5,789	
	27.9%		72.1%		100.0%	

Legend

- Study Area
- High Demand
- Study Blocks
- Block #
- Block Face

Off Street Parking

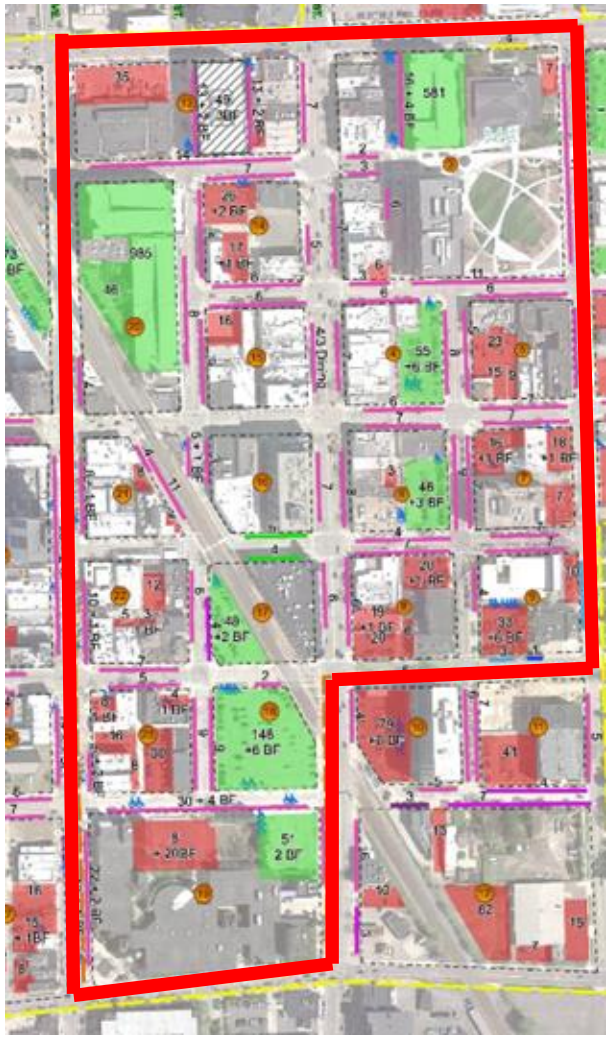
- Public
- Private
- Shared Use
- Barrier Free

On Street Parking

- 12HR
- 15M
- 2HR
- 3HR
- 5 Min
- Loading Zone
- Reserved
- Unmarked

RICH & ASSOCIATES
PARKING CONSULTANTS

Parking Supply – Core Blocks



Core Blocks

Core Blocks

	Private		Public		Total	
	On-Street	Off-Street	On-Street	Off-Street	On-Street	Off-Street
2022	14	476	389	1,928	403	2,404
	2.9%	97.1%	16.8%	83.2%	14.4%	85.6%
	490		2,317		2,807	
	17.5%		82.5%		100.0%	

Non-Core Blocks

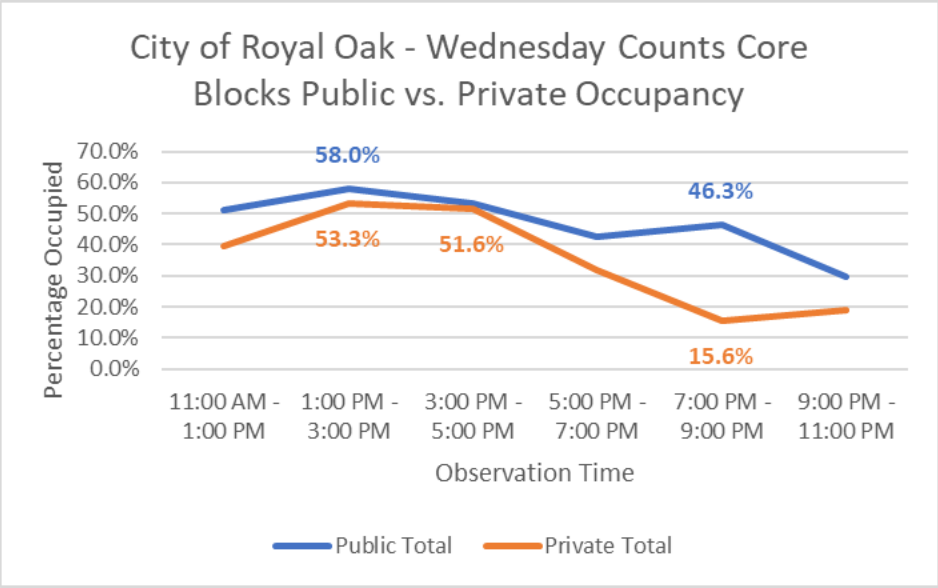
	Private		Public		Total	
	On-Street	Off-Street	On-Street	Off-Street	On-Street	Off-Street
2022	0	1,127	380	1,475	380	2,602
	0.0%	100.0%	20.5%	79.5%	12.7%	87.3%
	1,127		1,855		2,982	
	37.8%		62.2%		100.0%	

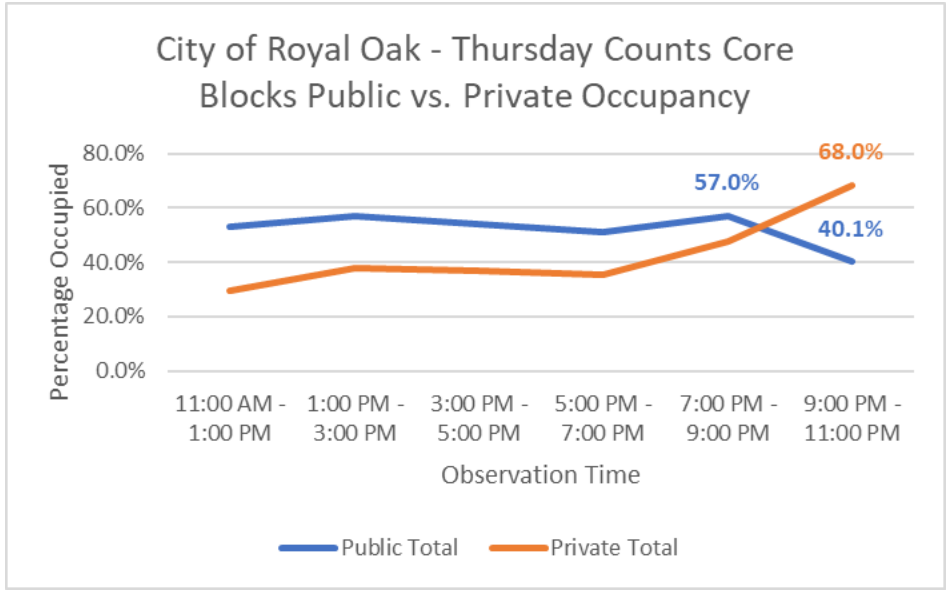
Total All Blocks

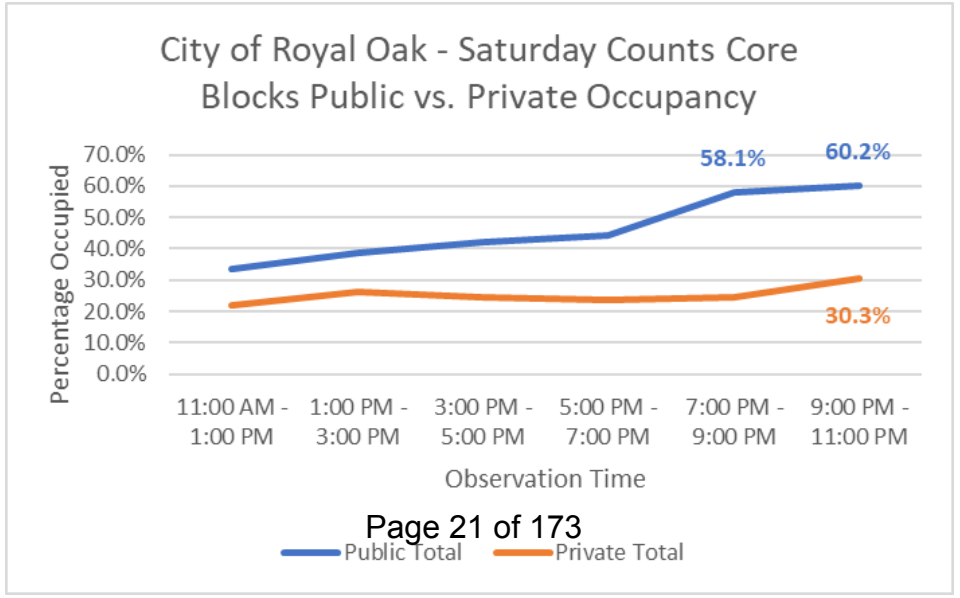
	Private		Public		Total	
	On-Street	Off-Street	On-Street	Off-Street	On-Street	Off-Street
2022	14	1,603	769	3,403	783	5,006
	0.9%	99.1%	18.4%	81.6%	13.5%	86.5%
	1,617		4,172		5,789	
	27.9%		72.1%		100.0%	

RICH & ASSOCIATES
PARKING CONSULTANTS

Parking Utilization – Core Blocks

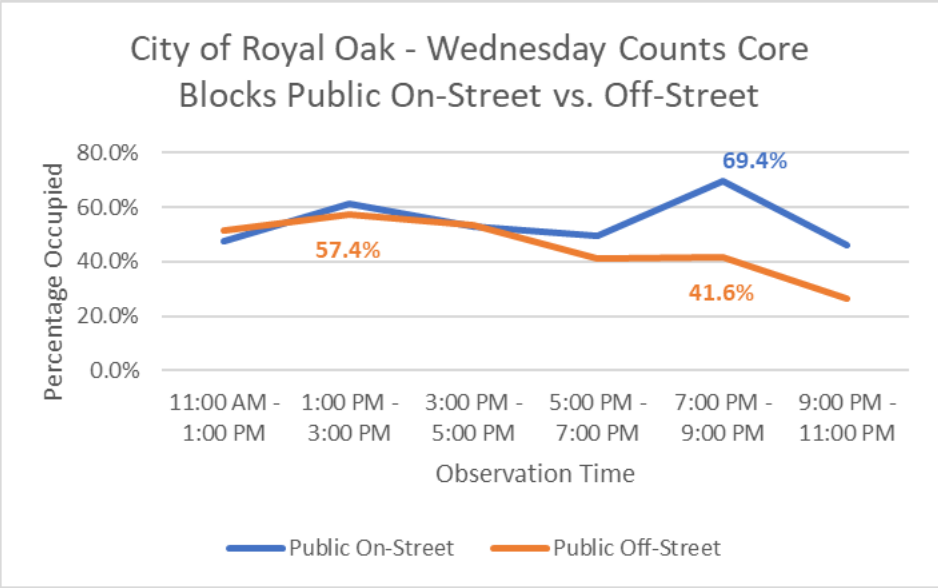


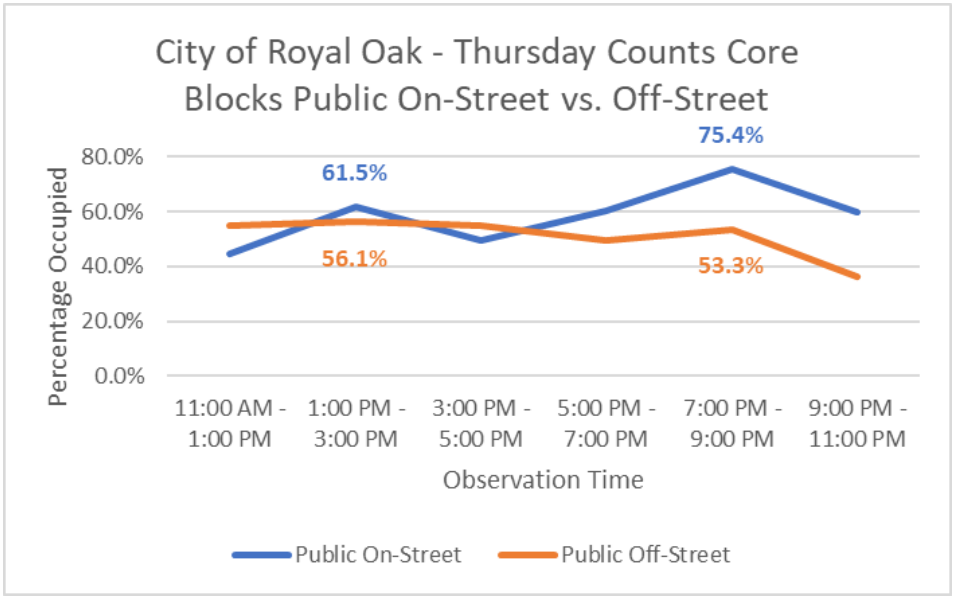


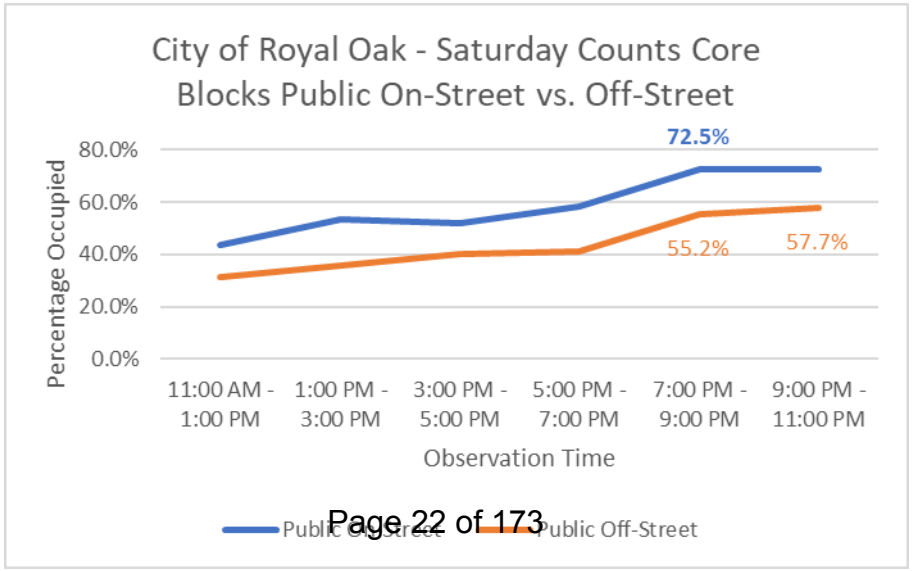


RICH & ASSOCIATES
PARKING CONSULTANTS

Parking Utilization – Core Blocks

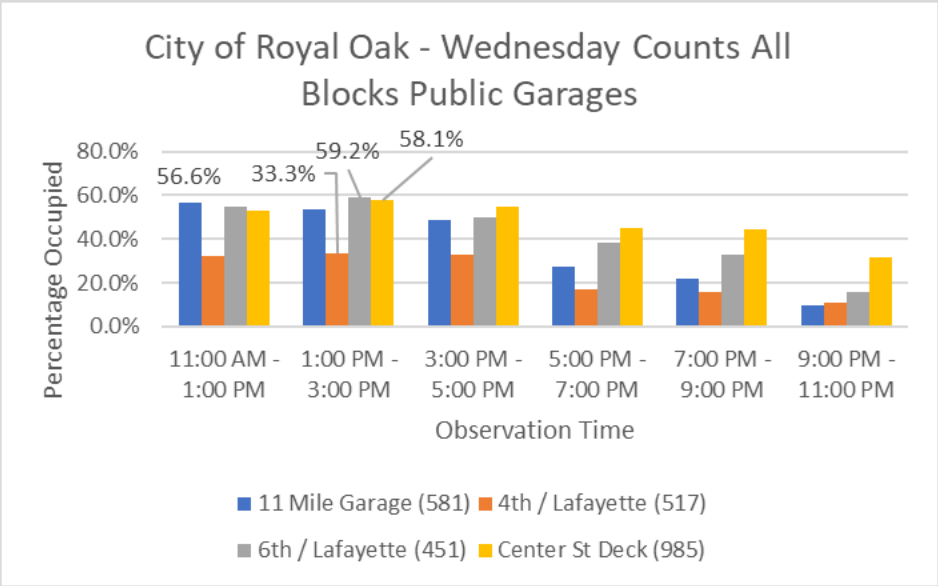


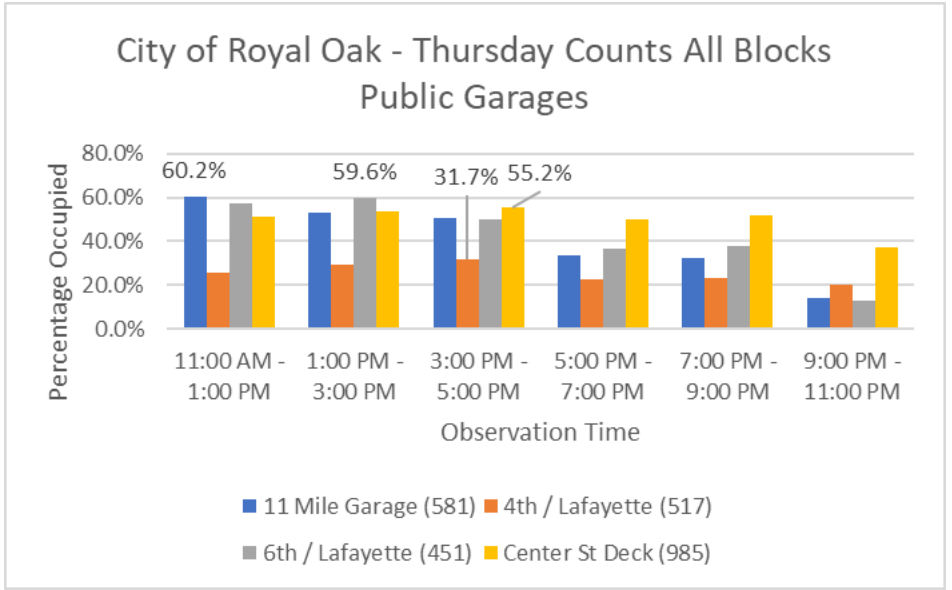


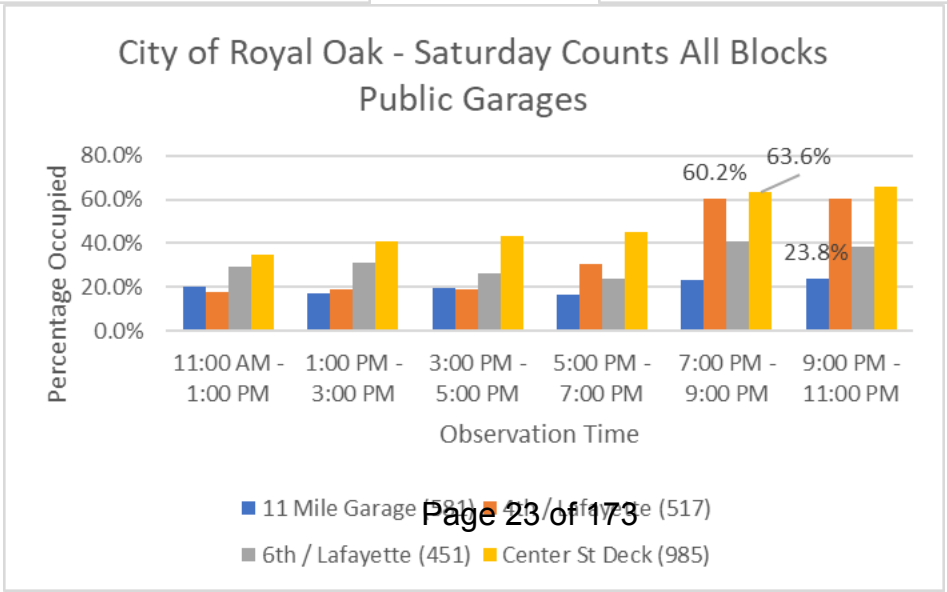


RICH & ASSOCIATES
PARKING CONSULTANTS

Parking Utilization – Public Garages







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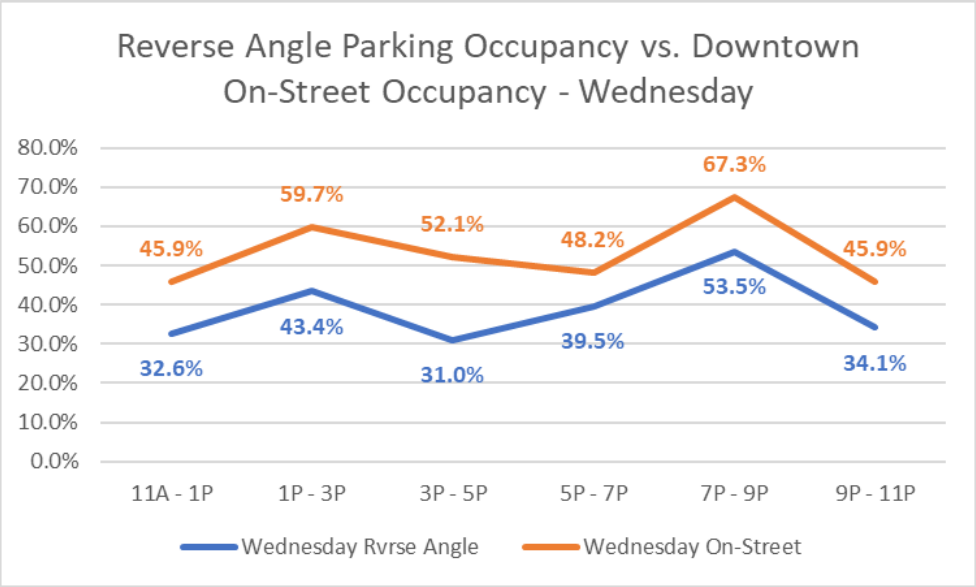
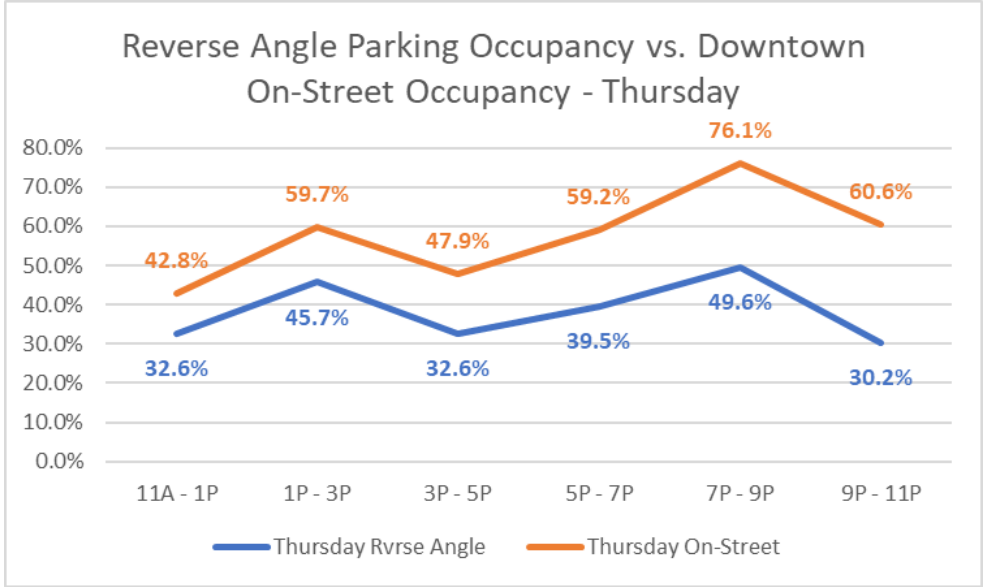
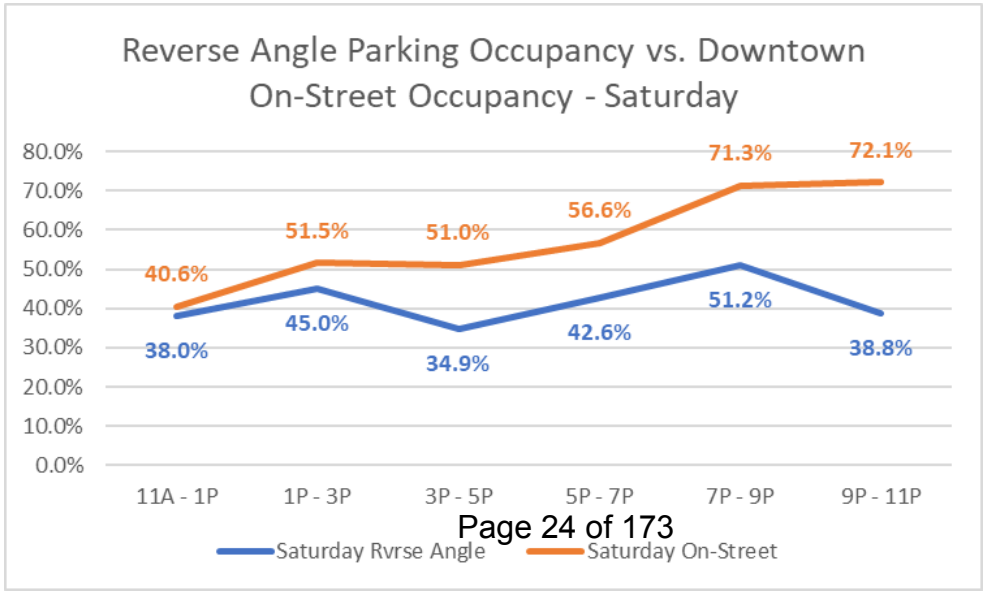
Parking Utilization – On-Street vs. Reverse Angle (Including 7th Street)







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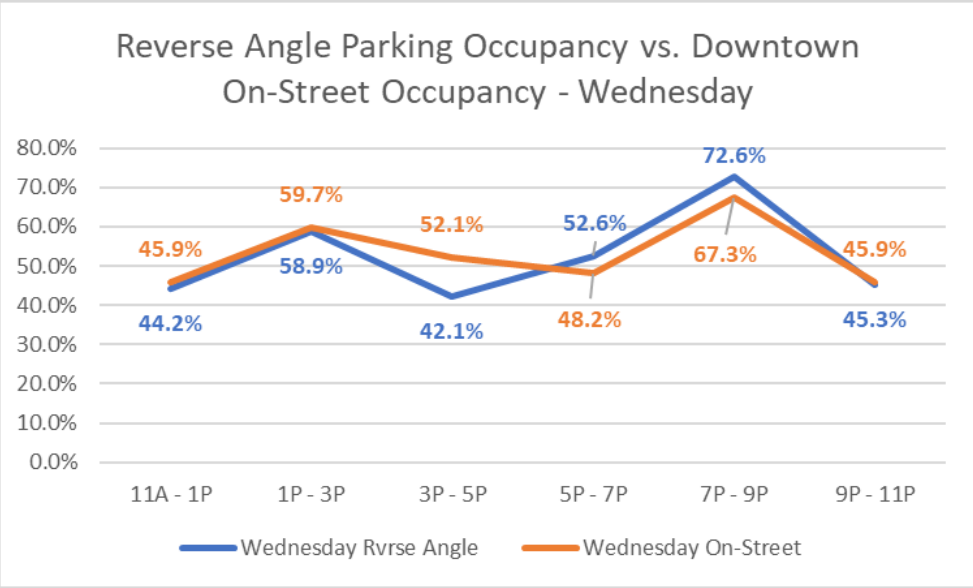
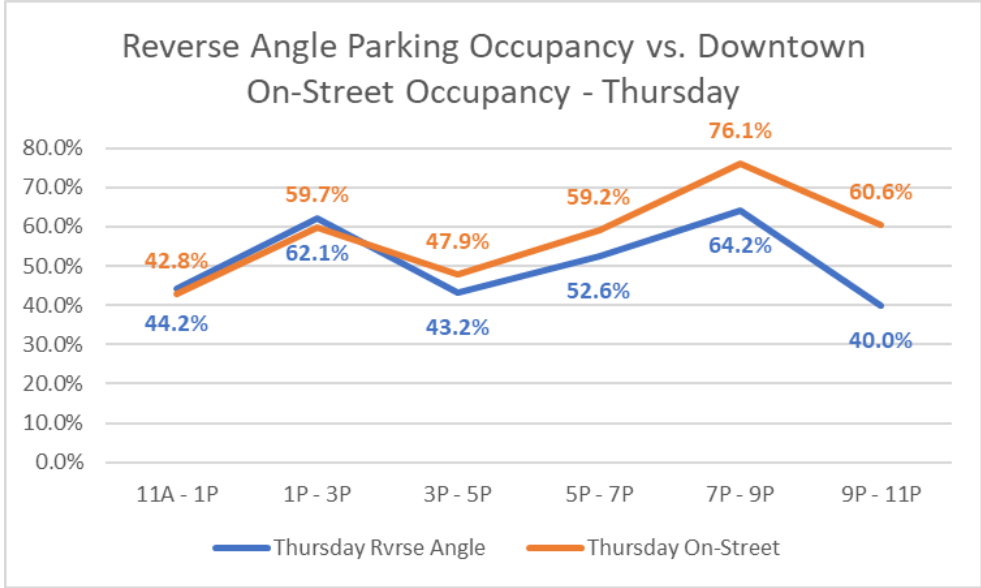
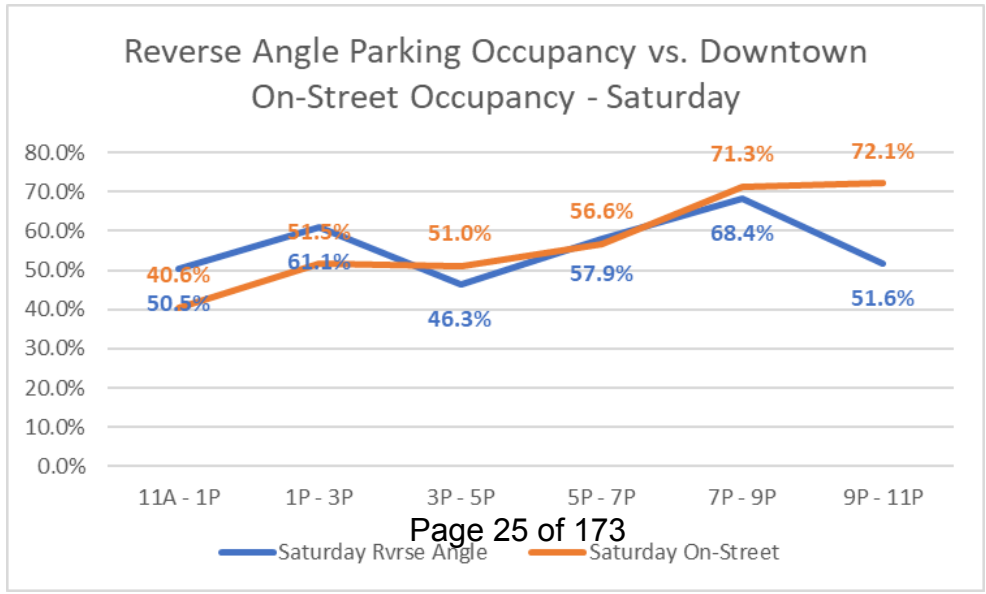
Parking Utilization – On-Street - *Reverse Angle* - (without 7th Street)







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Barrier-Free Parking

	CORE BLOCKS			NON-CORE BLOCKS			TOTAL		
	Regular	Barrier-Free	TOTAL	Regular	Barrier-Free	TOTAL	Regular	Barrier-Free	TOTAL
PUBLIC									
On-Street	**376**	**13**	389	370	10	380	746	23	769
Off-Street	**1872**	**56**	1,928	1424	51	1,475	3,296	107	3,403
Total	**2,248**	**69**	**2,317**	**1,794**	**61**	**1,855**	**4,042**	**130**	**4,172**
Percentage	**97.0%**	**3.0%**	**82.5%**	**96.7%**	**3.3%**	**62.2%**	**96.9%**	**3.1%**	**72.1%**
PRIVATE									
On-Street	**14**	**0**	14	**0**	**0**	0	14	0	14
Off-Street	**458**	**18**	476	**1070**	**57**	1,127	1,528	75	1,603
Total	**472**	**18**	**490**	**1,070**	**57**	**1,127**	**1,542**	**75**	**1,617**
Percentage	**96.3%**	**3.7%**	**17.5%**	**94.9%**	**5.1%**	**37.8%**	**95.4%**	**4.6%**	**27.9%**
TOTAL									
On-Street	390	13	403	370	10	380	760	23	783
Off-Street	2,330	74	2,404	2,494	108	2,602	4,824	182	5,006
Total	**2,720**	**87**	**2,807**	**2,864**	**118**	**2,982**	**5,584**	**205**	**5,789**
Percentage	**96.9%**	**3.1%**	**100.0%**	**96.0%**	**4.0%**	**100.0%**	**96.5%**	**3.5%**	**100.0%**

Barrier-Free Parking

Core Area Blocks - Off-Street Lots & Garages							
Block	Lot Letter	Deck, Lot or Street	Description	Total Spaces in Lot	Required Number of Barrier Free Spaces	Provided Hcp Accessible	Above (+ / Below - Require - ment
3		Deck	11 Mile Garage	581	12	20	**8**
4	A1	Lot	3 Hr Meters	61	3	6	**3**
6	B1	Lot	City Lot #1	54	3	3	**0**
17	A1	Lot	City Lot #3	52	3	2	**(1)**
18	A1	Lot	City Lot #7	160	6	6	**0**
20	A	Lot	Part of Garage	46	2	0	**(2)**
20		Deck	Center Street Garage	985	20	19	**(1)**
			TOTAL	**1939**	**49**	56	**7**

Core Area Blocks - On-Street Handicap Accessible							
Block	Lot Letter	Deck, Lot or Street	Description	Total Spaces in Lot	Required Number of Barrier Free Spaces	Provided Hcp Accessible	Above (+ / Below - Require - ment
3	Face F	Street	Alley Adjacent 11 Mile Garage	20	0	4	**4**
13	Face E	Street	Alley (East Side of Bldg)	15	0	2	**2**
13	Face F	Street	Alley (West Side of Bldg)	15	0	2	**2**
16	Face D	Street	West Side Center St.	6	0	1	**1**
21	Face D	Street	Back Angle (Washington)	9	0	1	**1**
22	Face D	Street	Washington Ave	11	0	1	**1**
23	Face D	Street	Washington Ave	6	0	1	**2**
			TOTAL	**82**	**0**	13	**13**

Minimum Number of Accessible Parking Spaces

ADA Standards for Accessible Design 4.1.2 (5)

Total Number of Parking spaces Provided (per lot)	Total Minimum Number of Accessible Parking Spaces (60" & 96" aisles)	Van Accessible Parking Spaces with min. 96" wide access aisle	Accessible Parking Spaces with min. 60" wide access aisle
	Column A		
1 to 25	1	**1**	**0**
26 to 50	2	**1**	**1**
51 to 75	3	**1**	**2**
76 to 100	4	**1**	**3**
101 to 150	5	**1**	**4**
151 to 200	6	**1**	**5**
201 to 300	7	**1**	**6**
301 to 400	8	**1**	**7**
401 to 500	9	**2**	**7**
501 to 1000	2% of total parking provided in each lot	**1/8 of Column A***	**7/8 of Column A****
1001 and over	20 plus 1 for each 100 over 1000	**1/8 of Column A***	**7/8 of Column A****

* one out of every 8 accessible spaces

** 7 out of every 8 accessible parking spaces

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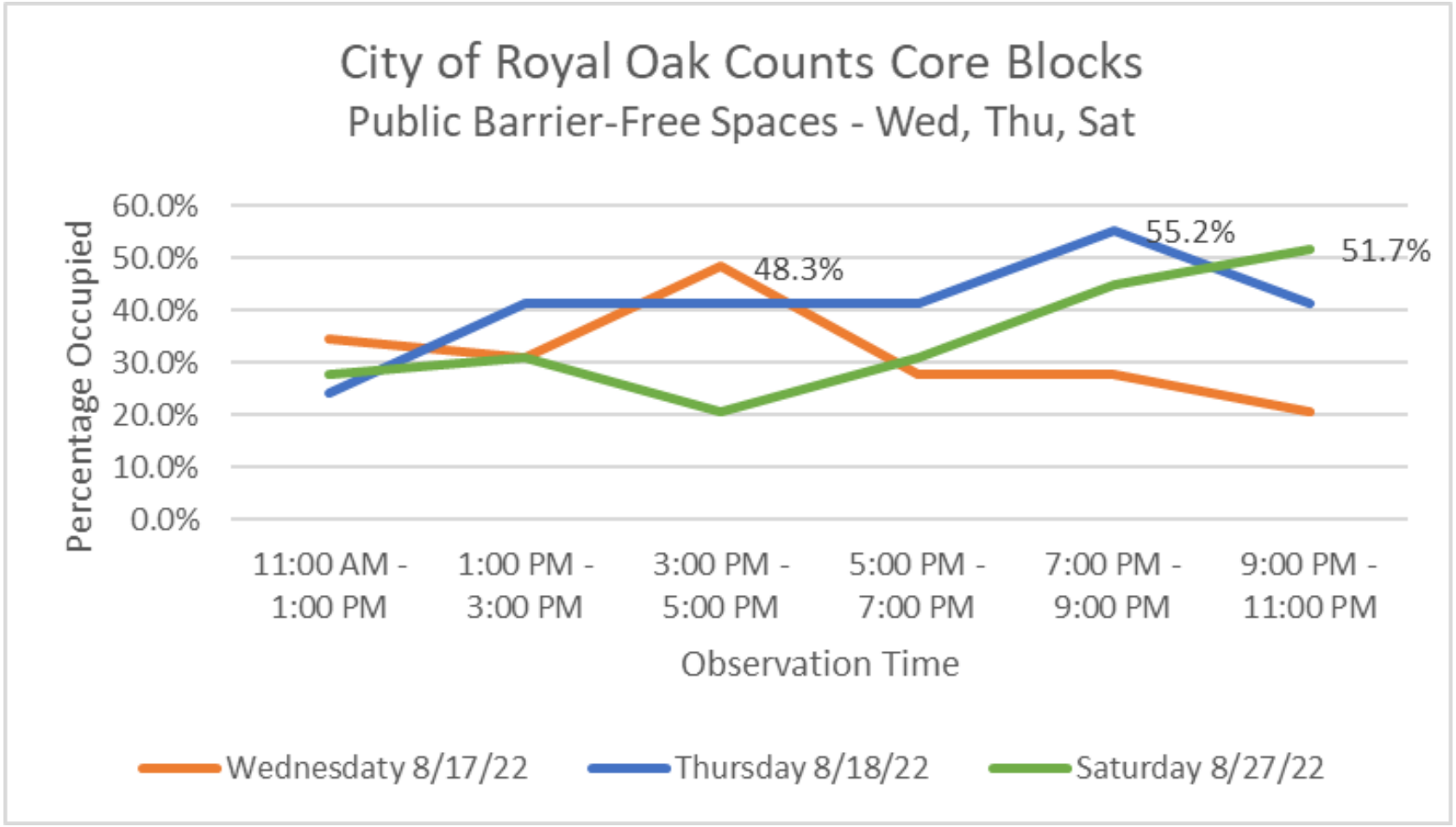
Barrier-Free Parking - Utilization



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MPS Assessment

	Average Length of Stay			
Data Month Provided	Patron's with no Violation	Grace Period Exceeded	Maximum Time Exceeded	Time Expired
	mm:ss	mm:ss	h:mm:ss	h:mm:ss
December 2021	54:35	43:02	2:52:29	1:28:56
April 2022	58:47	51:25	2:53:43	1:35:02
June 2022	59:48	53:37	2:54:54	1:36:00
July 2022	40:53	48:49	2:53:02	0:58:56
August 2022	56:32	48:35	2:53:36	1:31:29
September 2022	39:59	42:10	2:52:46	0:54:06
October 2022	34:04	44:15	2:51:33	0:59:34
	minutes:seconds		hours:minutes:seconds	

Violations APRIL 2022

meter	spot_name	parked_timestamp	exited_timestamp	session_duration	violation_reason	Violation Number	Officer Name	Plate	No Violation	Initial Grace Period Exceeded	Maxtime Exceeded	Time Expired
521	520	2022-04-01 11:00:04	2022-04-01 11:06:10	00:06:06					1			
3718-3719	3718	2022-04-01 11:00:27	2022-04-01 11:45:44	00:45:17					1			
1112	1113	2022-04-01 11:00:36	2022-04-01 11:45:15	00:44:39					1			
714	716	2022-04-01 11:00:48	2022-04-01 13:05:46	02:04:58					1			
1207	1207	2022-04-01 11:00:57	2022-04-01 12:31:59	01:31:02					1			
3827	3829	2022-04-01 11:01:02	2022-04-01 11:45:00	00:43:58	Initial Grace Period Exceeded					1		
1108	1108	2022-04-01 11:01:14	2022-04-01 12:10:53	01:09:39	Initial Grace Period Exceeded					1		
2919-2920	2922	2022-04-01 11:01:33	2022-04-01 11:12:22	00:10:49					1			
709	710	2022-04-01 11:01:38	2022-04-01 11:48:07	00:46:29					1			
1803	1801	2022-04-01 11:03:12	2022-04-01 13:10:32	02:07:20					1			
3101	3104	2022-04-01 11:03:04	2022-04-01 11:49:47	00:46:43					1			
1207	1208	2022-04-01 11:03:21	2022-04-01 11:57:22	00:54:01					1			
702	703	2022-04-01 11:03:22	2022-04-01 11:10:05	00:06:43	Initial Grace Period Exceeded					1		
2820	2820	2022-04-01 11:03:24	2022-04-01 12:13:42	01:10:18					1			
1803	1802	2022-04-01 11:03:33	2022-04-01 13:10:36	02:07:03					1			
2904	2904	2022-04-01 11:03:32	2022-04-01 12:08:42	01:05:10					1			
332	331	2022-04-01 11:04:03	2022-04-01 11:10:13	00:06:10	Initial Grace Period Exceeded					1		
2206	2206	2022-04-01 11:04:20	2022-04-01 13:06:29	02:02:09					1			
3904-3905	3907	2022-04-01 11:04:21	2022-04-01 14:09:36	03:05:15	Maxtime Exceeded						1	
1502	1503	2022-04-01 11:04:46	2022-04-01 11:12:30	00:07:44	Initial Grace Period Exceeded					1		
1513	1514	2022-04-01 11:05:08	2022-04-01 11:27:13	00:22:05					1			
521	521	2022-04-01 11:05:15	2022-04-01 13:12:39	02:07:24					1			
901	902	2022-04-01 11:05:46	2022-04-01 11:18:58	00:13:12	Initial Grace Period Exceeded					1		

Violations

City of Royal Oak - Violations Summary						
	December 2021	April 2022	June 2022	August 2022	Average	Estimated Annual
No Violation	32,373	34,781	29,384	40,302	**34,210**	**410,520**
Pct of Total	**52.7%**	**50.6%**	**55.6%**	**50.9%**	**52.2%**	**52.2%**
Initial 5 Minute Grace Period Exceeded	21,748	26,271	18,380	30,577	**24,244**	**290,928**
Pct of Total	**35.4%**	**38.2%**	**34.8%**	**38.6%**	**37.0%**	**37.0%**
Maxtime Exceeded	2,699	2,798	2,009	2,812	**2,580**	**30,954**
Pct of Total	**4.4%**	**4.1%**	**3.8%**	**3.6%**	**3.9%**	**3.9%**
Time Expired	3,023	3,128	2,223	3,553	**2,982**	**35,781**
Pct of Total	**4.9%**	**4.6%**	**4.2%**	**4.5%**	**4.5%**	**4.5%**
Combined Violations & Other Violations	1,637	1,712	841	1,928	**1,530**	**18,354**
Pct of Total	**2.7%**	**2.5%**	**1.6%**	**2.4%**	**2.3%**	**2.3%**
Total	61,480	68,690	52,837	79,172	65,545	786,537
	100.0%	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Total Cars with Violations	**29,107**	**33,909**	**23,453**	**38,870**	**31,335**	**376,017**
Pct of Total	**47.3%**	**49.4%**	**44.4%**	**49.1%**	**47.8%**	**47.8%**

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Violations

meter	spot_name	parked_timestamp	exited_timestamp	session_duratio	violation_reason	violation_number	officer_name	plate	No Violation	Initial Grace Period Exceeded
2911	2912	10/1/2022 11:00	10/1/2022 13:07	2:07:08				[redacted]	1	
2816	2818	10/1/2022 11:00	10/1/2022 11:10	0:10:02				[redacted]	1	
517	519	10/1/2022 11:00	10/1/2022 11:05	0:05:10	Initial Grace Period Exceeded	377893		[redacted]		
402	403	10/1/2022 11:00	10/1/2022 11:15	0:15:32	Initial Grace Period Exceeded	377866	[redacted]	[redacted]		1
3026	3026	10/1/2022 11:00	10/1/2022 11:50	0:49:47	Initial Grace Period Exceeded	377851		[redacted]		
321	321	10/1/2022 11:00	10/1/2022 11:14	0:14:22	Initial Grace Period Exceeded	377878	[redacted]	[redacted]		1
3023-3022	3022	10/1/2022 11:00	10/1/2022 11:53	0:52:27	Initial Grace Period Exceeded	377859		[redacted]		
2603	2601	10/1/2022 11:00	10/1/2022 17:44	6:43:31					1	
3202	3204	10/1/2022 11:00	10/1/2022 11:03	0:02:20				[redacted]	1	
2603	2602	10/1/2022 11:00	10/1/2022 11:32	0:31:25					1	
321	323	10/1/2022 11:00	10/1/2022 11:09	0:09:07	Initial Grace Period Exceeded	377899		[redacted]		
1330	1329	10/1/2022 11:00	10/1/2022 12:05	1:04:23				[redacted]	1	
1513	1515	10/1/2022 11:00	10/1/2022 11:32	0:31:39				[redacted]	1	
3904-3905	3906	10/1/2022 11:01	10/1/2022 11:09	0:08:12					1	
809	810	10/1/2022 11:01	10/1/2022 11:31	0:30:33				[redacted]	1	
1010	1010	10/1/2022 11:01	10/1/2022 11:12	0:10:49				[redacted]	1	
2907	2907	10/1/2022 11:01	10/1/2022 16:33	5:32:03	Initial Grace Period Exceeded	377917	[redacted]	[redacted]		1
328	327	10/1/2022 11:02	10/1/2022 13:02	2:00:36					1	
1010	1011	10/1/2022 11:02	10/1/2022 11:13	0:11:06	Initial Grace Period Exceeded	377920		[redacted]		
126	127	10/1/2022 11:02	10/1/2022 11:06	0:04:09					1	
1513	1514	10/1/2022 11:02	10/1/2022 12:46	1:44:12	Initial Grace Period Exceeded	377921		[redacted]		
1326	1327	10/1/2022 11:02	10/1/2022 11:56	0:53:54				[redacted]	1	
3718-3719	3721	10/1/2022 11:02	10/1/2022 11:04	0:01:58					1	
3015-3014	3015	10/1/2022 11:02	10/1/2022 11:32	0:29:56					1	
2826	2824	10/1/2022 11:02	10/1/2022 11:43	0:40:18					1	
3708-3709	3709	10/1/2022 11:02	10/1/2022 11:06	0:03:18				[redacted]	1	
1112	1112	10/1/2022 11:02	10/1/2022 11:10	0:07:29				[redacted]	1	

Violations

City of Royal Oak - Violations Summary										
	Data Valid Violations				Extrapolated Valid Violations					
	July 2022	September 2022	October 2022	Average	December 2021	April 2022	June 2022	August 2022	Average	Estimated Annual
Total No Violation	57,662	49,397	63,810	56,956	32,373	34,781	29,384	40,302	**43,958**	**527,501**
Pct of Total Interactions	**64.3%**	**59.6%**	**63.7%**	**62.7%**	**52.7%**	**50.6%**	**55.6%**	**50.9%**	**57.5%**	**57.5%**
Total Initial 5 Minute Grace Period Exceeded Violations	24,904	25,256	28,556	26,239	21,748	26,271	18,380	30,577	**25,099**	**301,186**
Number of Valid Violations (Citation Issued)	10,993	10,103	12,117	11,071	9,176	11,085	7,755	12,901	**10,590**	**127,081**
Valid Citations to Total Grace Period Violations	**44.1%**	**40.0%**	**42.4%**	**42.2%**	**42.2%**	**42.2%**	**42.2%**	**42.2%**	**42.2%**	**42.2%**
Total Time Expired Violations	2,893	2,880	3,355	3,043	2,699	2,798	2,009	2,812	**2,778**	**33,336**
Number of Valid Violations (Citations Issued)	1,795	1,652	2,051	1,833	1,626	1,685	1,210	1,694	**1,673**	**20,079**
Valid Time Expired Citations to Total Time Expired Violations	**62.0%**	**57.4%**	**61.1%**	**60.2%**	**60.2%**	**60.2%**	**60.2%**	**60.2%**	**60.2%**	**60.2%**
Total Maximum Time Limit Exceeded Violations	2,737	2,195	2,667	2,533	3,023	3,128	2,223	3,553	**2,789**	**33,473**
Number of Valid Violations (Citations Issued)	1,915	1,346	1,679	1,647	1,965	2,033	1,445	2,310	**1,813**	**21,760**
Valid Time Limit Citations to Total Time Limit Violations	**70.0%**	**61.3%**	**63.0%**	**65.0%**	**65.0%**	**65.0%**	**65.0%**	**65.0%**	**65.0%**	**65.0%**
All Other Violations	1,425	3,137	1,854	2,139	1,637	1,712	841	1,928	**1,791**	**21,487**
Number of Valid Violations (Citations Issued)	560	912	1,119	864	661	691	340	779	**723**	**8,677**
Valid All Other to Total All Other Violations	**39.3%**	**29.1%**	**60.4%**	**40.4%**	**40.4%**	**40.4%**	**40.4%**	**40.4%**	**40.4%**	**40.4%**
Total Interactions	89,621	82,865	100,242	[illegible]	**61,480**	**68,690**	**52,837**	**79,172**	**76,415**	**916,983**
Total Cars with Violations	**31,959**	**33,468**	**36,432**	**33,953**	**29,107**	**33,909**	**23,453**	**38,870**	**32,457**	**389,482**
Pct of Total	**35.7%**	**40.4%**	**36.3%**	**37.3%**	**47.3%**	**49.4%**	**44.4%**	**49.1%**	**42.5%**	**42.5%**
Number of Valid Violations (Citations Issued)	**15,263**	**14,013**	**16,966**	**15,414**	**13,428**	**15,495**	**10,750**	**17,684**	**14,800**	**177,597**
Proportion of Cars with Violations Issued Citations	**47.8%**	**41.9%**	**46.6%**	**45.4%**	**46.1%**	**45.7%**	**45.8%**	**45.5%**	**45.6%**	**45.6%**
Fine Amount					$10.00	$10.00	$20.00	$20.00	$20.00	$20.00
Fine Revenue Estimate					**$134,282**	**$154,948**	**$215,000**	**$353,671**	**$295,996**	**$3,551,949**

77% of Violations

9% of Violations

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Violations

Change from 5-Minute Grace Period to 15-Minute Grace Period

	5 Minute Grace Period			15 Minute Grace Period		
	Violations	Citations Issued	% "Valid"	Violations	Citations Issued	% "Valid"
July 2022	24,904	10,993	44%	15,498	6,482	42%
September 2022	25,256	10,103	40%	14,873	5,441	37%
October 2022	28,556	12,117	42%	16,991	6,706	39%
December 2021	21,748	9,176	42%	13,085	5,147	39%
April 2022	26,271	11,085	42%	15,807	6,217	39%
June 2022	18,380	7,755	42%	11,059	4,350	39%
August 2022	30,577	12,901	42%	18,398	7,236	39%
7-Month Average	**25,099**	**10,590**	**42%**	**15,102**	**5,940**	**39%**

Approximately 10,000 fewer Grace Period violations / month

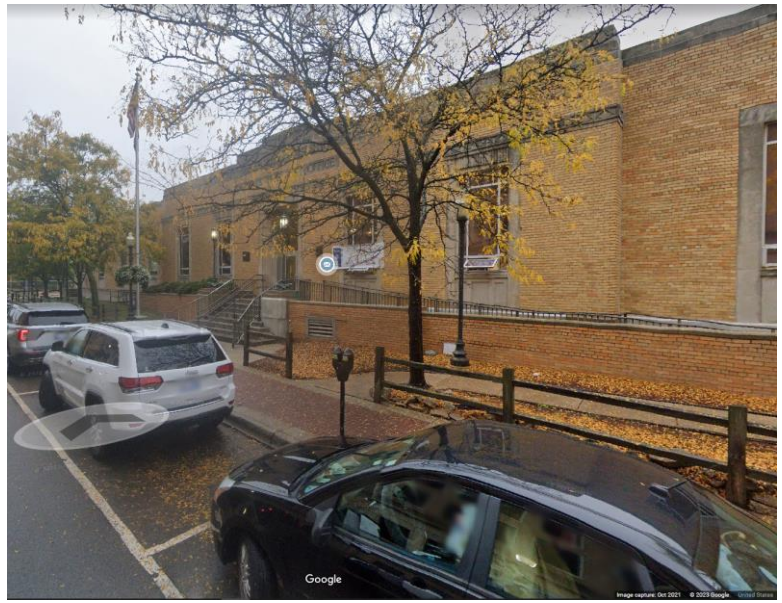
Approximately 2,000 fewer Time Limit violations / month

Change from 2-Hour Time Limit to 3-Hour Time Limit

	2-Hour Maximum Time Limit			3-Hour Maximum Time Limit		
	Violations	Citations Issued	% "Valid"	Violations	Citations Issued	% "Valid"
July 2022	2,737	1,915	70%	792	552	70%
September 2022	2,195	1,346	61%	649	391	60%
October 2022	2,667	1,679	63%	797	490	61%
December 2021	3,023	1,965	65%	890	570	64%
April 2022	3,128	2,033	65%	921	590	64%
June 2022	2,223	1,445	65%	655	419	64%
August 2022	3,553	2,310	65%	1,046	670	64%
7-Month Average	**2,789**	**1,813**	**65%**	**821**	**526**	**64%**

Recommendations

Recommendation Number	Recommendation Type	Recommendation	Action Time
1	Handicap Spaces	Provide two handicap accessible spaces in front of post office convenient to handicap access ramp on W. 2nd Street. Provide appropriate curb cuts for wheelchair access	As funds permit
2	Reverse Angle Parking	Continue Reverse Angle Parking on Washington Avenue and 7th Street	On-Going
3	Parking Rates	Maintain the premium rate for parking after 5:00 pm coincident with peak parking needs.	On-Going
3A	Parking Rates	Maintain the policy of charging a higher rate for on-street parking compared to off-street parking	On-Going
3B	Parking Rates	Maintain the policy of first two hours free in city garages to encourage use	On-Going
4	Parking Time Limits	Maintain the two-hour limit for on-street parking	On-Going
4A	Parking Time Limits	Discourage the moving of a vehicle to a new on-street space. This still removes an on-street space from use by another user. Longer term parkers should be directed to off-street lots or one of the garages	3 - 6 Months
4B	Parking Time Limits	Extend the Grace Period to 15 minutes.	3 - 6 Months



RICH & ASSOCIATES
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Recommendations

Recommendation Number	Recommendation Type	Recommendation	Action Time
5	Parking Lot Upgrades	If not planned to upgrade City Lots 1 & 2, change rates and maximum time limit consistent with other city lots	1 - 3 Months
6	Enforcement	Reverse Angle Patrons who drive straight in to a reverse angle space should have an additional fine attached in addition to fine for non payment due to hazard when leaving the space.	1 - 3 Months
7	Parking System Marketing	Install signs or some other indication to on-street pay stations that they are pay stations. Signs should be of consistent color and shape.	3 - 6 Months
7A	Parking System Marketing	Modify webpage to show what pay stations look like and that this is where payment should be made	3 - 6 Months
7B	Parking System Marketing	Add video to webpage to show the user what the interaction with the pay stations (smart meters) and app	3 - 6 Months
8	PEV Charging	Monitor use of existing charging stations and occupancy levels. Use this data in the evaluation of where and when additonal charging stations to be provided.	On-Going
8A	PEV Charging	Consider adoption of code changes for preparing new lots or structures to provide EV instrastructure	6 - 12 Months

QUESTIONS ?

Final Report

CITY OF ROYAL OAK
DOWNTOWN PARKING ASSESSMENT

Royal Oak, Michigan

January 12, 2023

RICH & ASSOCIATES, INC.
PARKING CONSULTANTS - PLANNERS

Table of Contents

Executive Summary

Introduction

Downtown Royal Oak has a very successful commercial district. Home to shops, bars, restaurants and entertainment offerings, the city has demonstrated over many years that it can attract and maintain numerous desirable businesses. These attract patrons from not only Royal Oak but surrounding communities. As such, the business environment has shown peak activity for many years occurring during the evening hours.

As part of the comprehensive assessment undertaken for the City of Royal Oak by Rich & Associates, the city officials have asked Rich to assess its parking operation and make recommendations that can enhance the attractiveness of the community and help parking to continue to support the local businesses and downtown environment. This assessment is not a comparison of parking supply versus parking demand, but a review of the utilization of parking and certain policies and procedures employed in the operation of the parking.

Methodology

The assessment began with an inventory of all on and off-street parking, both public and private in the 32 blocks encompassing the downtown study area. The study area was separated into an 18-block "high demand area" or core blocks with the balance in the 14 blocks outside this core. The utilization assessment reviewed the occupancy of the downtown parking over three days in mid to late August 2022. The assessment began in the late morning (11:00 am) and continued into the late evening hours (11:00 pm) in order to capture the use of public and private, on and off-street parking during the period of greatest need. Because a similar analysis was conducted by Rich in 2018, the City asked for a comparison of the 2018 data (pre-Covid) to the most recent data.

The relatively new MPS system in Royal Oak which monitors on-street parking was also reviewed. This system automatically reads license plates in order to collect parking information. Users can pay at a kiosk or use a phone app. Because Michigan does not have front license plates, where parallel spaces are not provided, the city changed from drive-in to reverse angle parking and asked Rich to review this utilization and make any recommendations for adjustment. The City's new MPS smart meter system provided statistics on parking operations going back to December 2021. Analysis of this data provided important details on violation types and rates of violation as well as parking durations that were more detailed and accurate than could be provided by the Rich utilization studies which only evaluated on and off-street spaces once every two hours.

A key question was whether the city was meeting the needs for barrier free access parking and/or should additional handicap accessible spaces be provided and if so, where. As a result of this overall assessment, the city officials were looking for recommendations to answer questions related to maximum time limits, fee schedules, graduated fees, reverse angle parking and electric vehicle charging stations.

The MPS system collects and provides data on lengths of stay for each encounter. This data combined with Rich's utilization assessment has led to a question on how best to control the parking through the use of rates and/or time limits. The City of Royal Oak is already charging a premium rate for on-street parking during the busier evening hours and would like information if these rates are appropriate or should be changed.

Results

The parking inventory has shown that within the 32 included blocks of the study area there are a total of 5,789± spaces. Seventy-two percent are classified as publicly available with the balance privately provided. Best practice is that a municipality should control or have publicly available a minimum of 50 percent of the parking supply in order to facilitate a patrons' ability to park once and walk to multiple destinations. Within the 18 core blocks the proportion of public parking increases to 83 percent. The city is exceeding the best practice minimum which should make for an easier parking experience for many patrons.

Within the public lots, garages and on-street spaces, the city is providing 130± handicap accessible spaces exceeding the requirement per ADA regulations of 97 spaces. ADA regulations specify the number of handicap accessible spaces that must be provided based on the size of the individual lots. At this time there is no requirement to provide on-street handicap accessible parking. The 23 on-street handicap accessible spaces comprise more than half of the surplus handicap accessible spaces provided. With the additional number of handicap accessible spaces, the maximum occupancy observed of these spaces was 46 percent (63 spaces). This would represent two-thirds of the supply if just the required number of spaces was provided.

Analyzing and comparing the utilization of the public parking within the high demand area over the three survey dates showed that the occupancy peaked at between 55 and 60 percent. Comparing these results to the 2018 analysis for the two Thursdays showed a maximum occupancy in 2022 of 50 percent of the observed public spaces occupied (7:00 pm to 9:00 pm) while the 2018 analysis showed the public spaces peaked at 51 percent between 11:00 am and 1:00 pm and again between 5:00 pm and 7:00 pm. Results from the Saturday comparisons showed the 2018 public occupancy at 79 percent of the observed spaces occupied between 7:00 pm and 9:00 pm whereas in the 2022 analysis the occupancy of the public spaces on the Saturday survey date was just 52 percent.

The MPS system provided comprehensive information on the utilization of the on-street parking spaces for seven months. This included not only each transaction noting the start and end of each parking session leading to parking duration statistics but also information on if a violation was committed and whether a citation was, in fact, issued. Key categories Rich analyzed included:

- No Violation
- Grace Period Exceeded
- Maximum Time Exceeded
- Time Expired

Data from these categories was analyzed to derive average lengths of stay as detailed below.

Table ES-1 – Average Length of Stay (MPS System)

	Average Length of Stay			
Data Month Provided	Patron's with no Violation	Grace Period Exceeded	Maximum Time Exceeded	Time Expired
	mm:ss	mm:ss	h:mm:ss	h:mm:ss
December 2021	54:35	43:02	2:52:29	1:28:56
April 2022	58:47	51:25	2:53:43	1:35:02
June 2022	59:48	53:37	2:54:54	1:36:00
July 2022	40:53	48:49	2:53:02	0:58:56
August 2022	56:32	48:35	2:53:36	1:31:29
September 2022	39:59	42:10	2:52:46	0:54:06
October 2022	34:04	44:15	2:51:33	0:59:34
	minutes:seconds		hours:minutes:seconds	

Analysis of the data provided by the MPS system showed an apparent violation rate of 43 percent most of which were due to violation of the five-minute grace period. Increasing the grace period from five minutes to 15 minutes would reduce the number of violations from a monthly average of 25,000 down to 15,000. Rich has recommended this change be implemented.

The data also showed that while the on-street time limit is two hours, the average time parked in the on-street spaces for those who violated the time constraint was nearly three hours. An additional change which is not being recommended is extending the on-street time limit to three hours as this contradicts best practices that on-street parking should be limited to two hours in order to encourage turnover of spaces. Although violators of the on-street time limit are parking for nearly three hours, this should continue to be discouraged through the violations and fines imposed.

While reverse angle parking which is employed in downtown Royal Oak is relatively new and to some not desired, some studies have found it to be safer and even quicker to complete than parallel parking. Rich's review of the utilization rate of the reverse angle on-street parking spaces has found the occupancy of the reverse angle spaces within the core to be consistent with general on-street parking occupancy rates.

Installing charging stations for plug-in electric vehicles is still a dilemma for many communities because of the relatively low market penetration to date. It is a question if the charging stations need to be provided in order to encourage greater use of electric vehicles or wait until sufficient vehicles are in use. Unless some arrangement with a provider can be made, the $10,000 to $40,000 cost for level 3 chargers is a hindrance to many municipalities to provide such stations. At present, more municipalities are revising their parking standards or codes to require some level of EV charging or infrastructure to support future EV charging in new lots and structures.

Table ES-2 – Recommendations Summary

Recommendation Number	Recommendation Type	Recommendation	Action Time
1	Handicap Spaces	Provide two handicap accessible spaces in front of post office convenient to handicap access ramp on W. 2nd Street. Provide appropriate curb cuts for wheelchair access	As funds permit
2	Reverse Angle Parking	Continue Reverse Angle Parking on Washington Avenue and Center Street	On-Going
3	Parking Rates	Maintain the premium rate for parking after 5:00 pm coincident with peak parking needs.	On-Going
3A	Parking Rates	Maintain the policy of charging a higher rate for on-street parking compared to off-street parking	On-Going
3B	Parking Rates	Maintain the policy of first two hours free in city garages to encourage use	On-Going
4	Parking Time Limits	Maintain the two-hour limit for on-street parking	On-Going
4A	Parking Time Limits	Discourage the moving of a vehicle to a new on-street space. This still removes an on-street space from use by another user. Longer term parkers should be directed to off-street lots or one of the garages	3 - 6 Months
4B	Parking Time Limits	Extend the Grace Period to 15 minutes.	3 - 6 Months
5	Parking Lot Upgrades	If not planned to upgrade City Lots 1 & 2, change rates and maximum time limit consistent with other city lots	1 - 3 Months
6	Enforcement	Reverse Angle Patrons who drive straight in to a reverse angle space should have an additional fine attached in addition to fine for non payment due to hazard when leaving the space.	1 - 3 Months
7	Parking System Marketing	Install signs or some other indication to on-street pay stations that they are pay stations. Signs should be of consistent color and shape.	3 - 6 Months
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8	PEV Charging	Monitor use of existing charging stations and occupancy levels. Use this data in the evaluation of where and when additonal charging stations to be provided.	On-Going
8A	PEV Charging	Consider adoption of code changes for preparing new lots or structures to provide EV instrastructure	6 - 12 Months

Introduction

Rich & Associates have been asked by the City of Royal Oak Downtown Development Authority (DDA) to complete an assessment of downtown parking. This analysis is not intended to be a comparison of parking supply versus parking demand but instead a review of current parking operations. A key component of the analysis are the three days (Wednesday, Thursday and Saturday) and evenings of parking utilization analysis. This data provided the Rich & Associates team with critical information on how and where the parking system was operating at or near capacity and where utilization was showing additional opportunities to improve usage.

In addition to this analysis, the DDA asked a number of questions regarding details of the existing parking supply. This included proportions of publicly provided versus privately supplied spaces, use restrictions on the parking supply and data regarding the number and utilization of both barrier-free (handicap accessible) spaces and the electric vehicle charging infrastructure.

Study Area

The data was analyzed within a total study area which encompassed 32 total blocks in downtown Royal Oak. This has been further divided into a "core" area which encompasses 18 blocks and includes the blocks essentially south of Eleven Mile Road between Washington and Troy down to Lincoln Avenue. The total and core parking study areas are defined in **Map 1 on page 4.**

Parking Supply

Public vs. Private

Within the total study area are a total of 5,789± parking spaces. A key benchmark that any municipality should be aware of regarding its parking supply is the proportion of parking which is publicly available versus the amount which is privately controlled. Best practice is that a municipality should control a minimum of 50 percent of the supply. This level of parking control helps facilitate the ability for patrons to park once and walk to multiple destinations. When too much of the supply is privately controlled, patrons will often be expected to move their vehicle from a private lot once their visit is concluded to make space available for the next customer. Having control of at least 50 percent of the supply also helps the city manage parking rates.

Rich uses the following definition when considering whether parking is publicly available or privately controlled:

Public Parking: This is parking available to anyone regardless of their ultimate destination. It generally includes municipally owned or provided on and off-street parking as long as the parking is not specified for a particular group. For example, parking that is provided or intended just for Library staff or visitors, even though this is a public entity, would not be considered "public parking"

Private Parking: This is parking provided by and for the staff, customers or visitors of a particular business or entity. Typically, at the conclusion of their visit the customer or visitor is expected to move their vehicle to make way for the next customer or visitor.

For the City of Royal Oak, within the total study area, 72 percent of the available parking is publicly available while this rises to 83 percent within the core area. The table showing the detailed parking supply is in the appendix of this report.

Table 1 – Summary Public / Private Supply (All Blocks)

Total All Blocks

	Private		Public		Total	
	On-Street	Off-Street	On-Street	Off-Street	On-Street	Off-Street
2022	14	1,603	769	3,403	783	5,006
	0.9%	99.1%	18.4%	81.6%	13.5%	86.5%
	1,617		4,172		5,789	
	27.9%		72.1%		100.0%	

Table 2 – Summary Public / Private Supply (Core Blocks)

Core Blocks

	Private		Public		Total	
	On-Street	Off-Street	On-Street	Off-Street	On-Street	Off-Street
2022	14	476	389	1,928	403	2,404
	2.9%	97.1%	16.8%	83.2%	14.4%	85.6%
	490		2,317		2,807	
	17.5%		82.5%		100.0%	

Barrier-Free Spaces

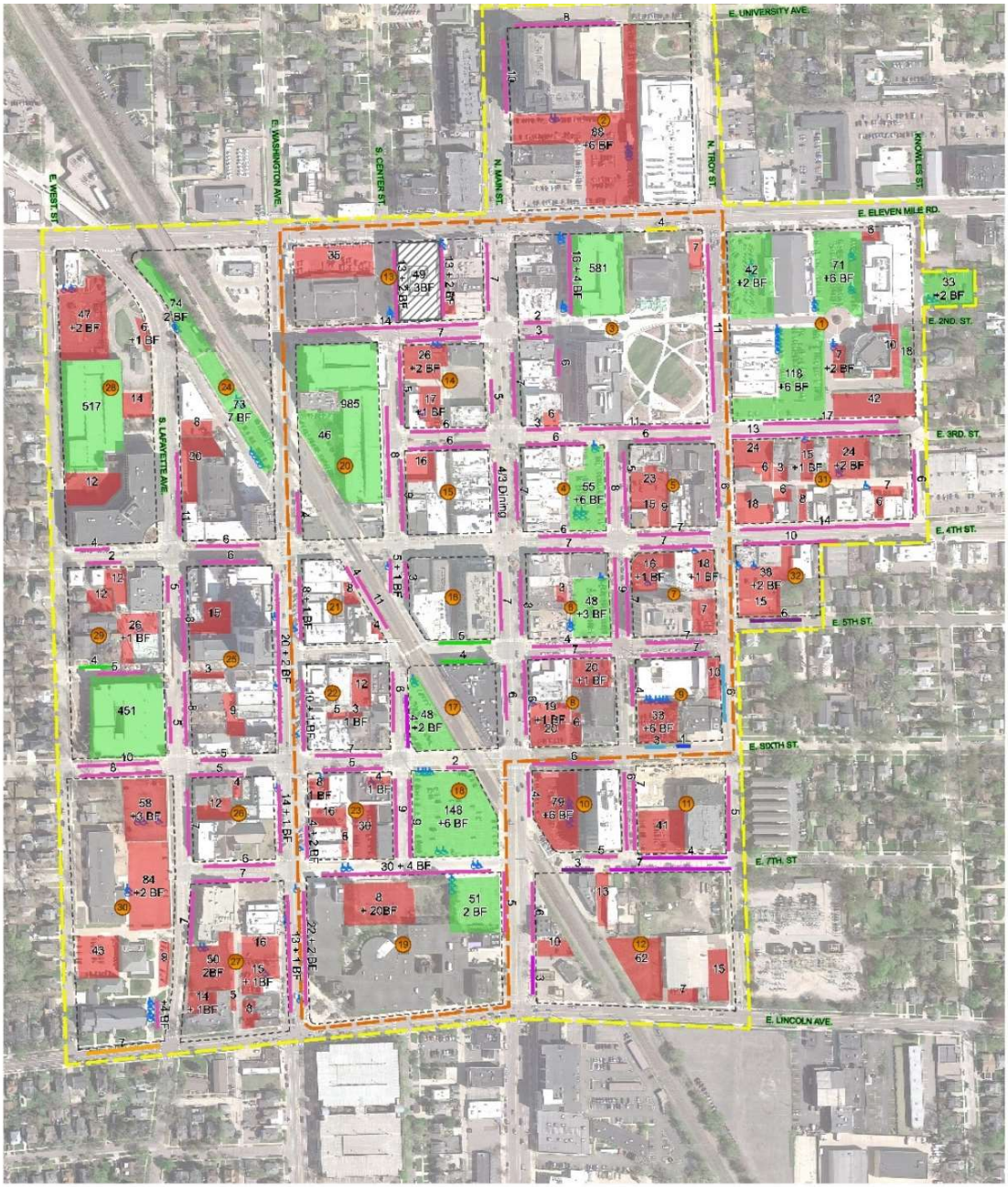
Within the downtown there are also a total of 205 barrier-free spaces. Nearly two-thirds (130) of these spaces are either publicly controlled on-street (23 spaces) or in publicly provided lots or garages (107 spaces).

Table 3 below summarizes the core and non-core parking supply for on-street versus off-street parking and regular versus barrier-free parking again separated into public and private supply.

Table 3 – Summary Parking Supply (Public vs. Private Core vs. Non-Core Blocks)

	CORE BLOCKS			NON-CORE BLOCKS			TOTAL		
	Regular	Barrier-Free	TOTAL	Regular	Barrier-Free	TOTAL	Regular	Barrier-Free	TOTAL
PUBLIC									
On-Street	**376**	**13**	389	370	10	380	746	23	769
Off-Street	**1872**	**56**	1,928	1424	51	1,475	3,296	107	3,403
Total	**2,248**	**69**	**2,317**	**1,794**	**61**	**1,855**	**4,042**	**130**	**4,172**
Percentage	**97.0%**	**3.0%**	**82.5%**	**96.7%**	**3.3%**	**62.2%**	**96.9%**	**3.1%**	**72.1%**
PRIVATE									
On-Street	**14**	**0**	14	**0**	**0**	0	14	0	14
Off-Street	**458**	**18**	476	**1070**	**57**	1,127	1,528	75	1,603
Total	**472**	**18**	**490**	**1,070**	**57**	**1,127**	**1,542**	**75**	**1,617**
Percentage	**96.3%**	**3.7%**	**17.5%**	**94.9%**	**5.1%**	**37.8%**	**95.4%**	**4.6%**	**27.9%**
TOTAL									
On-Street	390	13	403	370	10	380	760	23	783
Off-Street	2,330	74	2,404	2,494	108	2,602	4,824	182	5,006
Total	**2,720**	**87**	**2,807**	**2,864**	**118**	**2,982**	**5,584**	**205**	**5,789**
Percentage	**96.9%**	**3.1%**	**100.0%**	**96.0%**	**4.0%**	**100.0%**	**96.5%**	**3.5%**	**100.0%**

Map 1 – Parking Supply (Existing)



City of Royal Oak
Parking Recommendations
Parking Supply Map

RICH & ASSOCIATES
PARKING CONSULTANTS

01/06/2023

Legend

- Study Area
- High Demand Study Blocks
- Block #
- Block Face

Off Street Parking

- Public
- Private
- Shared Use
- Barrier Free

On Street Parking

- 12HR
- 15M
- 2HR
- 3HR
- 5 Min
- Loading Zone
- Reserved
- Unmarked

Parking Occupancy Analysis

A critical and key component of this effort has been the analysis of the collected data from the three days and evenings of the parking utilization study conducted by Rich & Associates. For this analysis between the hours of 11:00 am and 11:00 pm, the team collected utilization data (number of spaces occupied) from various on-street and off-street lots. Additionally in certain on-street spaces generally time-limited to two-hours (356 total spaces), Rich recorded portions of the license plate number in order to provide an assessment for how long vehicles were staying. This analysis showed that 92 percent of vehicles stayed for two-hours or less, meaning eight percent stayed in two-hour spaces for longer than the specified two-hours.

Table 4 – Parking Turnover Summary Results (3-Survey Dates)

Wednesday Parking Turnover Surmmary		
Vehicles that remained 2 hours or less	874	92%
Vehicles that remained between 2 and 4 hours	**68**	**7%**
Vehicles that remained between 4 and 6 hours	**8**	**1%**
Vehicles that remained between 6 and 8 hours	**2**	**0%**
Vehicles that remained between 8 and 10 hours	**1**	**0%**
Vehicles that remained between 10 and 12 hours	**0**	**0%**
Total number of Vehicles Observed	953	100%
Total Number of Stalls analyzed for turnover	356	
Total Vehicles in Violation	**79**	**8%**

Thursday Parking Turnover Surmmary		
Vehicles that remained 2 hours or less	958	92%
Vehicles that remained between 2 and 4 hours	**62**	6%
Vehicles that remained between 4 and 6 hours	**11**	1%
Vehicles that remained between 6 and 8 hours	**5**	0%
Vehicles that remained between 8 and 10 hours	**0**	0%
Vehicles that remained between 10 and 12 hours	**0**	0%
Total number of Vehicles Observed	1,036	100%
Total Number of Stalls analyzed for turnover	356	
Total Vehicles in Violation	**78**	**8%**

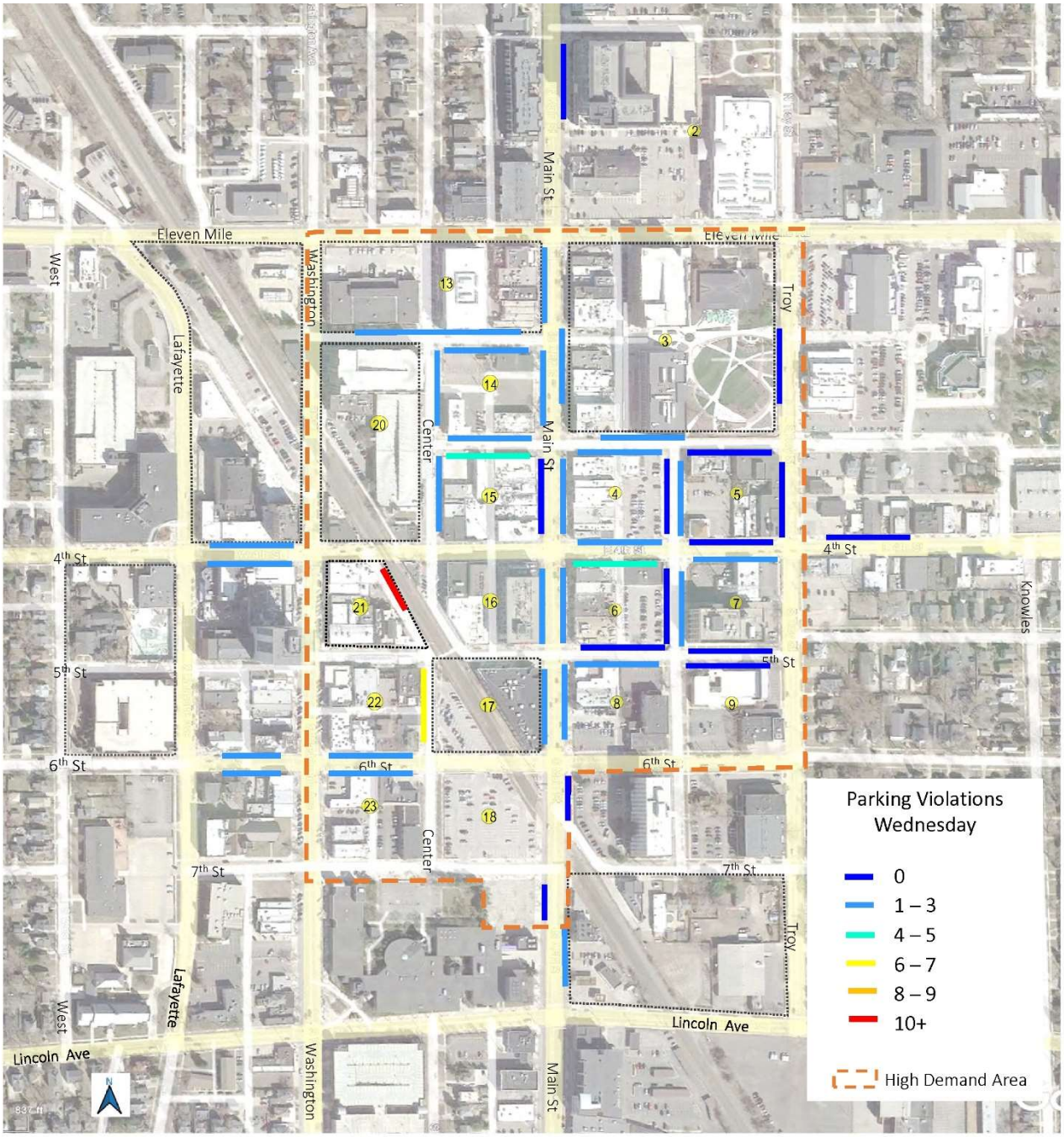
Saturday Parking Turnover Surmmary		
Vehicles that remained 2 hours or less	1,027	93%
Vehicles that remained between 2 and 4 hours	**61**	**6%**
Vehicles that remained between 4 and 6 hours	**4**	0%
Vehicles that remained between 6 and 8 hours	**5**	**0%**
Vehicles that remained between 8 and 10 hours	**2**	0%
Vehicles that remained between 10 and 12 hours	**0**	**0%**
Total number of Vehicles Observed	1,099	100%
Total Number of Stalls analyzed for turnover	356	
Total Vehicles in Violation	**72**	**8%**

Violation Summary Maps

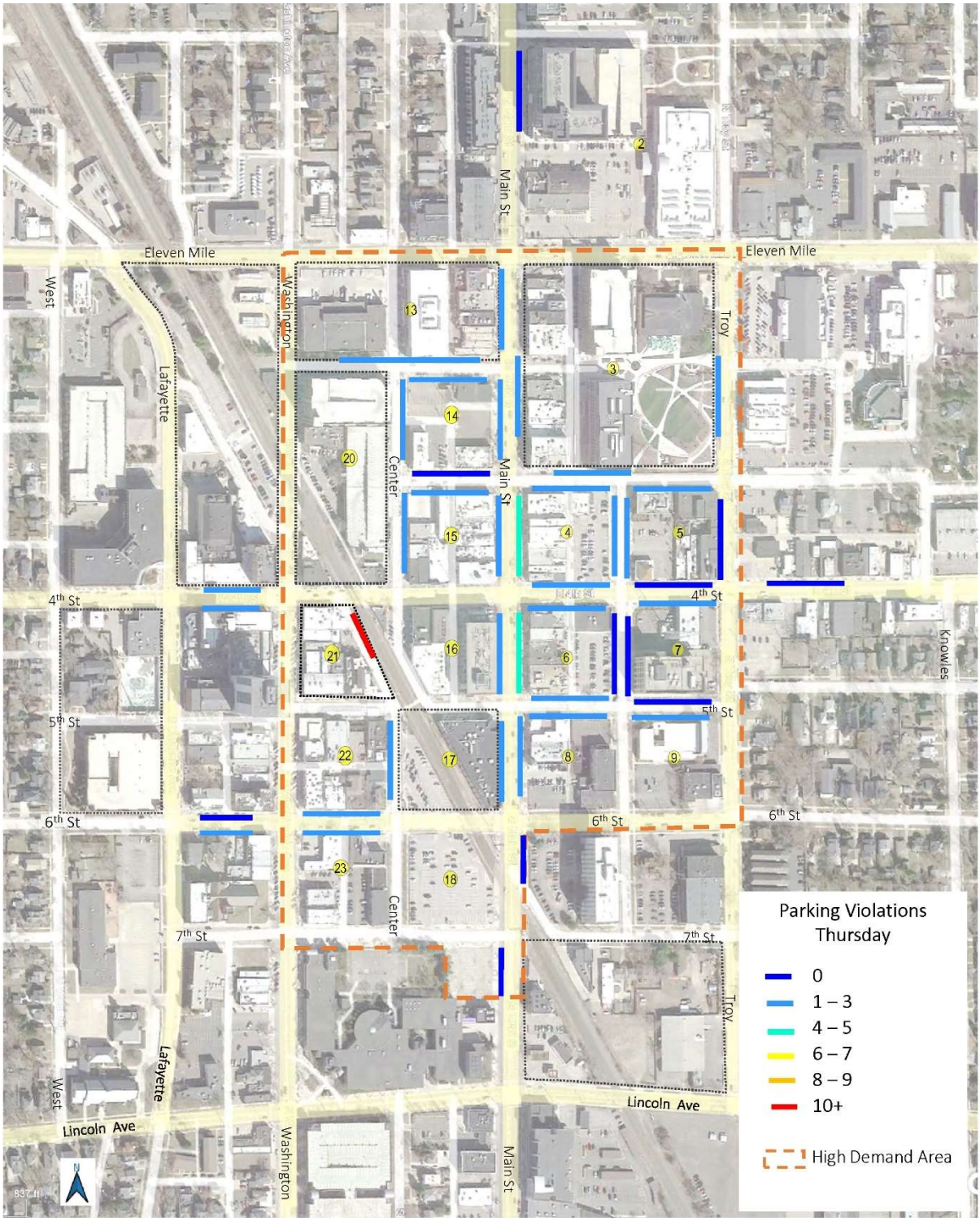
During the three survey dates and generally within the high demand area (core blocks), where individual on-street spaces were striped or could be clearly defined, the Rich team as noted above recorded whether vehicles were overstaying the stated time limit (2-hours). The series of three maps on the following three pages, demonstrate the number of violations found on the various block faces during the total observation period. This can help city or parking officials identify particular areas subject to abuse. As Table 4 above shows, the number of violations averaged 76 cars during each of the three days.

It will be noted that no violations are noted along Washington Avenue. This is because with Michigan's policy of no front license plates; the reverse angle parking did not permit the surveyors to observe license plates as they drove down the road.

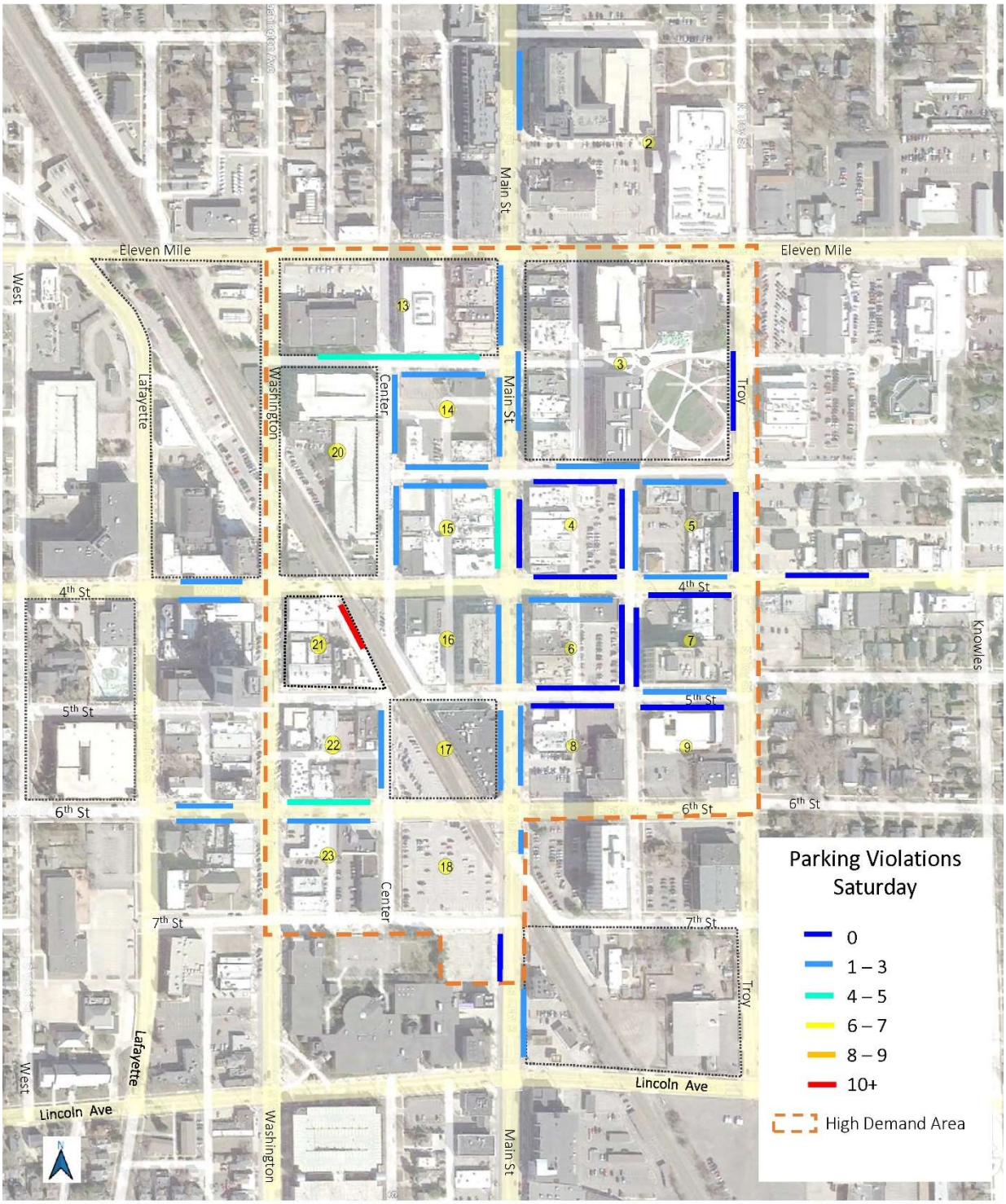
Map 2 – Violations Summary Wednesday



Map 3 – Violations Summary Thursday



Map 4 – Violations Summary Saturday



Occupancy Study Results – Wednesday

The occupancy study methodology involved having teams observing on-street and off-street parking lots and spaces once every two hours following a defined route. Two routes were used, one focused on on-street parking while the second reviewed public and private off-street lots. The City provided occupancy data for the four city-owned garages within the study area. These results were included in the off-street parking capacity assessment. Figures below summarize the results for the periodic occupancy

Public vs. Private Parking Occupancy - Wednesday

Figure 1 demonstrates that the utilization of public spaces peaked between 1:00 pm and 3:00 pm on the Wednesday survey date. The privately controlled spaces peaked slightly later during the 3:00 pm to 5:00 pm period. At peak time, the public spaces were only a maximum of about 50 percent occupied which decreased to a maximum of 40 percent for the privately controlled locations.

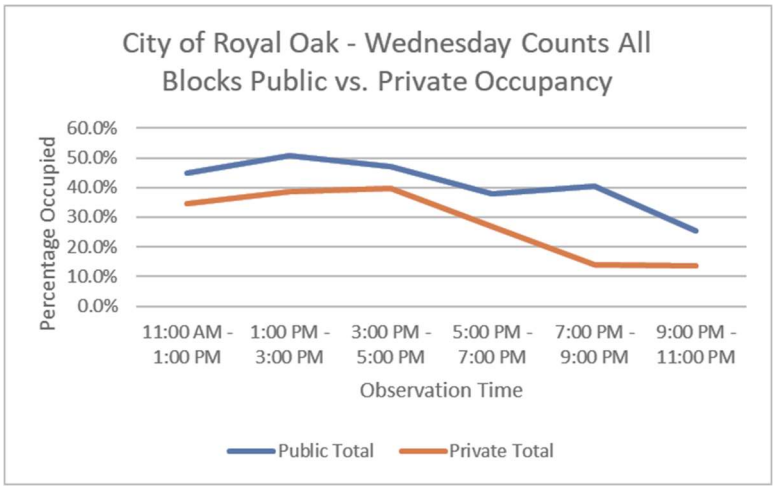


Figure 1 - Wednesday Percentage Occupancy Public vs. Private Spaces (All Blocks)

Figure 2 demonstrate the public vs private occupancy for the high demand (core) blocks within the defined study area. The core area blocks show both public and private parking peaking at slightly above 50 percent of the available capacity during the 1:00 pm to 3:00 pm period.

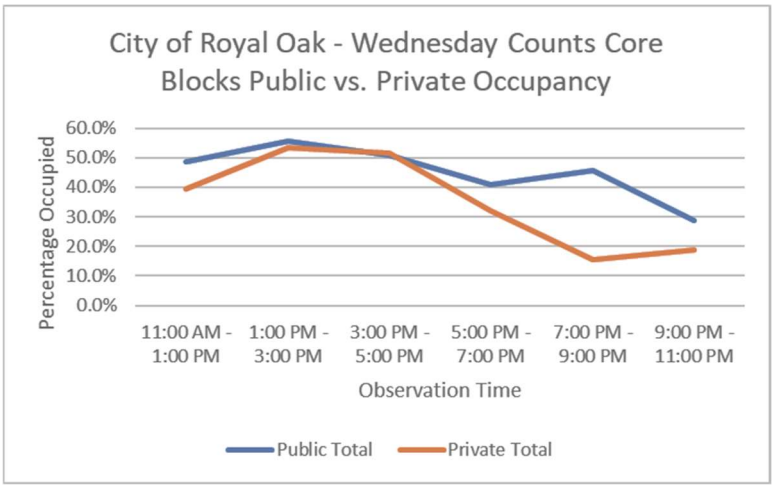


Figure 2 Wednesday Percentage Occupancy Public vs. Private Spaces (Core Blocks)

Public On-Street vs. Public Off-Street Parking – Wednesday

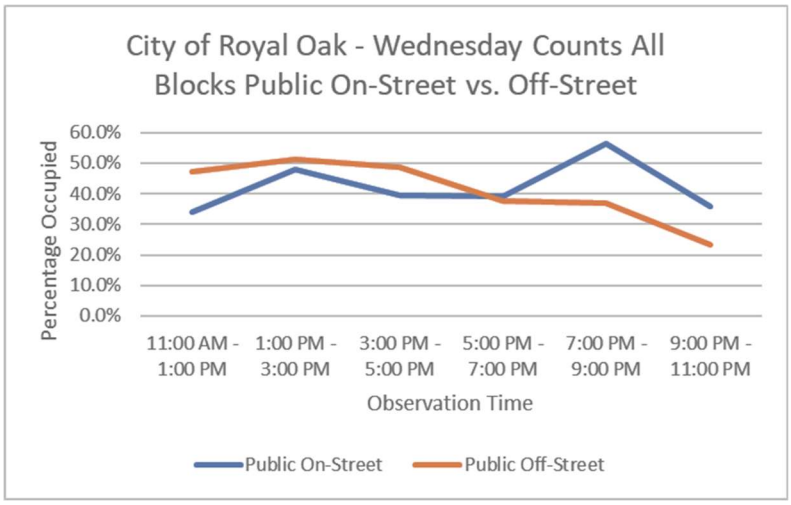


Figure 3 – Wednesday Percentage On-Street vs. Off-Street Parking Occupancy – All Blocks

Figure 3 demonstrates when considering all blocks within the study area that the on-street parking spaces reach their period of maximum occupancy (56%) on the Wednesday survey date during the 7:00 pm to 9:00 pm period. This is opposite to what the public off-street spaces are seeing with their peak reached in early / mid-afternoon and then declining for the rest of the day (evening).

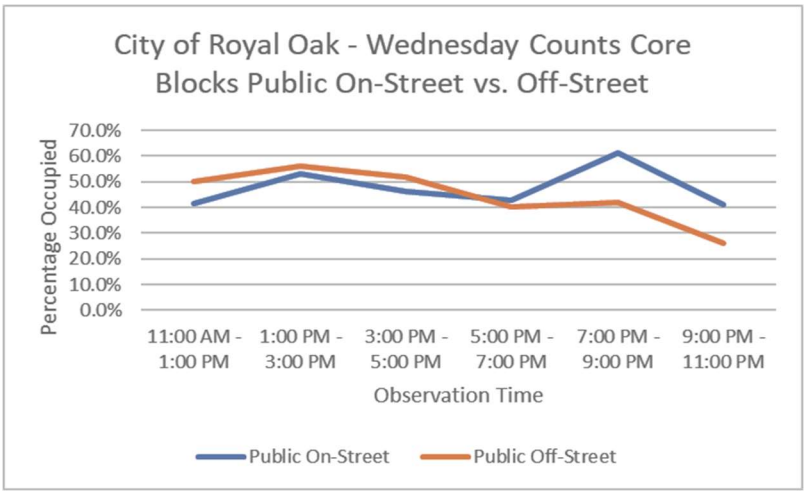


Figure 4 - Wednesday Percentage On-Street vs. Off-Street Parking Occupancy - Core Blocks

Analyzing similar information for the core or high demand area blocks shows similar patterns, as would be expected, but achieving slightly higher peak percentage occupancy values. The off-street spaces still exhibit a decline from the early / mid-afternoon peak while on-street spaces experience the sharp increase in the evening hours.

Parking Garage Occupancy - Wednesday

The utilization of on-street versus off-street parking demonstrated in Figures 3 and 4 includes the four public garages. Using City supplied data from the three survey dates for the garages, three of the four garages were less than 60 percent occupied at their peak time while the fourth garage (4th and Lafayette) was just one-third full at its highest point during the day on the Wednesday survey date.

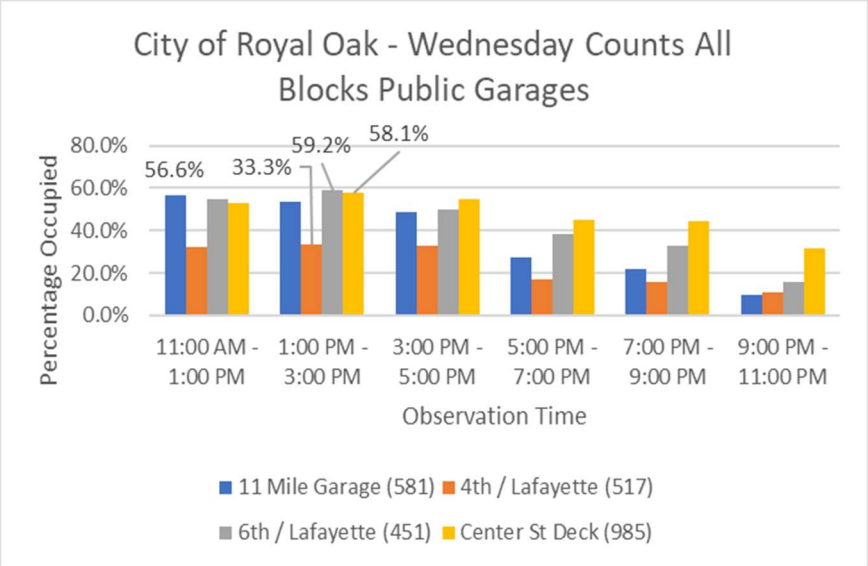
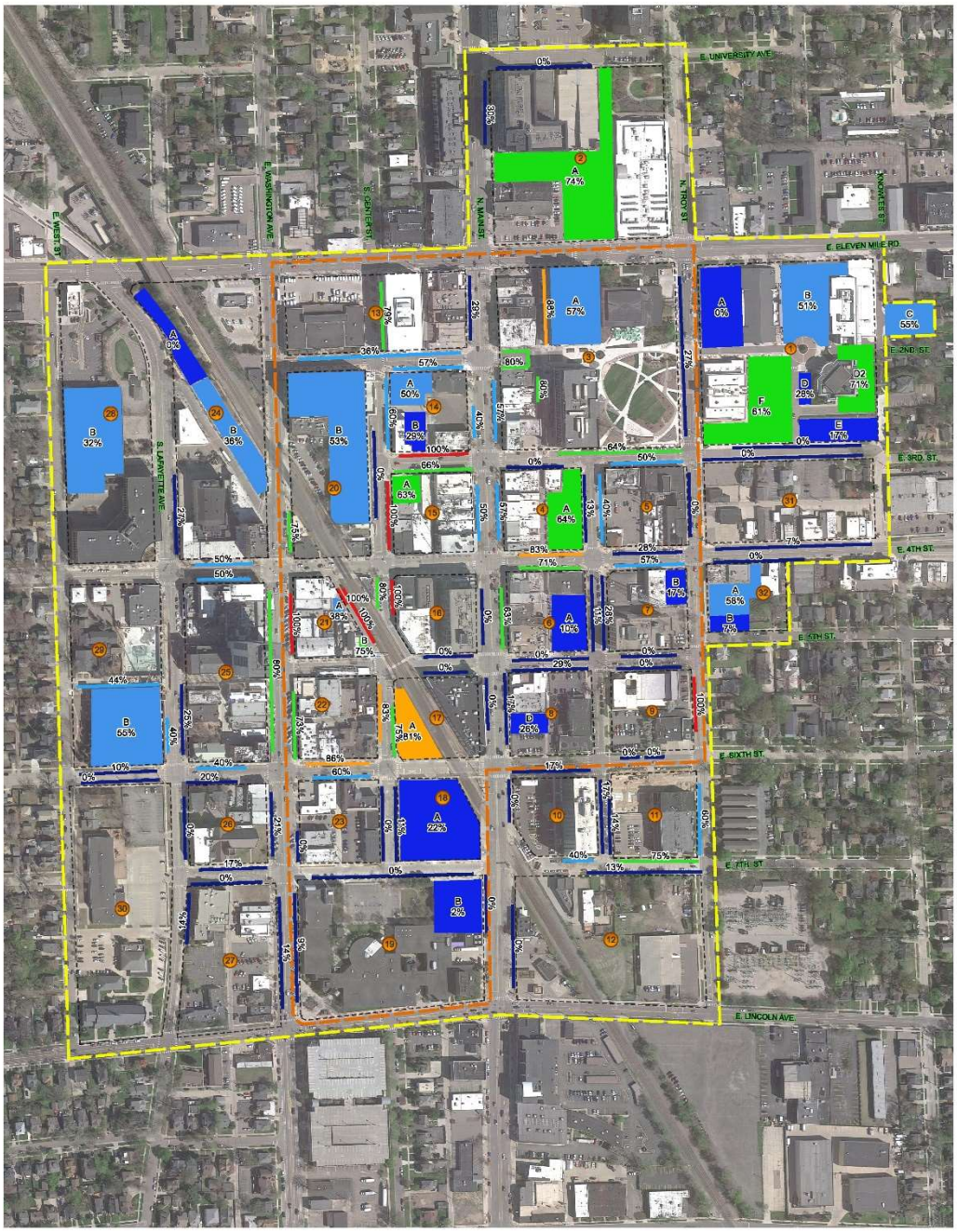


Figure 5 - Wednesday Percentage Occupancy Public Parking Garages

Wednesday Occupancy Counts – Time of Day

The following series of maps demonstrate the occupancy recorded for the various on and off-street parking locations during each of the six observation periods. These maps use colors to demonstrate the level of occupancy observed for that time period. These maps are designed to demonstrate lots, garages or on-street block faces that may be "stressed" by high occupancy at certain times of the day. These series of maps demonstrate the Wednesday survey results. The results for the Thursday and Saturday counts will be shown following those series of discussions as well.

Map 5 – Wednesday 11:00 am – 1:00 pm



City of Royal Oak
Parking Recommendations

RICH & ASSOCIATES
PARKING CONSULTANTS
ARCHITECTS • ENGINEERS • PLANNERS

N

Legend

(#) Block #

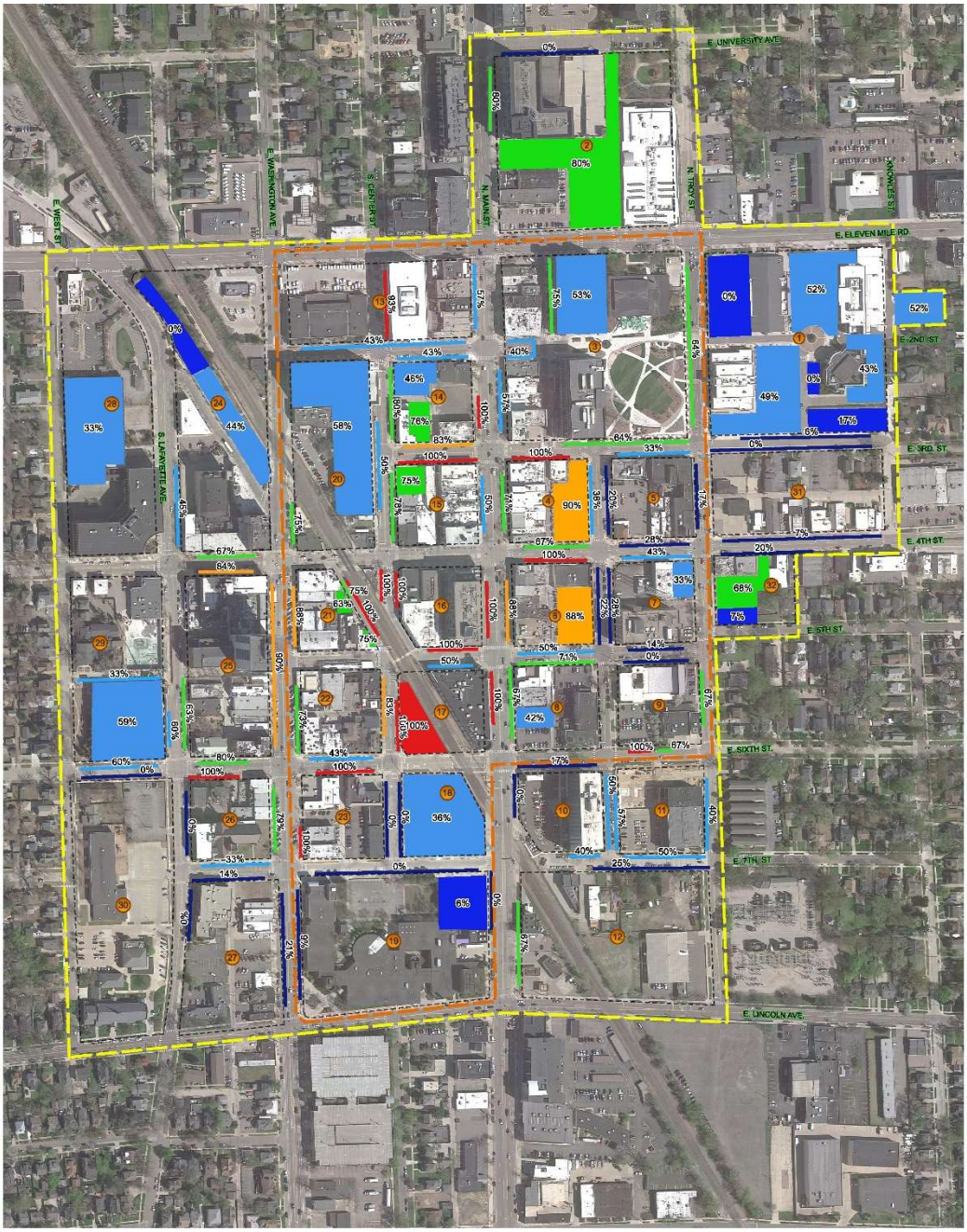
A
D B Block Face
C

0% - 30%
31% - 60%
61% - 80%
81% - 90%
91% - 100%

Turnover/Occupancy
Wednesday, August 17

11:00 am - 1:00 pm

Map 6 – Wednesday 1:00 pm – 3:00 pm



City of Royal Oak
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Legend

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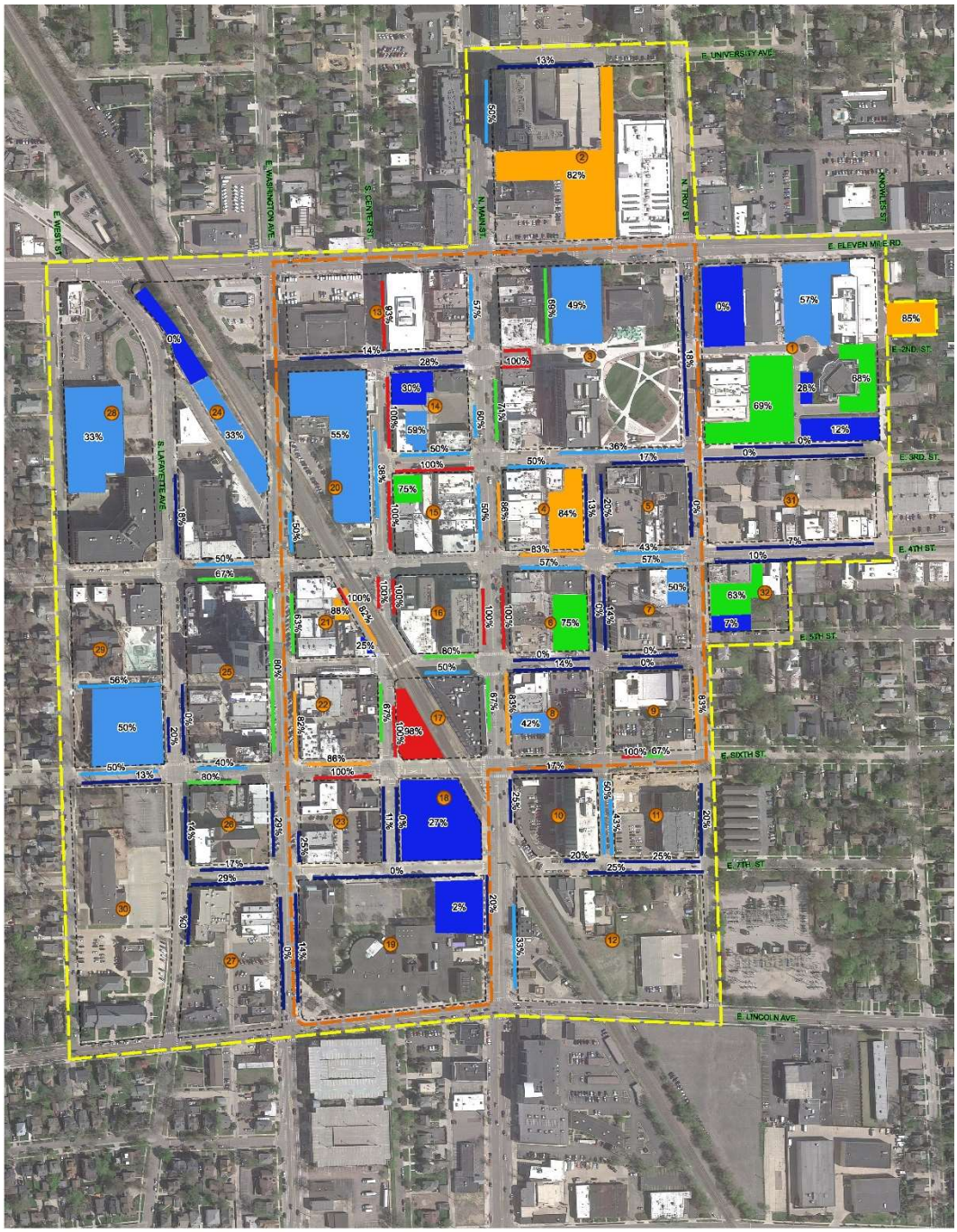
Turnover/Occupancy
Wednesday, August 17

1:00 pm - 3:00 pm

Map 7 – Wednesday 3:00 pm – 5:00 pm



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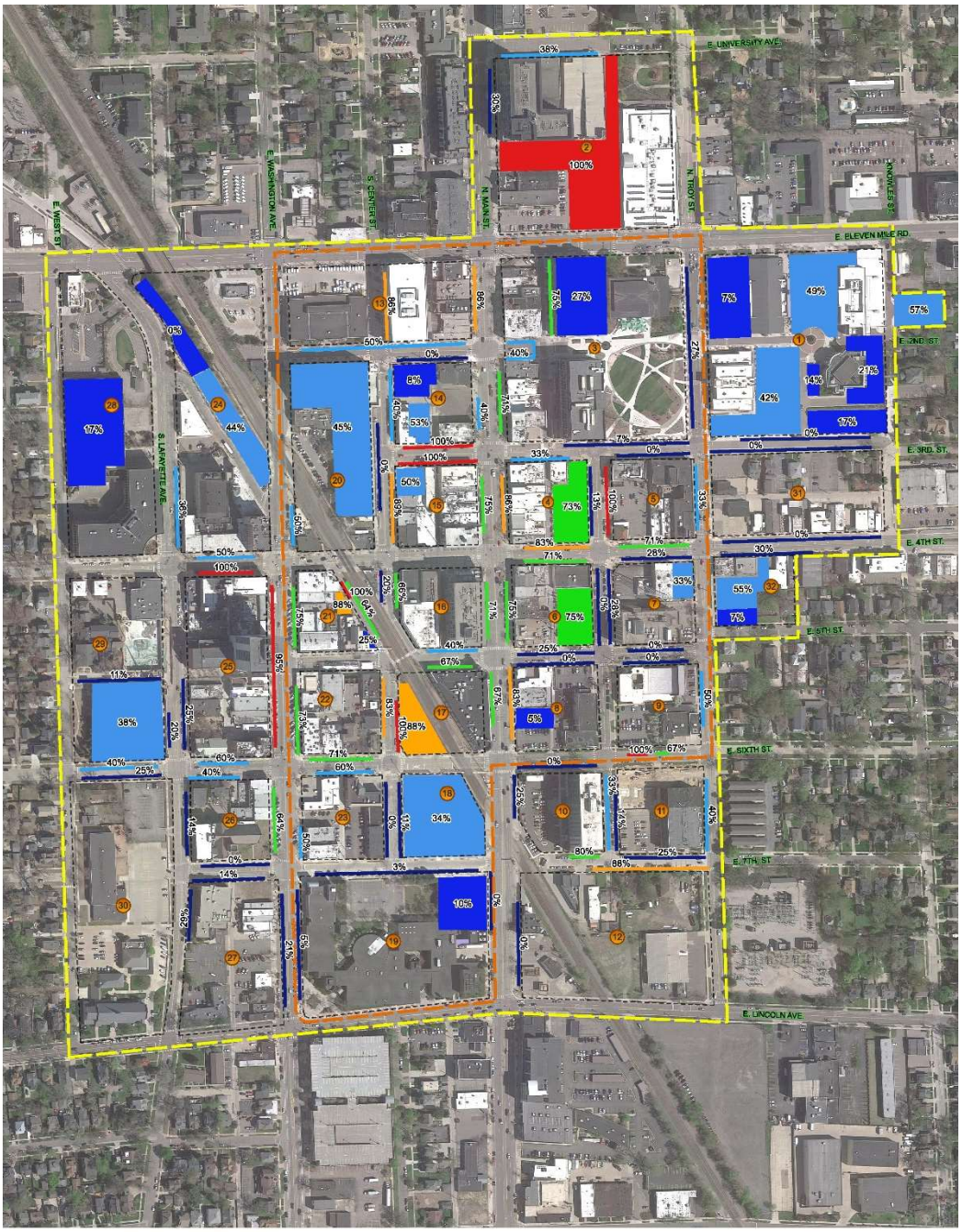
Turnover/Occupancy
Wednesday, August 17

3:00 pm - 5:00 pm

Map 8 – Wednesday 5:00 pm – 7:00 pm



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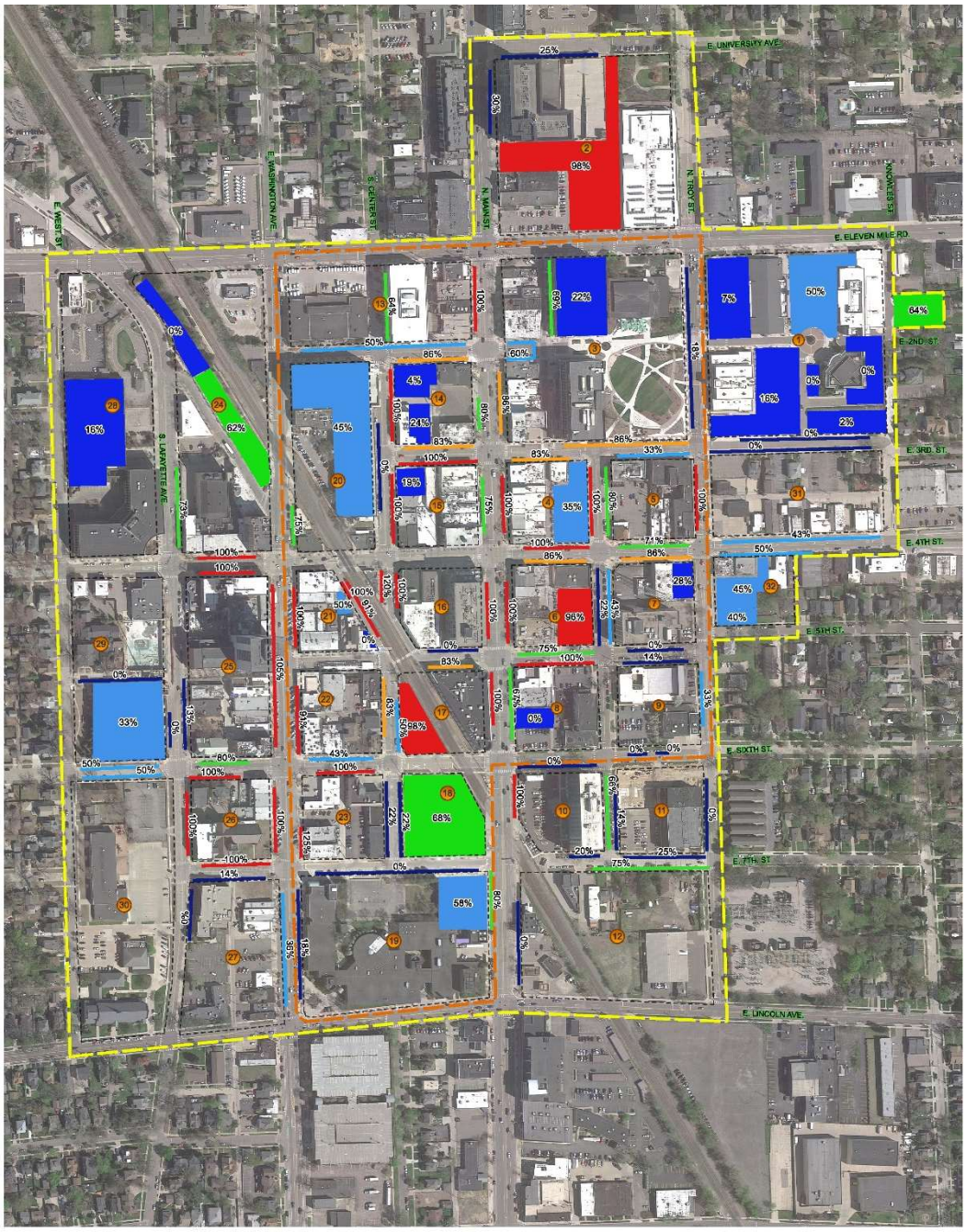
Turnover/Occupancy
Wednesday, August 17

5:00 pm - 7:00 pm

Map 9 – Wednesday 7:00 pm – 9:00 pm



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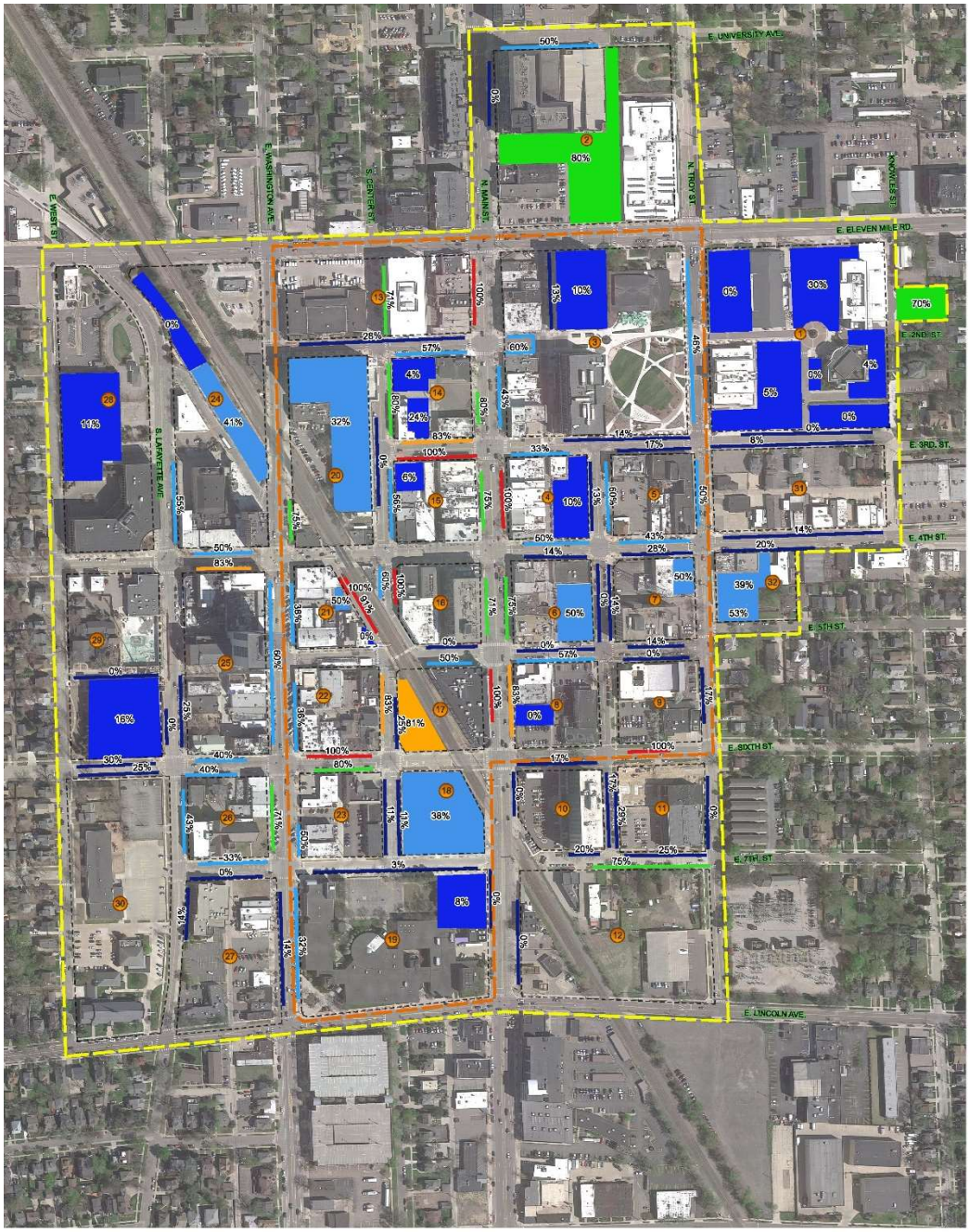
Turnover/Occupancy
Wednesday, August 17

7:00 pm - 9:00 pm

Map 10 – Wednesday 9:00 pm – 11:00 pm



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Turnover/Occupancy
Wednesday, August 17

9:00 pm - 11:00 pm

Occupancy Study Results – Thursday

The City requested that three days be included in the turnover / occupancy analysis conducted by the Rich & Associates team. While a Wednesday would be expected to have nominal parking demand and utilization, typically a Thursday would begin to see higher levels of parking utilization, particularly during the evening hours. This will be evaluated in the following series of figures and tables.

Public vs. Private Parking Occupancy - Thursday

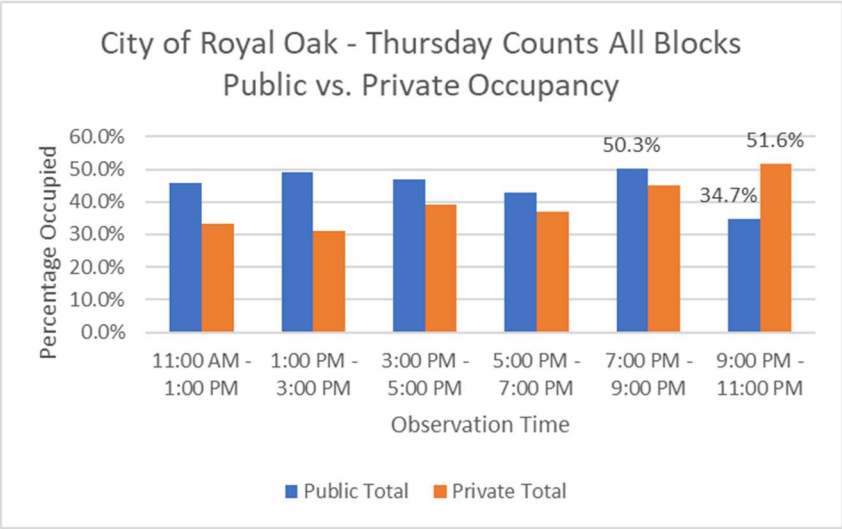


Figure 6 - Thursday Public vs. Private Parking Occupancy - All Blocks

Analysis of the data from the Thursday series of observations shows that unlike the Wednesday counts which peak during the early to mid-afternoon period, both the public and private spaces are peaking during the evening hours. The public space occupancy for all blocks peaked at 50 percent of capacity while the private spaces only slightly exceeded this at 52 percent.

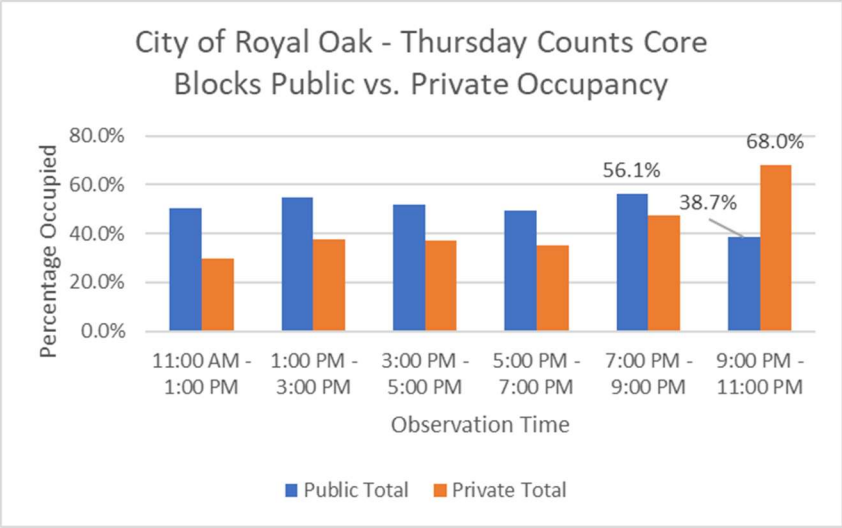


Figure 7 - Thursday Public vs. Private Parking Occupancy - Core Blocks

When just the high-demand area or core blocks are considered, the proportion of spaces occupied for both public and privately controlled spaces exhibited higher percentages of occupancy. While the proportion of publicly controlled spaces was only slightly higher (56% in the core versus 50% for all blocks), the privately controlled spaces were significantly higher at 68 percent occupancy. In Rich's opinion, this could be patrons

taking advantage of available parking in privately controlled lots which have closed for the day and thus provide free parking. Alternatively, it could be greater access to private businesses that provide their own parking for their staff and customers.

Public On-Street vs. Public Off-Street Parking – Thursday

With all blocks within the study area considered as shown by Figure 8, the on-street spaces achieve their highest occupancy during the 7:00 pm to 9:00 pm period. Similarly, to what the Wednesday results showed, the public off-street spaces are reaching their peak occupancy during the mid to late-afternoon period.

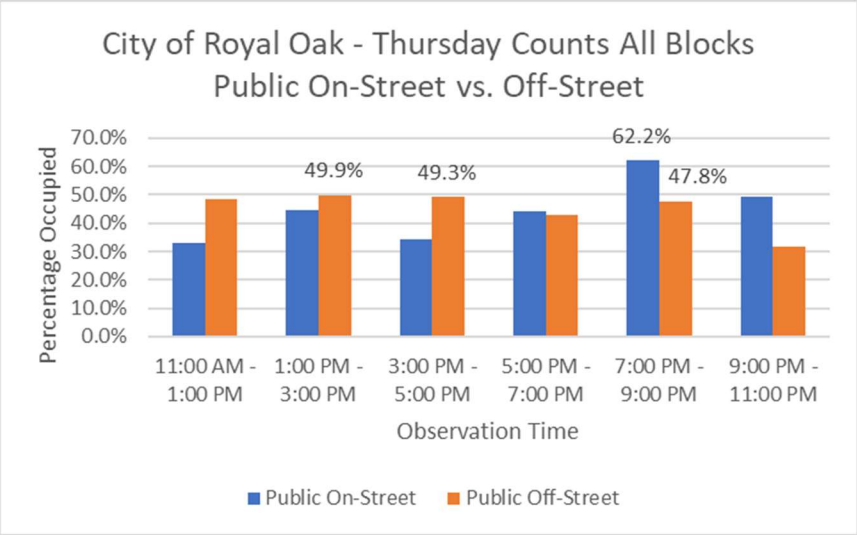


Figure 8 - Thursday Public On-Street vs. Public Off-Street Parking Occupancy - All Blocks

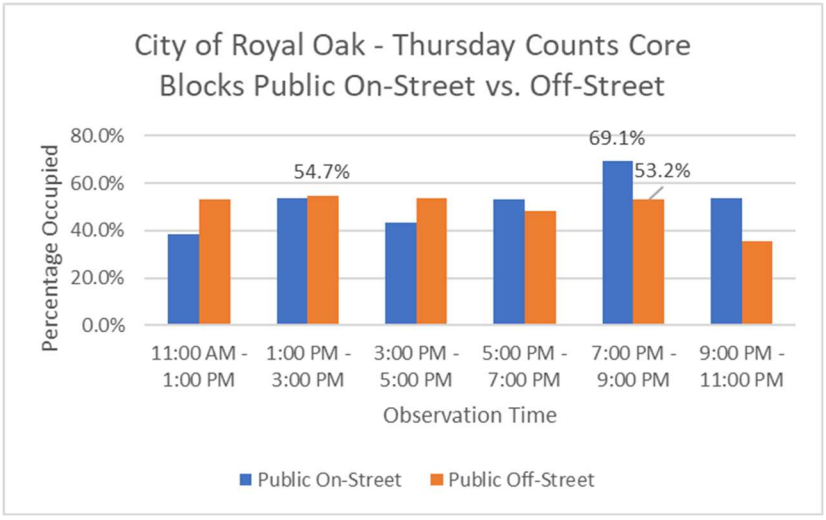
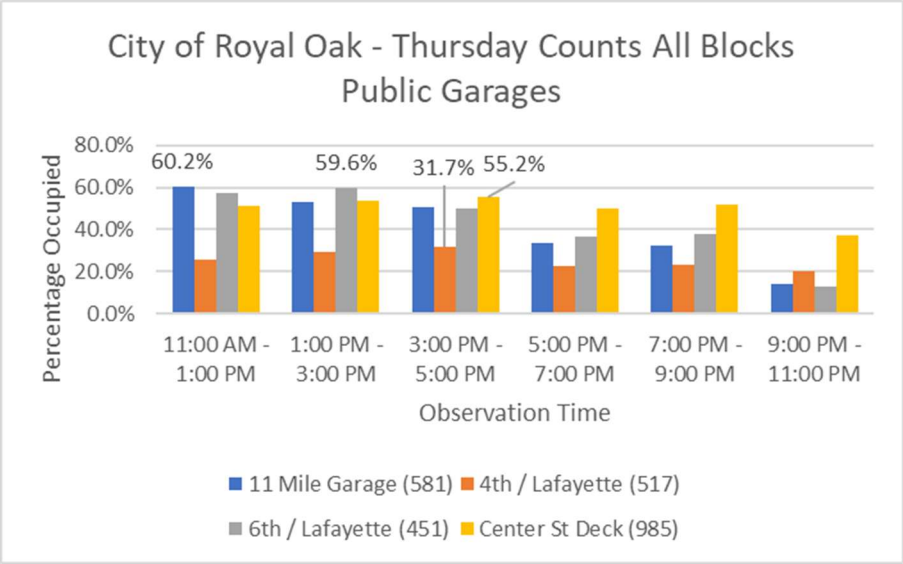


Figure 9 - Thursday Public On-Street vs Public Off-Street Occupancy - Core Blocks

Within the core or high-demand blocks where most restaurants and entertainment offerings are located, the Thursday occupancy study results showed that the on-street peaked at its highest occupancy during the early evening. These results showed that the maximum occupancy peaked at just under 70 percent of the observed spaces occupied. At this same time, the public off-street results were only slightly below the early afternoon peak value.

Parking Garage Occupancy - Thursday



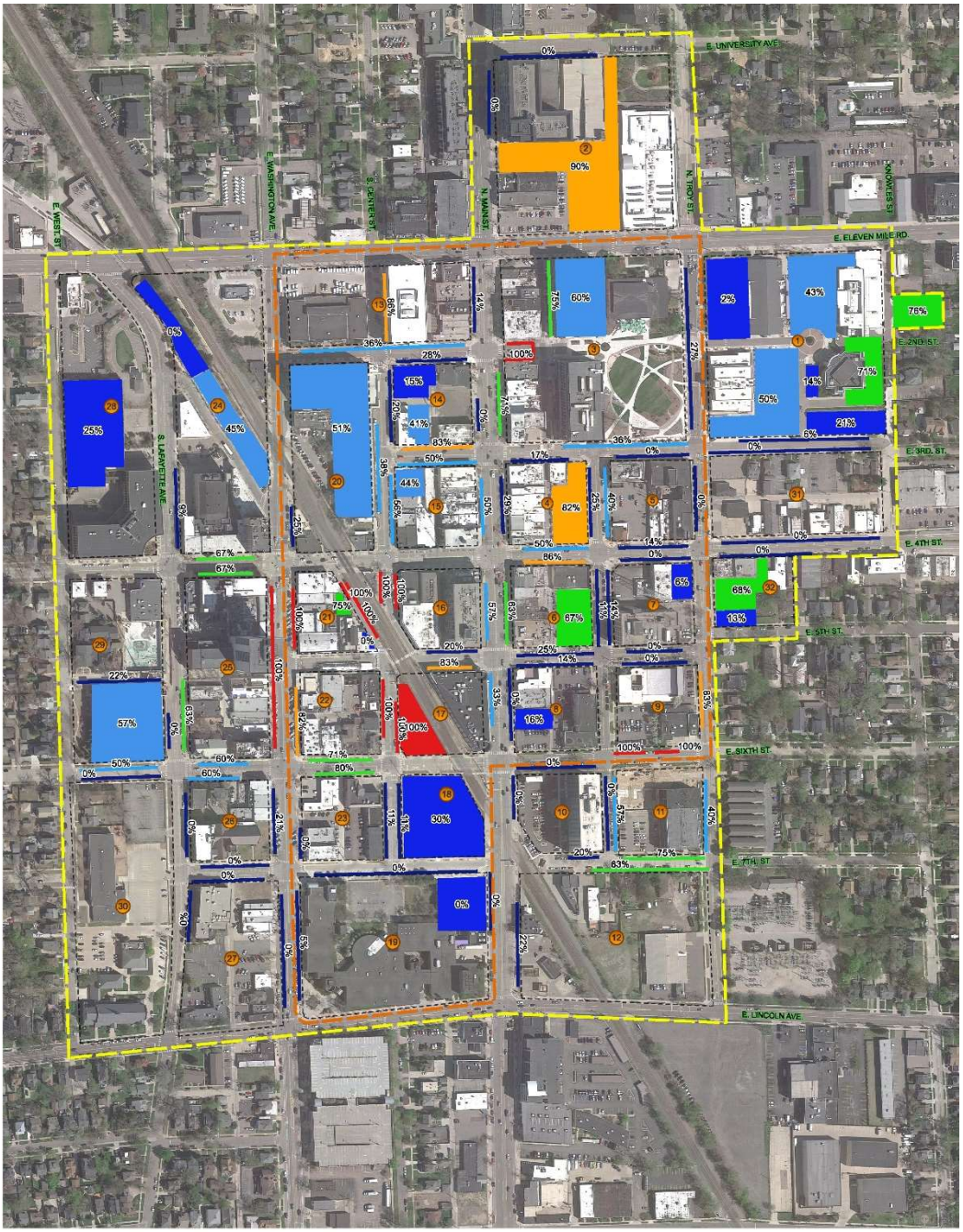
The City of Royal Oak parking garages exhibited similar occupancy results and patterns as occurred coinciding with the Wednesday observations with only very minor increases in occupancy rates on the order of two to three percent increases.

Figure 10 - Parking Garage Occupancy Rates - Thursday

Thursday Occupancy Counts – Time of Day

As was shown with the Wednesday counts, the following series of six maps demonstrate the occupancy at the various observation periods for the on-street and off-street parking spaces reviewed as part of the turnover and occupancy study.

Map 11 – Thursday 11:00 am – 1:00 pm



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Legend

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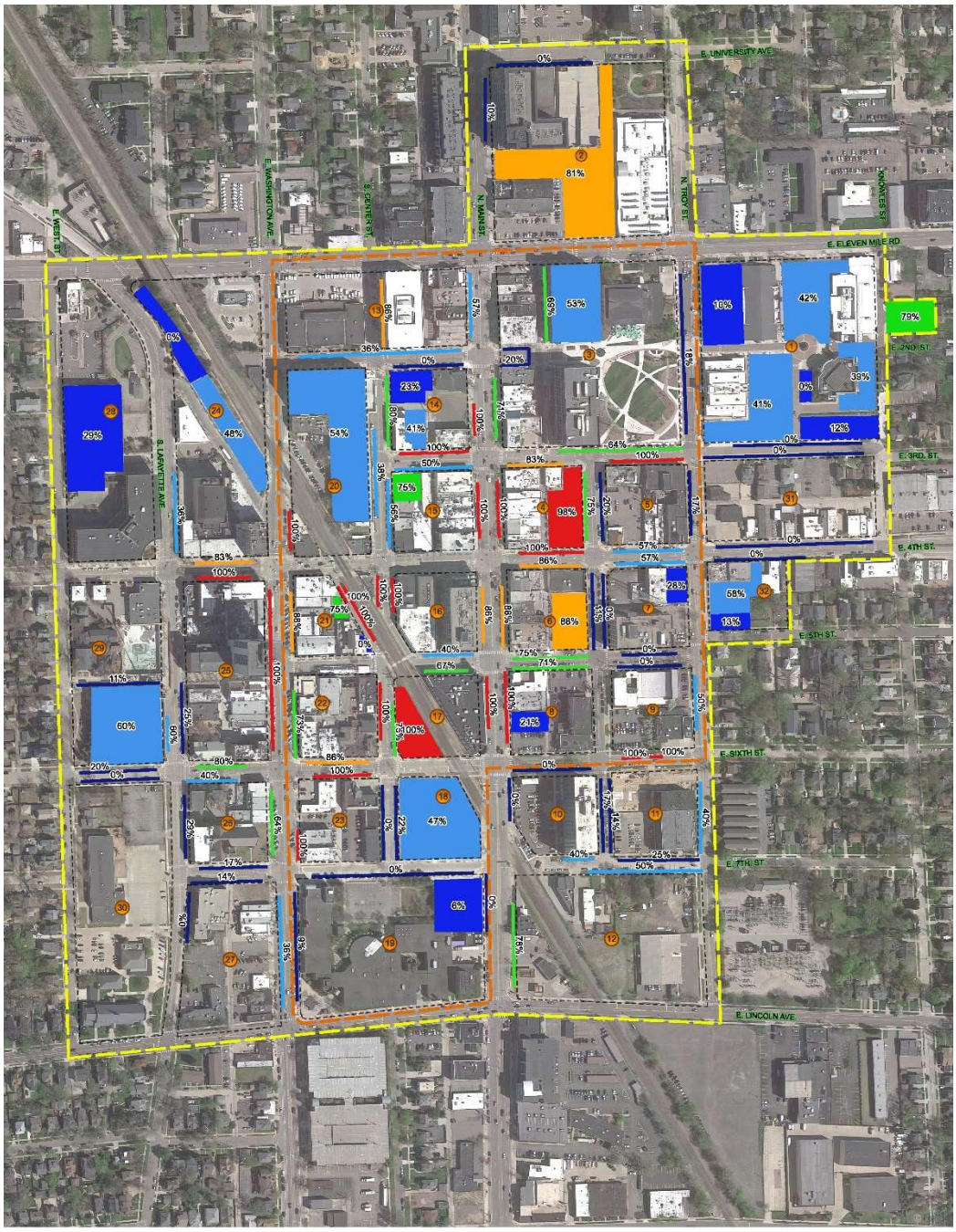
Turnover/Occupancy
Thursday, August 18
11:00 am - 1:00 pm

Map 12 – Thursday 1:00 pm – 3:00 pm



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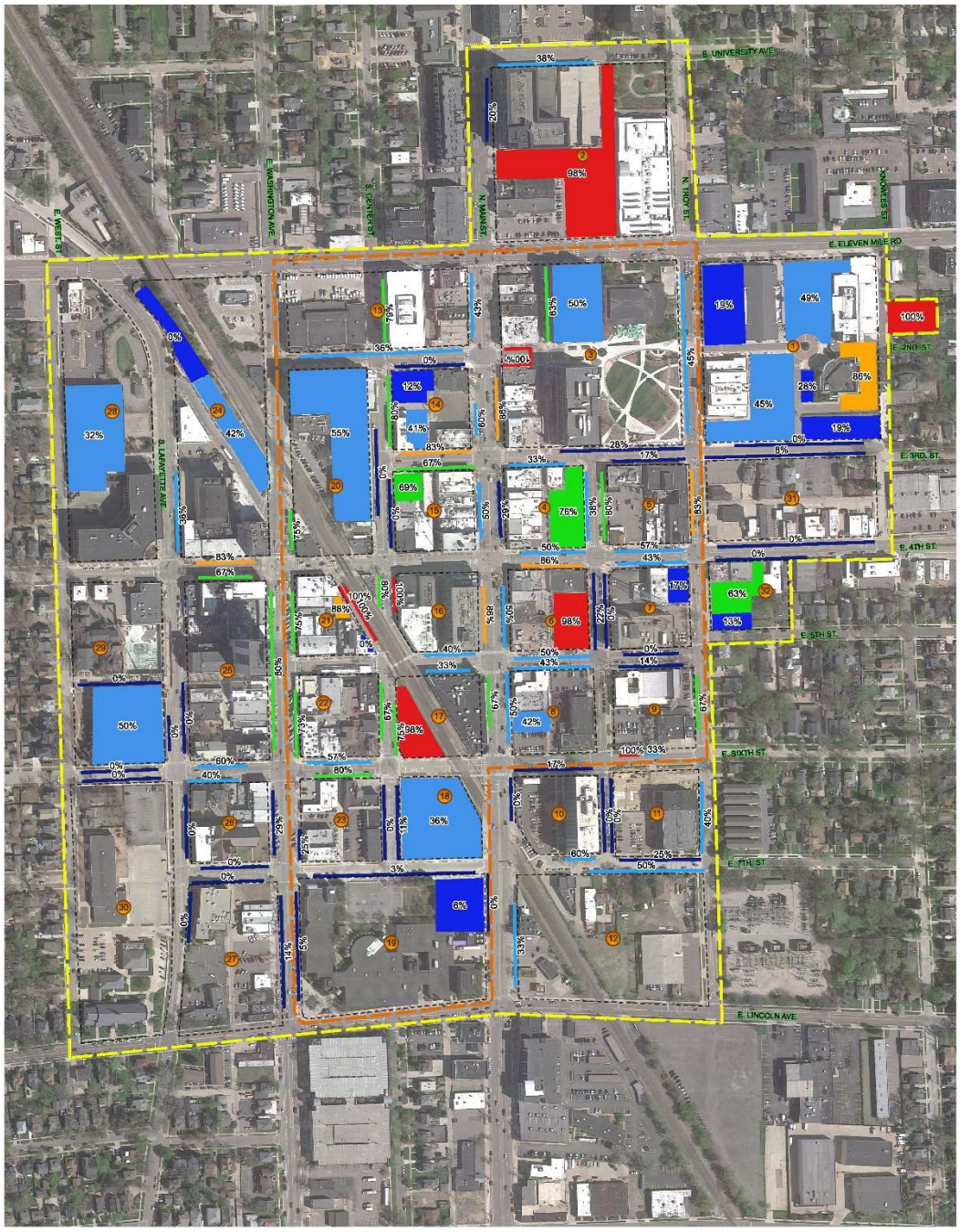
Turnover/Occupancy
Thursday, August 18

1:00 pm - 3:00 pm

Map 13 – Thursday 3:00 pm – 5:00 pm



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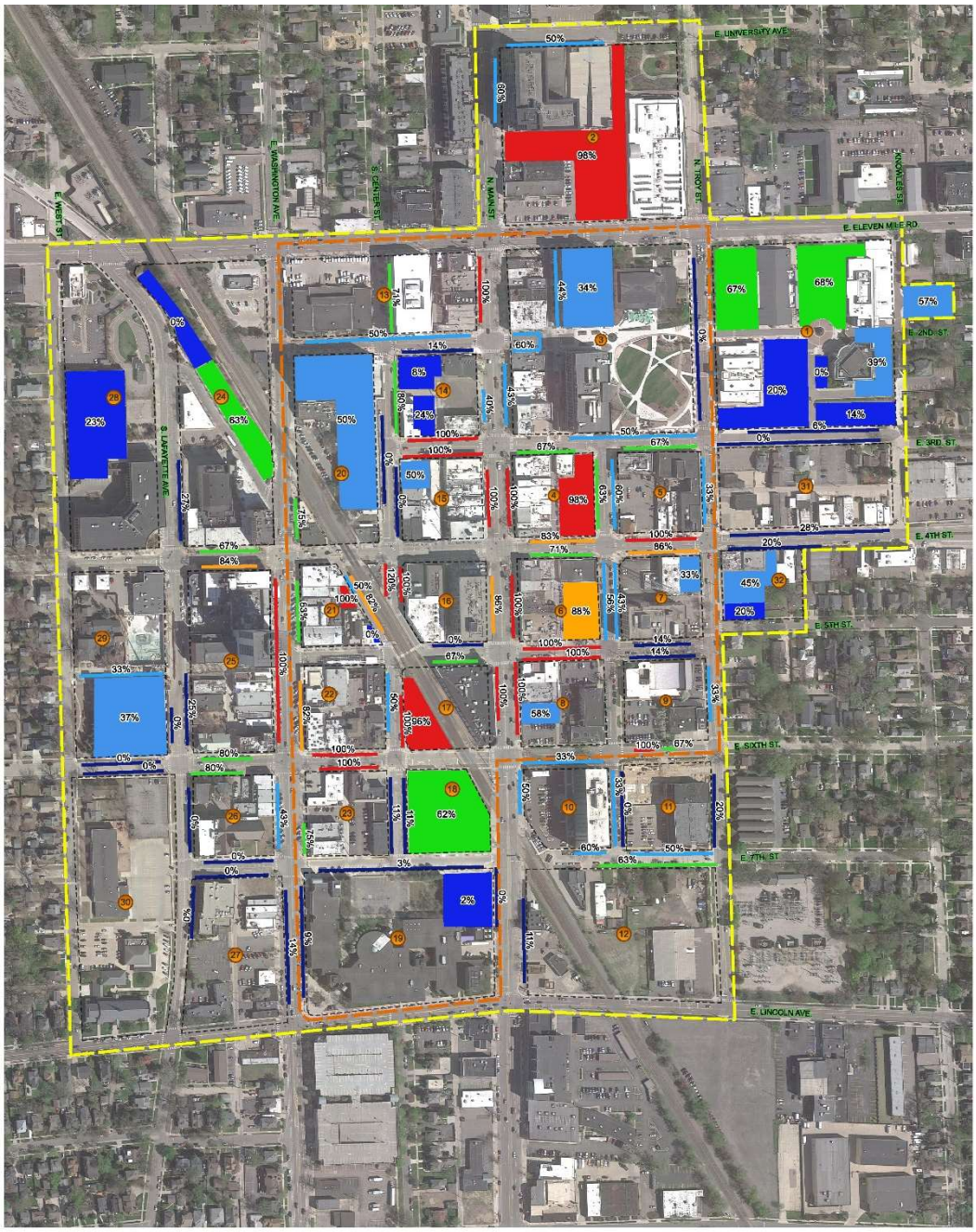
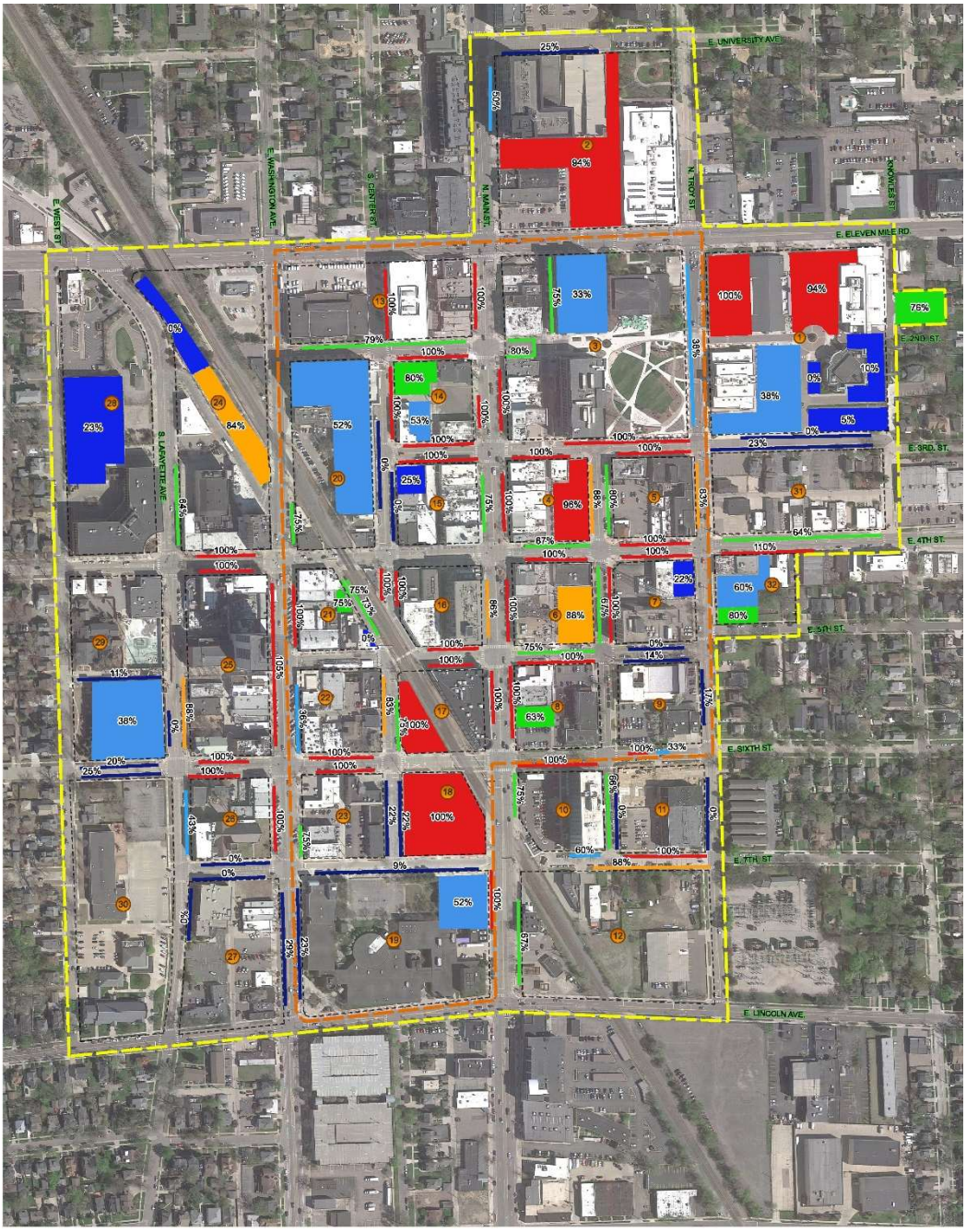
Turnover/Occupancy
Thursday, August 18

3:00 pm - 5:00 pm

Map 14 – Thursday 5:00 pm – 7:00 pm



Map 15 – Thursday 7:00 pm – 9:00 pm



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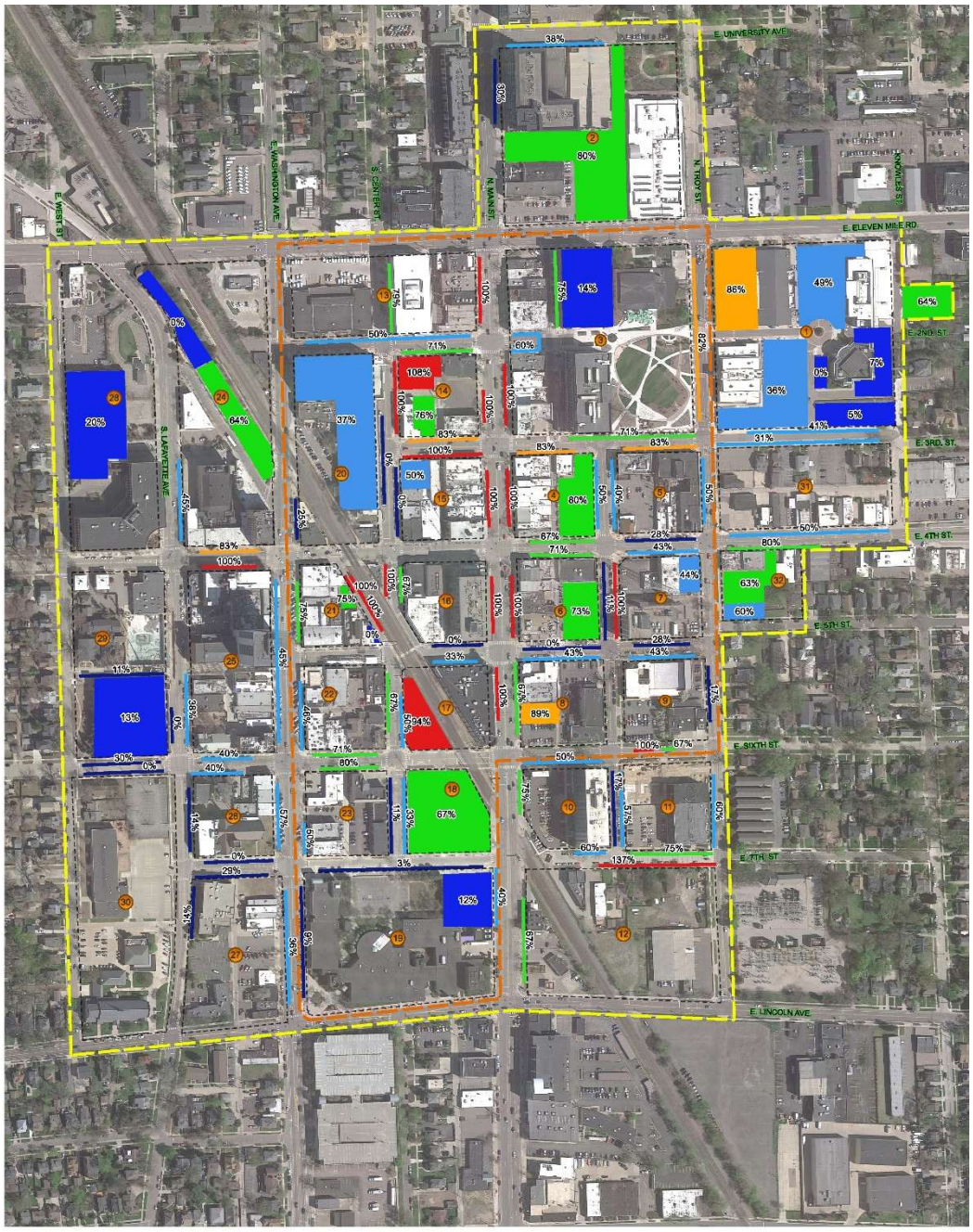
Turnover/Occupancy
Thursday, August 18

7:00 pm - 9:00 pm

Map 16 – Thursday 9:00 pm – 11:00 pm



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Turnover/Occupancy
Thursday, August 18

9:00 pm - 11:00 pm

Occupancy Study Results – Saturday

Expectations are that Saturdays would see higher levels of activity. For this reason, the city officials requested that the occupancy counts also be conducted on a "typical" Saturday that avoided significant extraordinary events downtown. This series of counts was conducted on Saturday, August 27th. Just as with the Wednesday and Thursday counts, Rich is summarizing the public versus private parking occupancy as well as detailing the public on and off-street results, garage results and barrier free parking occupancy.

Public vs. Private Parking Occupancy - Saturday

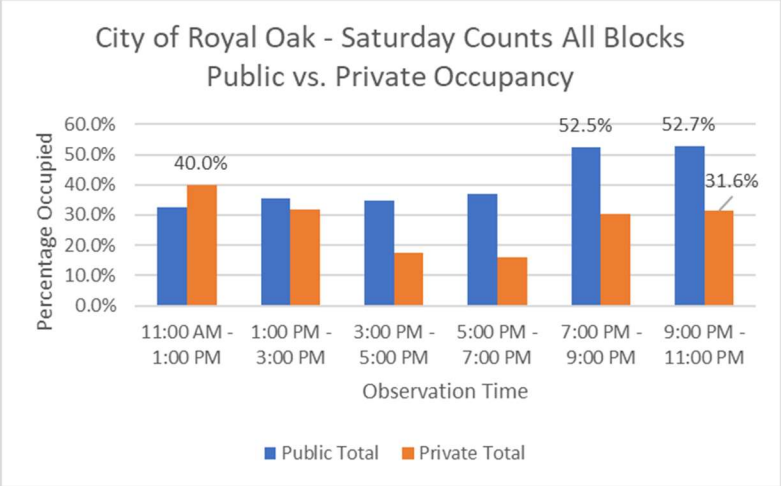


Figure 11 - Public vs. Private Parking Occupancy Saturday - All Blocks

As might be expected, the occupancy of the public parking supply was higher on the Saturday observation day for all blocks although the magnitude of the increase was very slight.

The Saturday observations of public versus private parking considering just the core blocks exhibited some interesting differences compared to the Thursday results. The first difference was the continual increase in public parking occupancy throughout the day. A second difference noted was the significantly lower use of private parking during the evening hours than what was observed on the Thursday observation date. On Thursday, 68 percent of the private supply was occupied (83 spaces occupied of 122 private observed) during the 9:00 pm to 11:00 pm period. For the Saturday results this decreased to just 30 percent (37 of 122 private spaces).

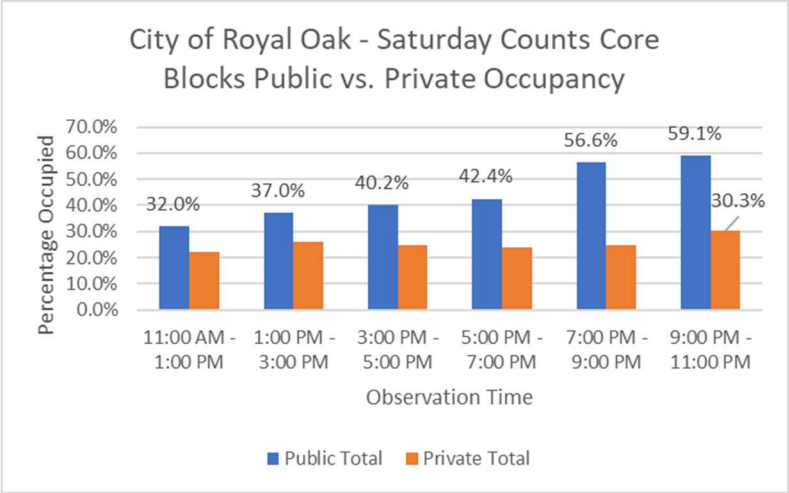


Figure 12 - Public vs. Private Parking Occupancy Saturday - Core Blocks

Public On-Street vs. Public Off-Street Parking – Saturday

Both the public on and off-street parking showed a general trend of increasing utilization on the Saturday reaching their peaks during the evening hours. Because the violation analysis did not show a significant increase in violations on Saturday (averaging about 8 percent across the three days of observations) then this suggests that the vehicles using on-street parking are generally only staying for two-hours and being replaced with new arrivals.

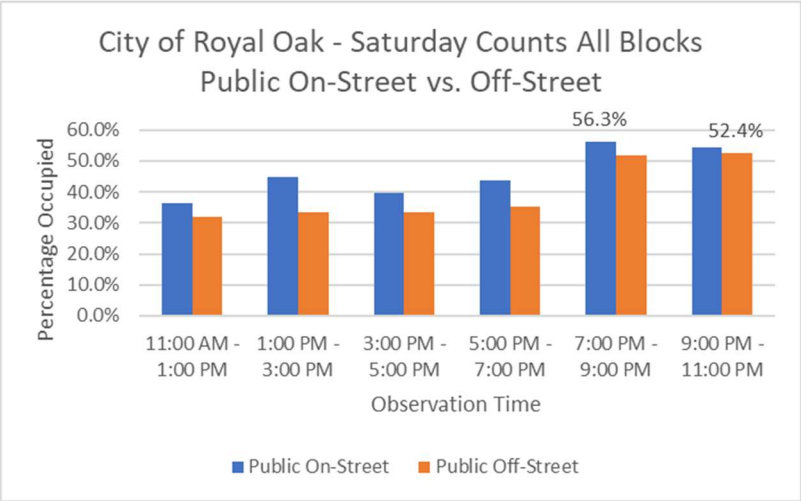


Figure 13 - Saturday Public On-Street vs. Public Off-Street - All Blocks

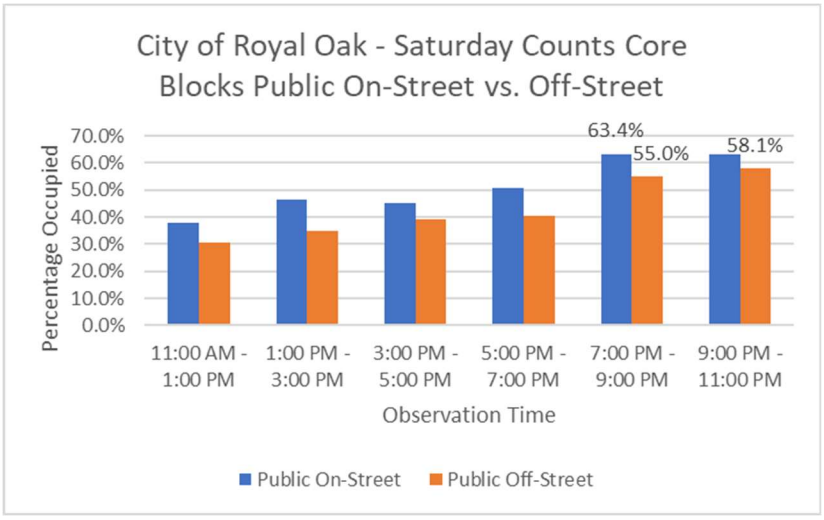


Figure 14 - Saturday Public On-Street vs. Public Off-Street - Core Blocks

The core block results essentially duplicate the results as observed for all blocks but showing a higher percentage occupancy as might be expected due to the influence from the blocks with higher demand.

Parking Garage Occupancy – Saturday

Even on what would be expected to be a busy day and evening, the analysis is showing the garages are running at less than two-thirds of capacity. While the garages provide two-hours of free parking as well as longer-term parking, many patrons are still choosing to park on-street. Data also shows that many patrons are receiving citations for exceeding the two-hour limit which suggests more information needs to be provided to discourage abuse of on-street limits and encourage use of the garages.

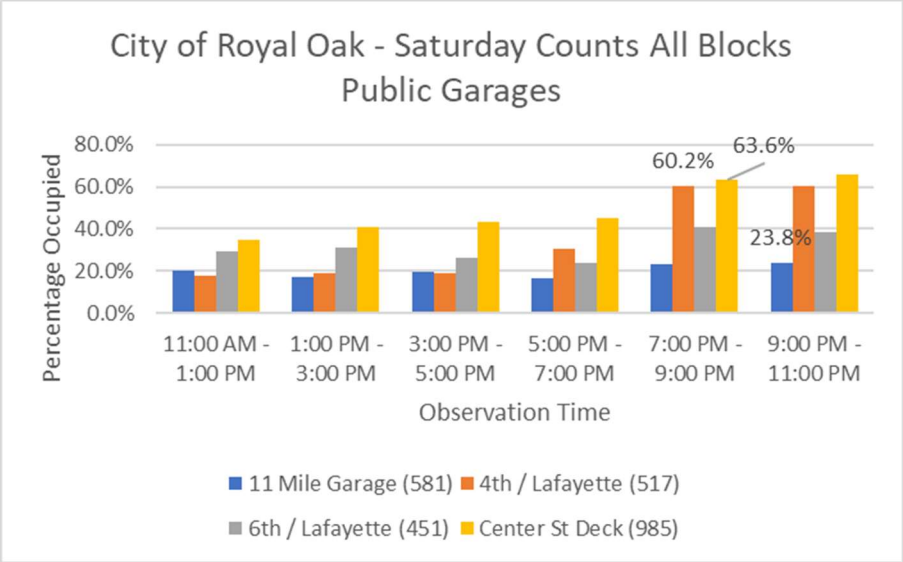
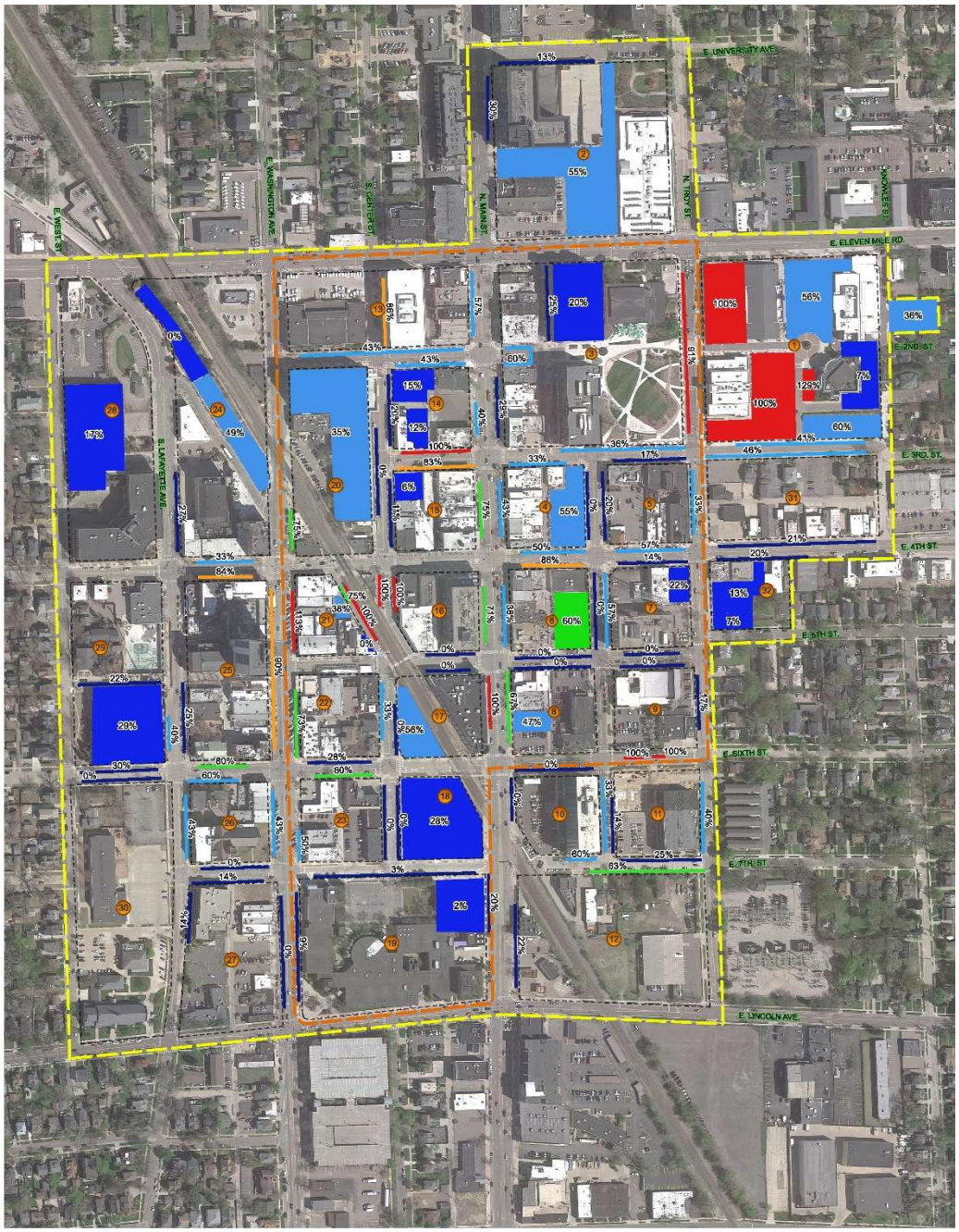


Figure 15 - Saturday Parking Garage Occupancy

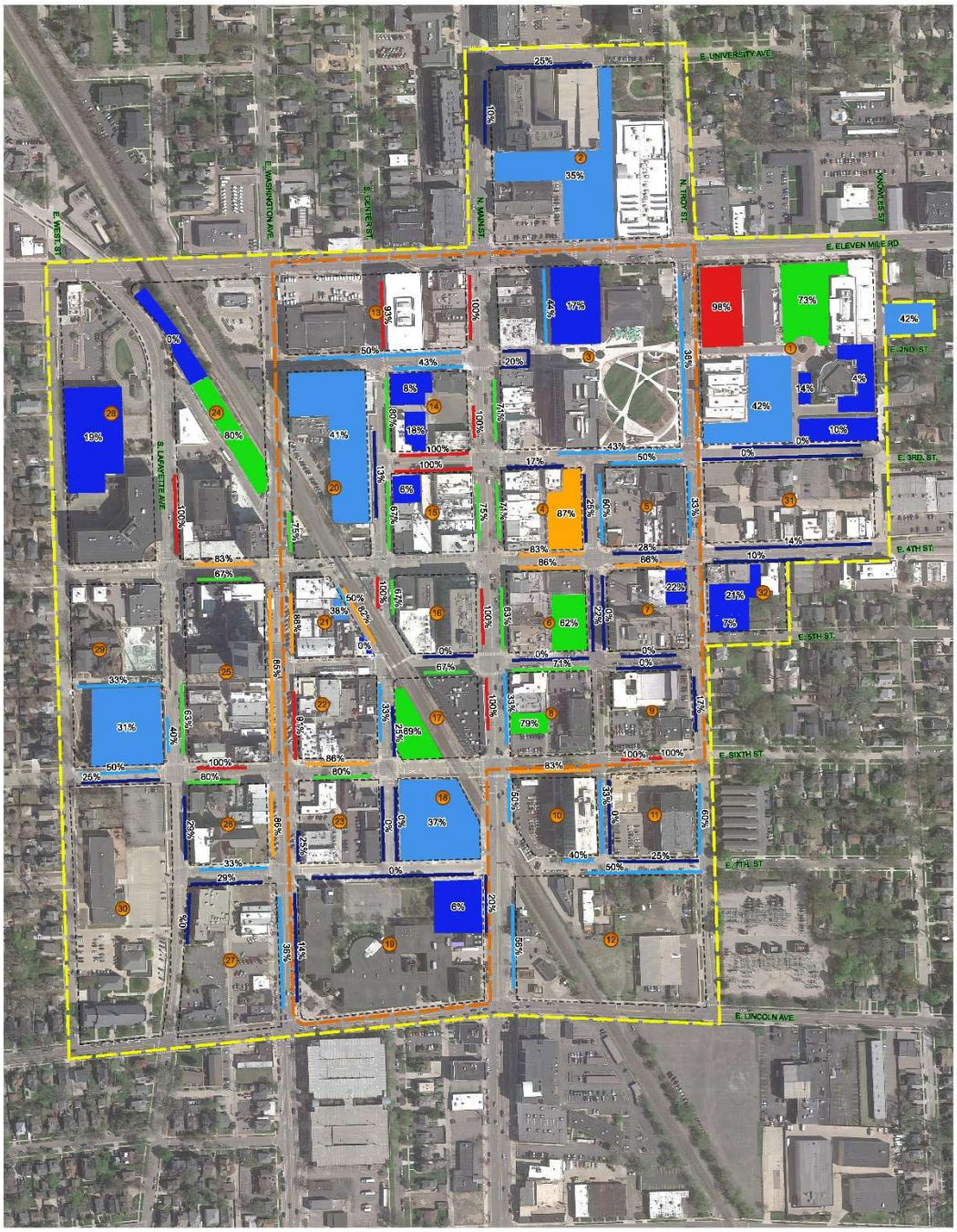
Saturday Occupancy Counts – Time of Day

As was shown with the Wednesday and Thursday counts, the following series of six maps demonstrate the occupancy at the various observation periods for the on-street and off-street parking spaces reviewed as part of the turnover and occupancy study.

Map 17 – Saturday 11:00 am – 1:00 pm



Map 18 – Saturday 1:00 pm – 3:00 pm



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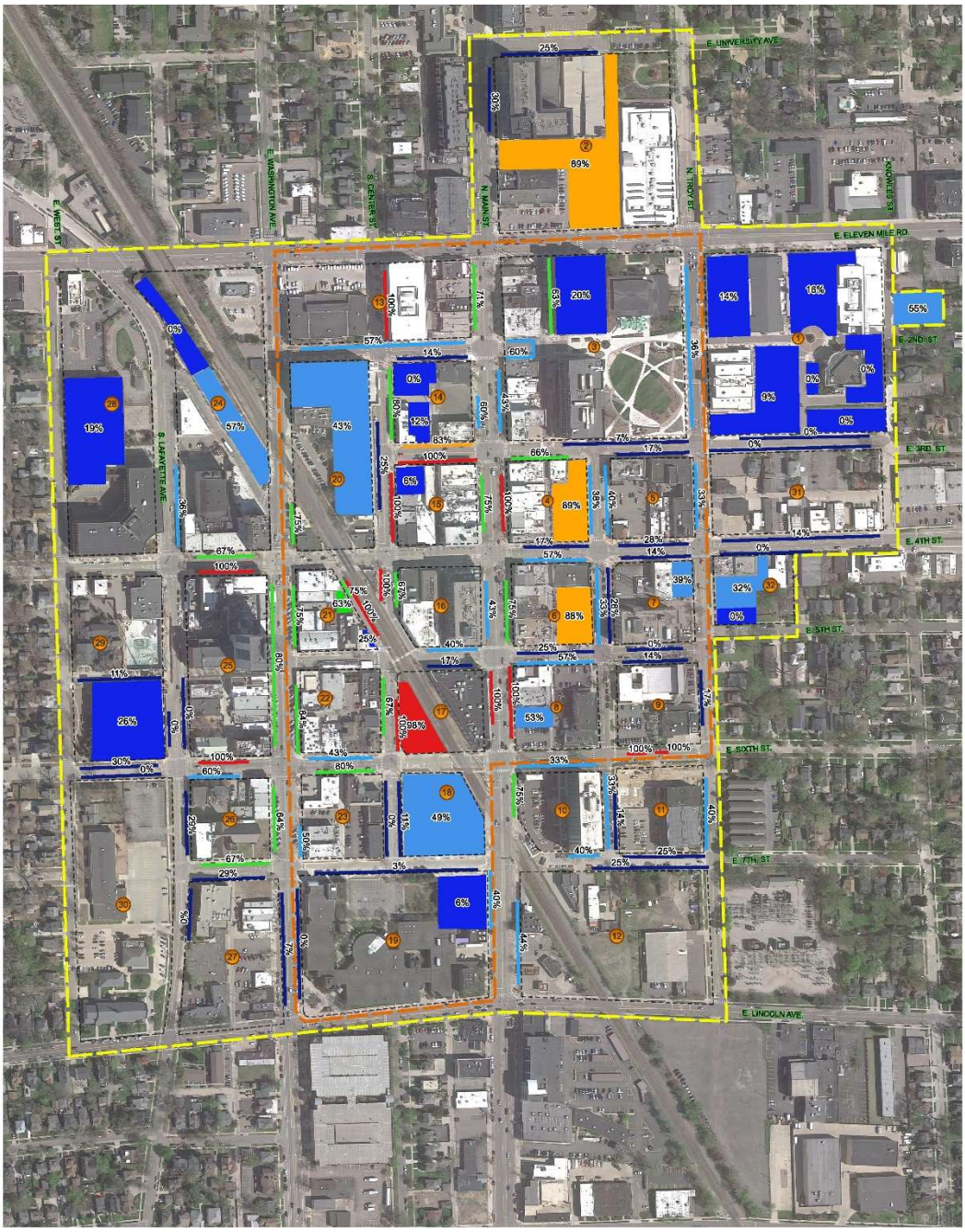
Turnover/Occupancy
Saturday, August 27

1:00 pm - 3:00 pm

Map 19 – Saturday 3:00 pm – 5:00 pm



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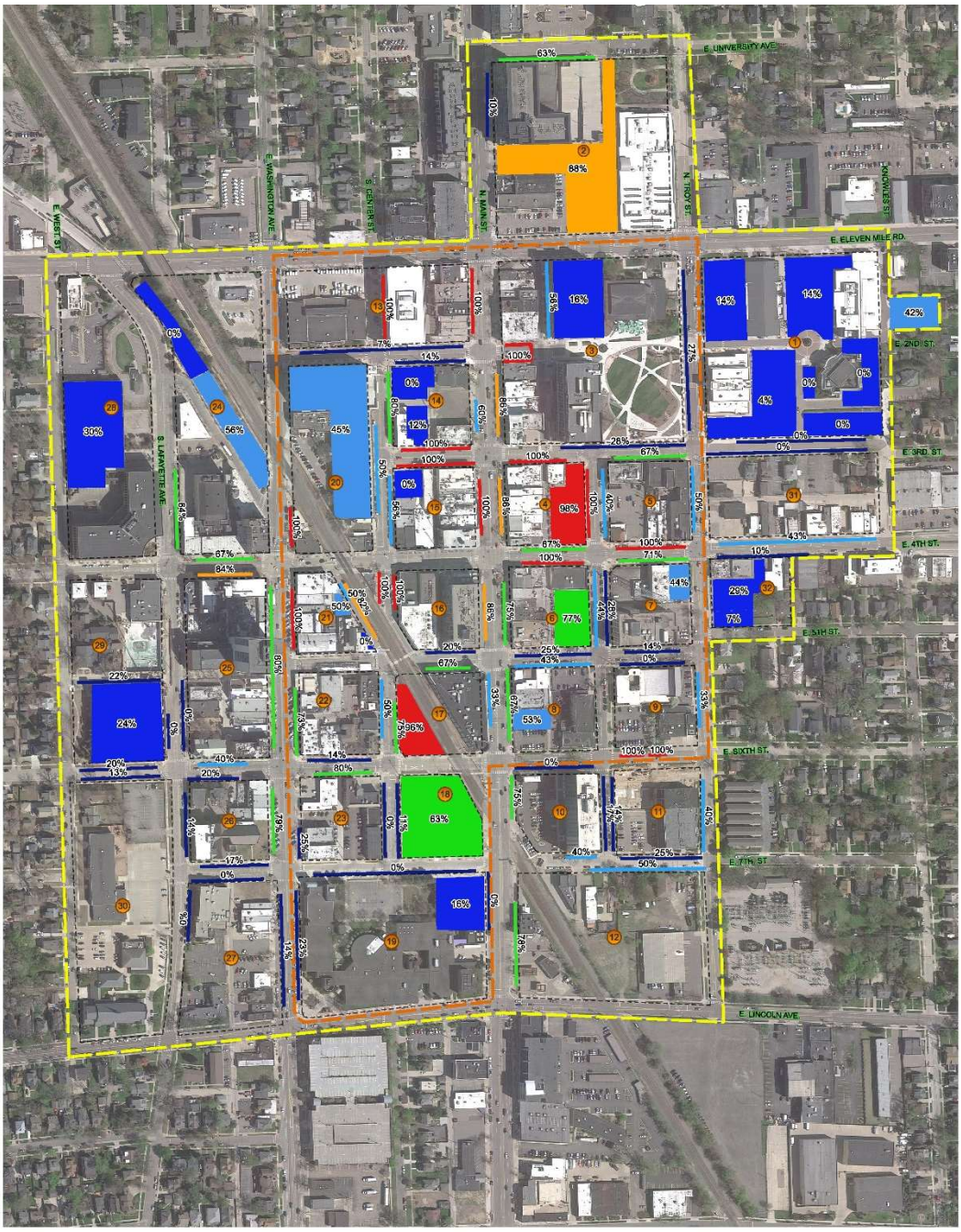
Turnover/Occupancy
Saturday, August 27

3:00 pm - 5:00 pm

Map 20 – Saturday 5:00 pm – 7:00 pm



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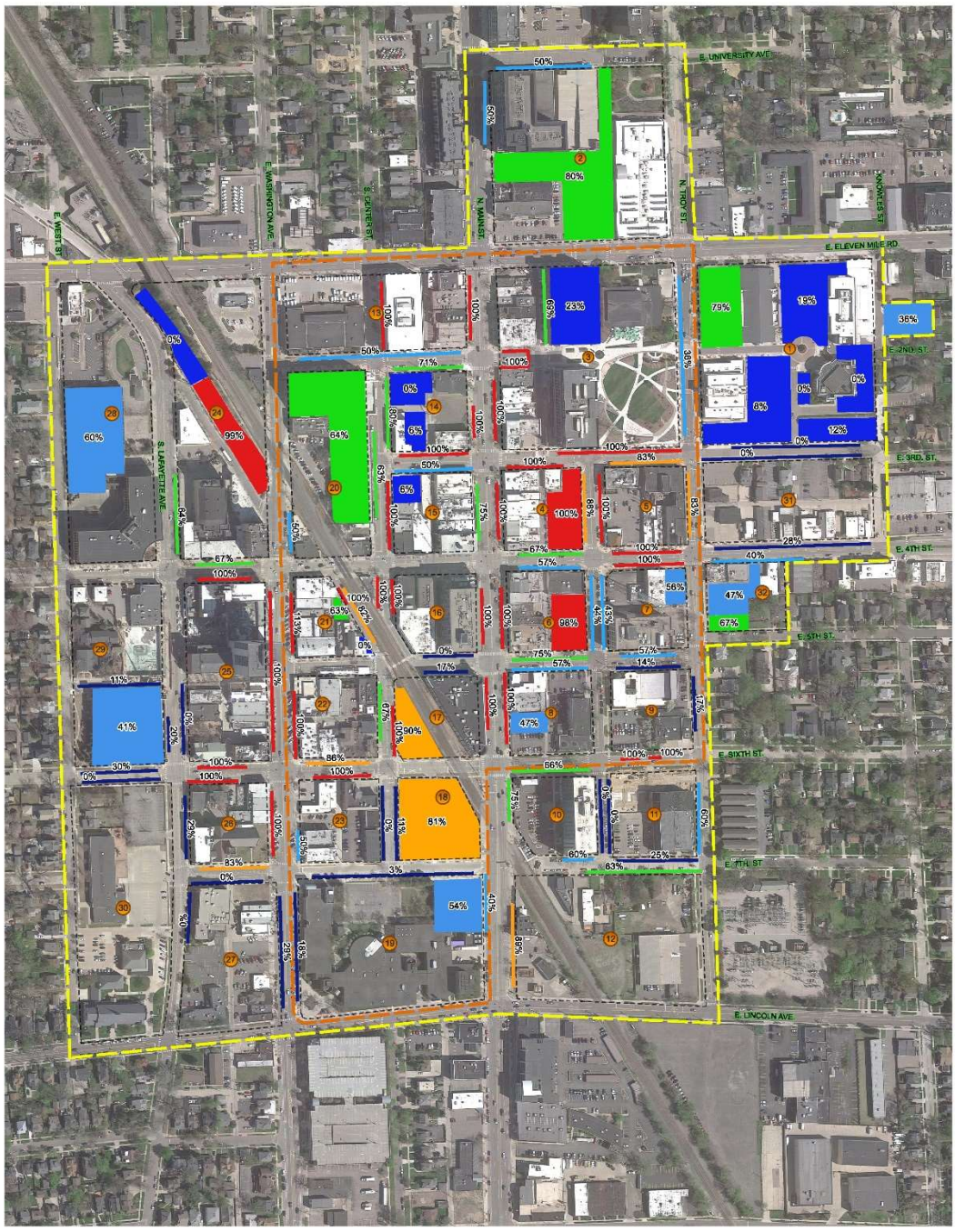
Turnover/Occupancy
Saturday, August 27

5:00 pm - 7:00 pm

Map 21 – Saturday 7:00 pm – 9:00 pm



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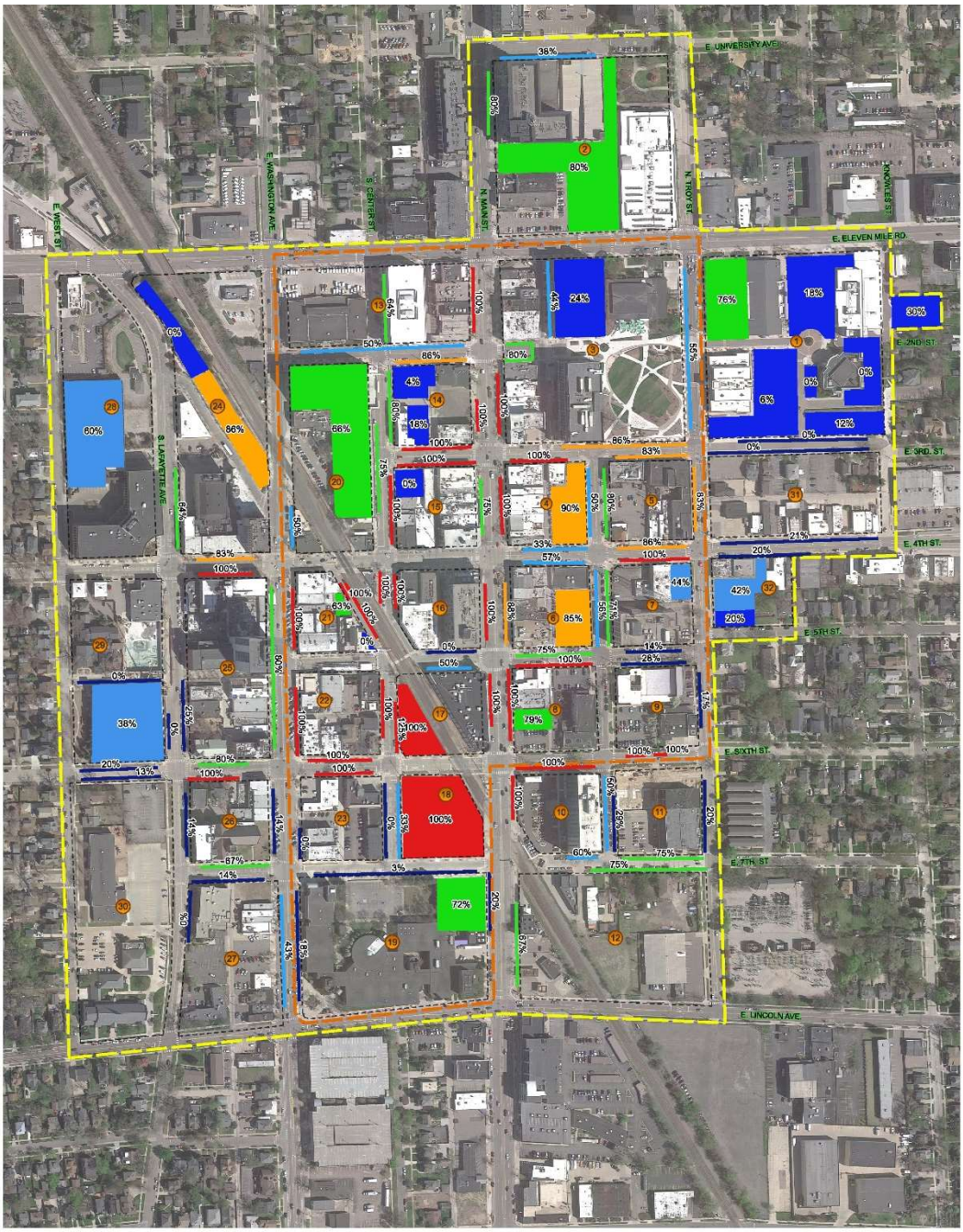
Turnover/Occupancy
Saturday, August 27

7:00 pm - 9:00 pm

Map 22 – Saturday 9:00 pm – 11:00 pm



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91% - 100%

Turnover/Occupancy
Saturday, August 27

9:00 pm - 11:00 pm

Wednesday vs. Thursday vs. Saturday Comparison 2022

In Rich's opinion, another important key to understanding the utilization of parking spaces is to compare how the data from different days of the week is related to each other. This information can help in determining how "typical" any weekday is versus a weekend day and help in providing appropriate management tools should the occupancy be found to be especially high on one day versus another or at specific times of the day.

The most recent occupancy assessments reflect a different condition than that experienced in the 2018 parking analysis. In the most recent study, for most of the day, the Wednesday and Thursday percentage occupancy is greater until the latter parts of the evening when the parking occupancy started to decline while the Saturday occupancy rises. In the 2018 analysis, Saturday occupancy exhibited a steady increase throughout the day and was always higher than the percentage of spaces observed occupied on the Thursday survey date. **Figure 16** below demonstrates the results from the "core" blocks subset. Data from all blocks showed a similar pattern with the percentage values slightly lower.

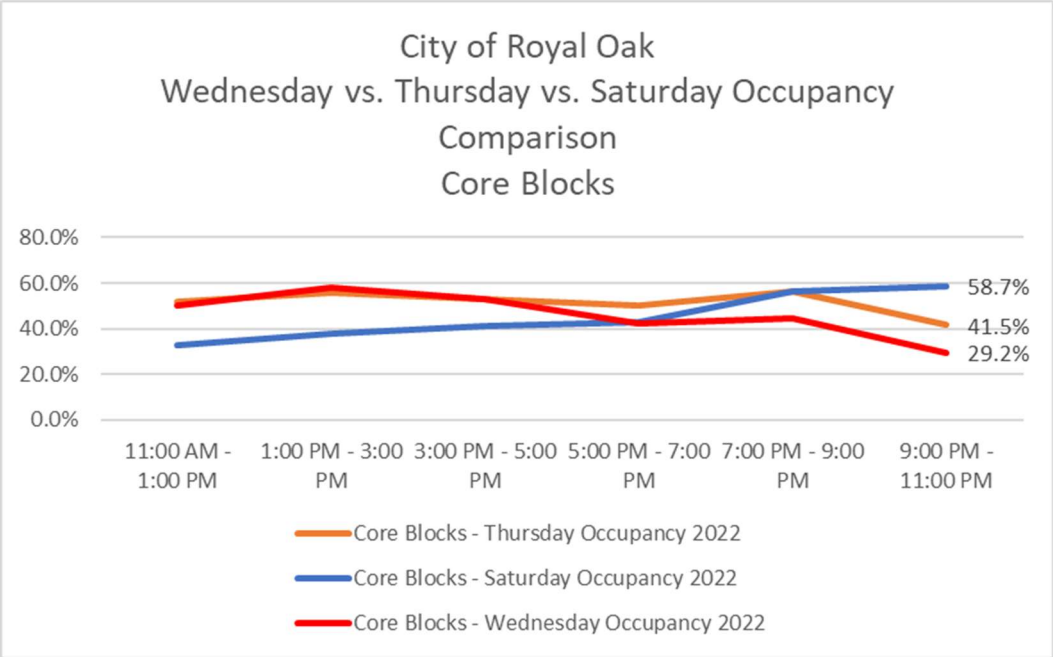


Figure 16 - Occupancy Comparison - Wednesday, Thursday, Saturday 2022

The comparison of public parking between a Wednesday, Thursday and a Saturday is demonstrated by **Figure 17** on the following page.

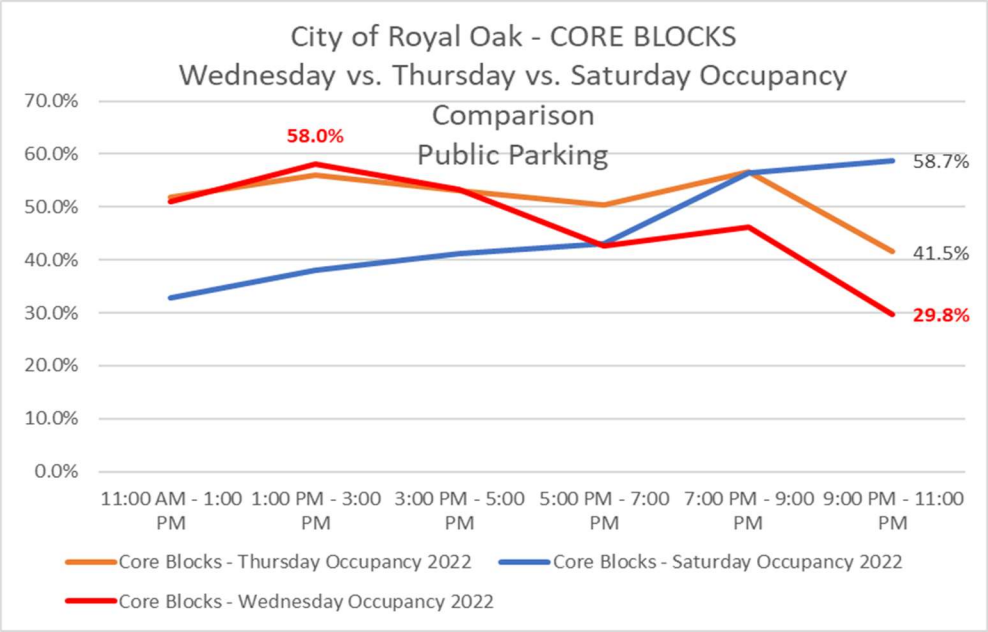


Figure 17 - Public Parking Comparison Wed, Thu, Sat. 2022

Public On-Street Parking Occupancy Comparison

Figure 18 shows the comparison for public on-street parking for the Wednesday vs Thursday vs. Saturday Occupancy days.

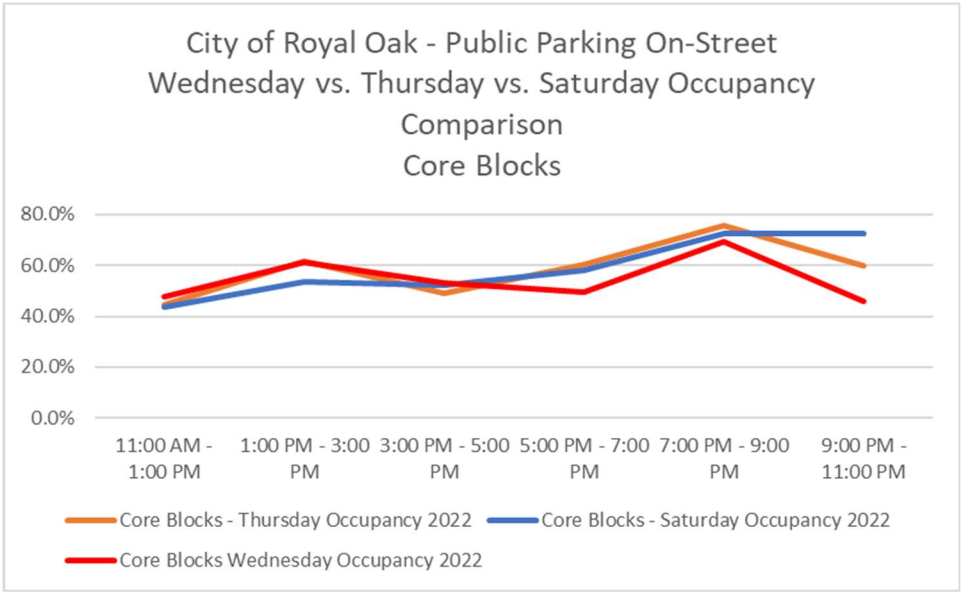


Figure 18 - Public On-Street Occupancy Comparison 2022

Public Off-Street Parking Occupancy Comparison

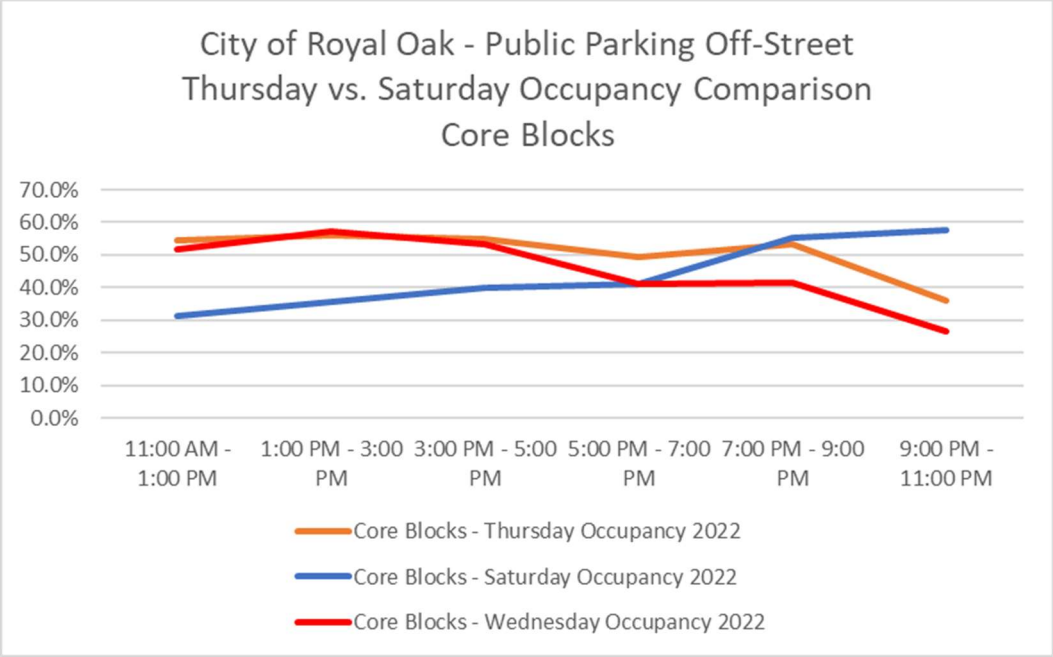


Figure 19 - Public Off-Street Occupancy Comparison 2022

2018 vs. 2022 Occupancy Comparison

In the same regard that comparing data on different days of the week when multiple days are collected, can provide valuable information, analyzing data between different occasions of the occupancy analysis over a period of several years can begin to show how trends are emerging or how initiatives undertaken by the City in the interim may help in managing the parking. The last parking study completed for the City of Royal Oak by Rich & Associates was completed in 2018. The 2018 analysis had two days of counts completed;

- Saturday March 3, 2018
- Thursday March 8, 2018

The data from these two days will be compared to the data collected as part of the 2022 analysis on:

- Thursday August 18, 2022
- Saturday August 27, 2022

During the **2018 analysis**, the Saturday observations of public and private parking was based on a total of 3,632 spaces. The Saturday observations showed a total of 3,632 for the detailed counts shown in Table 5 of that report on page 10. However, the summary table for Saturday (Table 4, page 8 in the 2018 report) had only 3,519 spaces. The Thursday results in **2018** had 3,632 spaces in both the detailed table (Table 7) and summary table (Table 6) in the 2018 report.

These values compare with the 4,416 spaces analyzed as part of the 2022 analysis. The number of public on and off-street and private spaces included in each analysis are demonstrated by **Table 5** below. This shows that the latest analysis included a net 784 more spaces than were analyzed in 2018.

Table 5 - Comparison of Number of Spaces Included in Occupancy Analysis 2018 vs. 2022

	2018	2022	Difference 2022 vs. 2018
Type of Parking	**# Spaces**	**# Spaces**	**# Spaces**
Public On-Street	659	721	62
Public Off-Street	2,629	3,410	781
Private	344	285	-59
Total	3,632	4,416	784

The comparison of data shows that despite an increase of 784± spaces in the number of spaces observed, that the 2018 analysis had only a slightly higher occupancy rate on the Thursday comparison during the daytime hours. During the evening hours, the proportion of occupied spaces was greater during the later evening hours in 2022.

The results for the Saturday analysis showed that the 2018 proportion of spaces occupied was consistently 20 percent to 30 percent higher than the 2022 values.

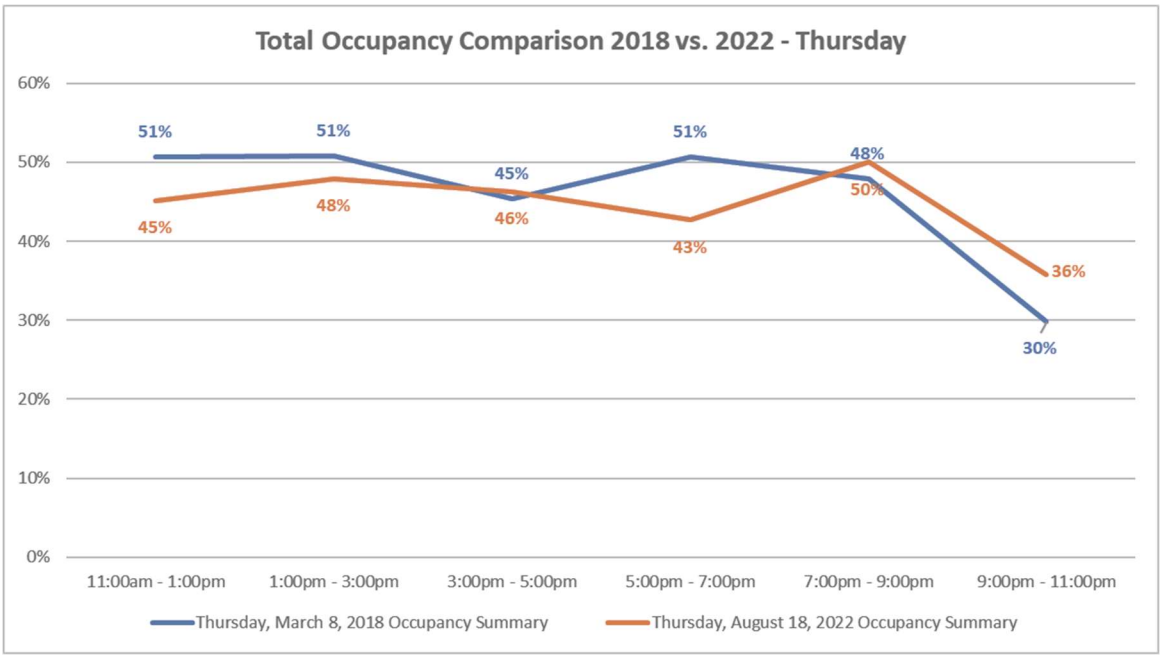


Figure 20 - Thursday Occupancy Comparison 2018 vs. 2022

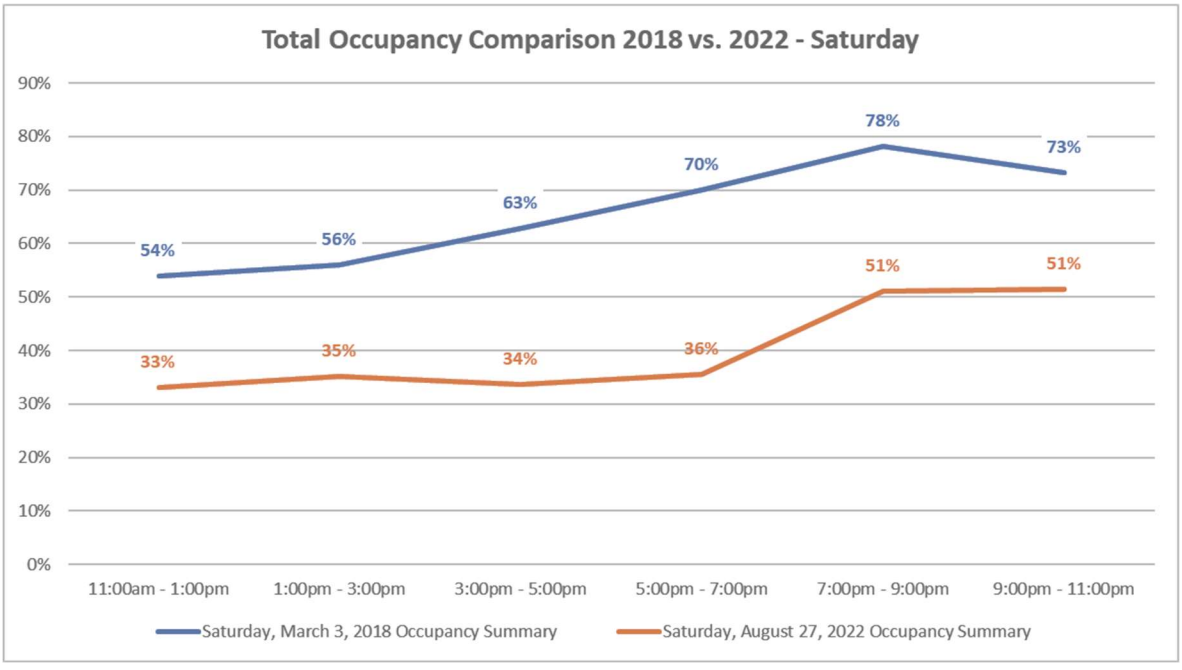


Figure 21 - Saturday Occupancy Comparison 2018 vs. 2022

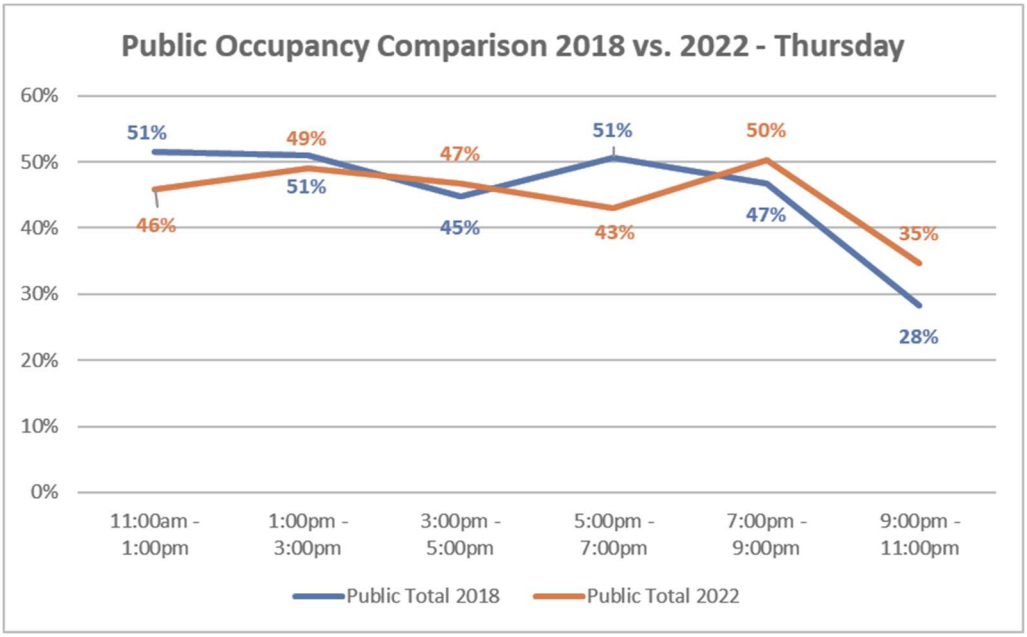


Figure 22 Public Occupancy Comparison Thursday 2018 vs. 2022

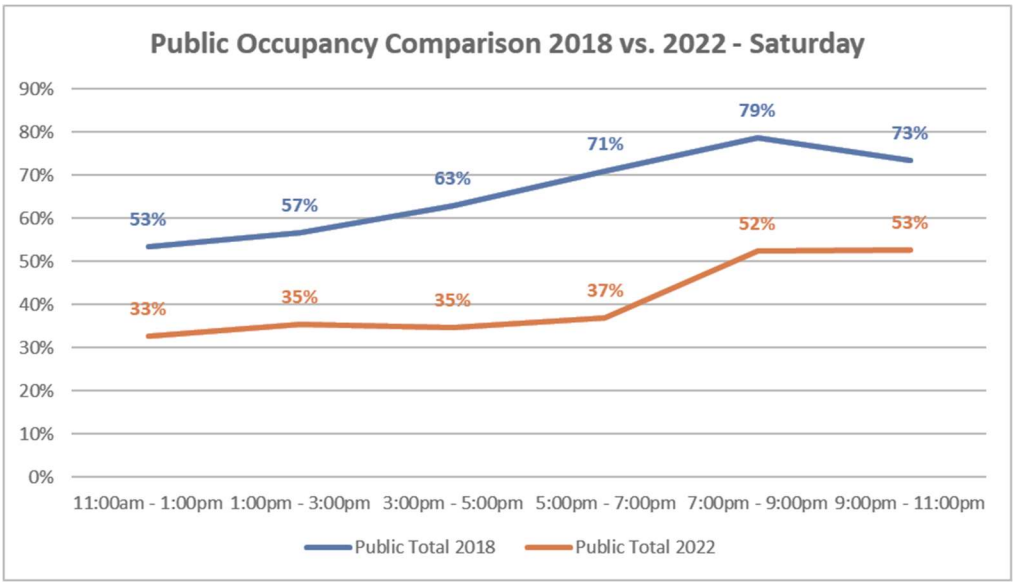


Figure 23 - Public Occupancy Comparison Saturday 2018 vs. 2022

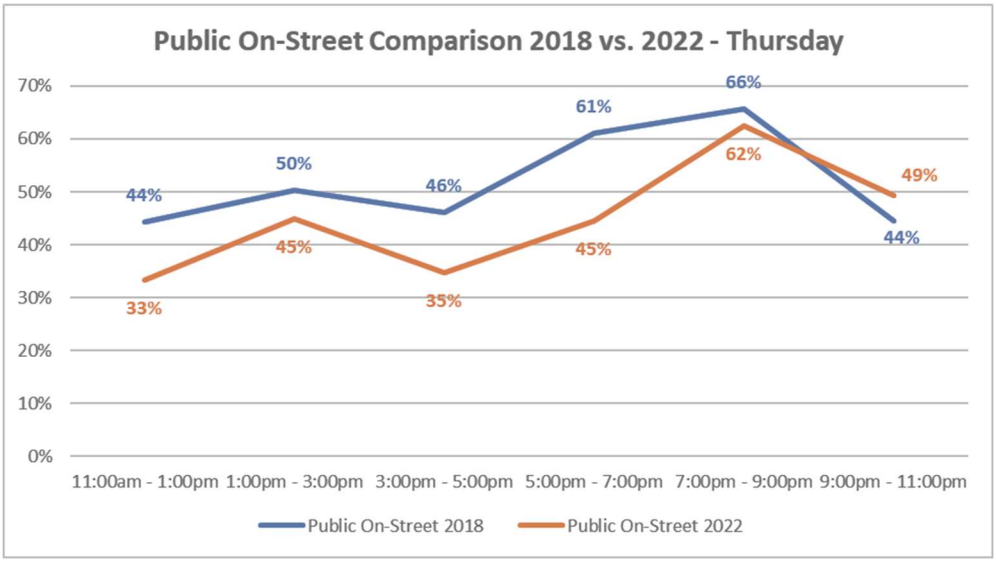


Figure 24 - On-Street Occupancy Comparison Thursday 2018 vs. 2022

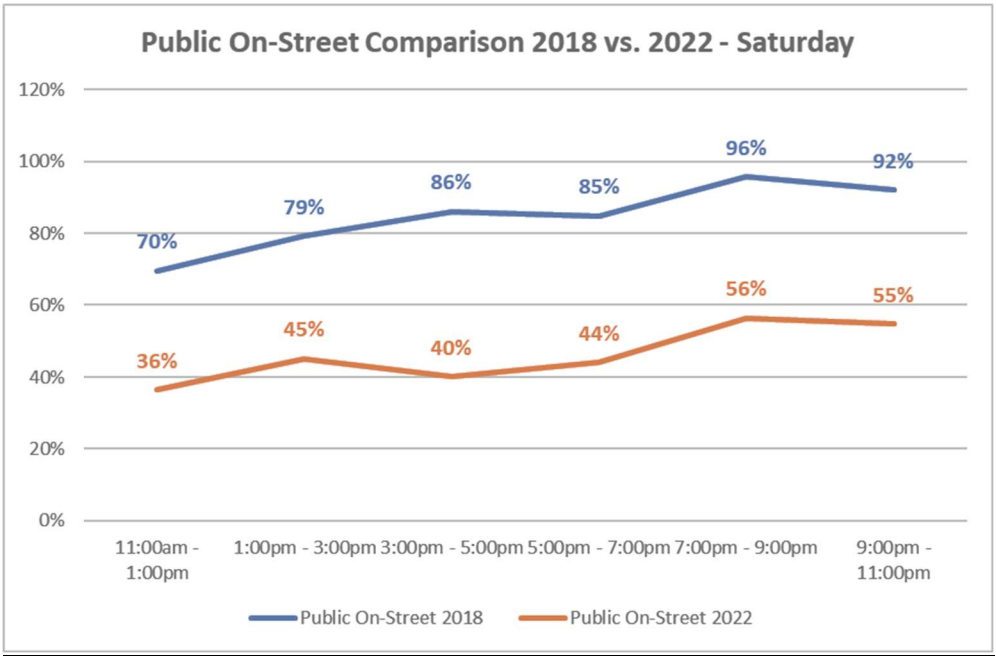


Figure 25 - On-Street Occupancy Comparison Saturday 2018 vs. 2022

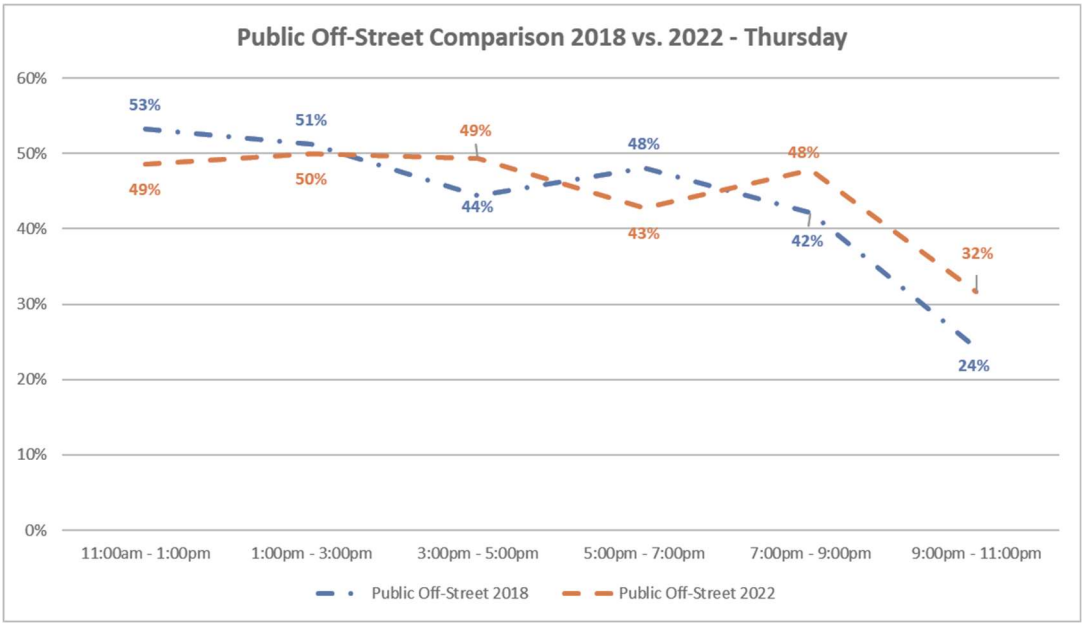


Figure 26 - Public Off-Street Occupancy Comparison - Thursday 2018 vs. 2022

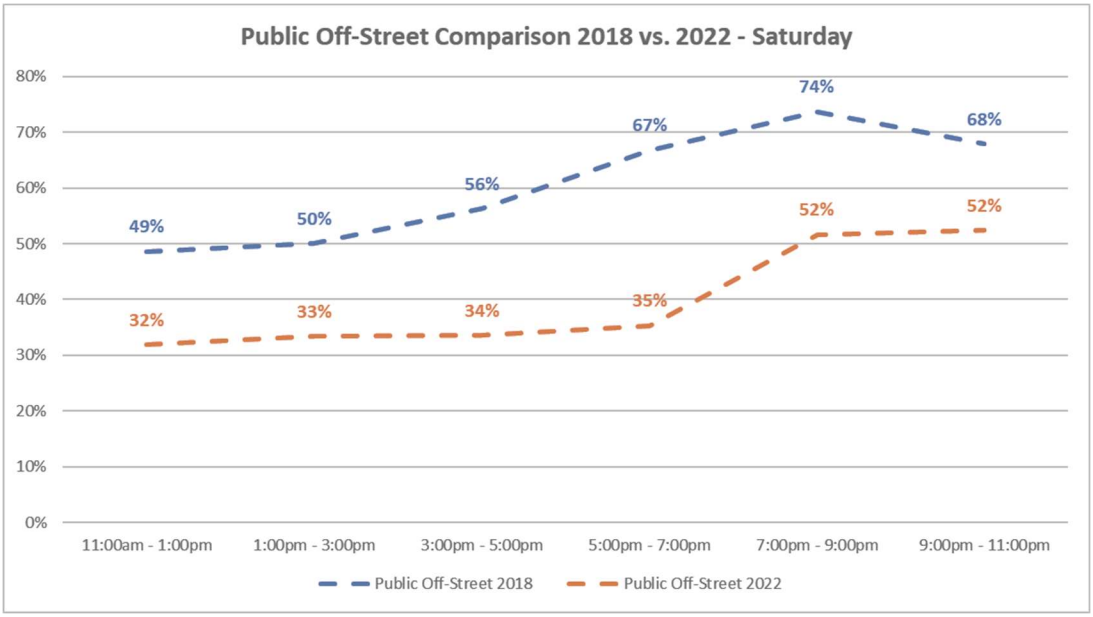


Figure 27 - Public Off-Street Occupancy Comparison - Saturday 2018 vs. 2022

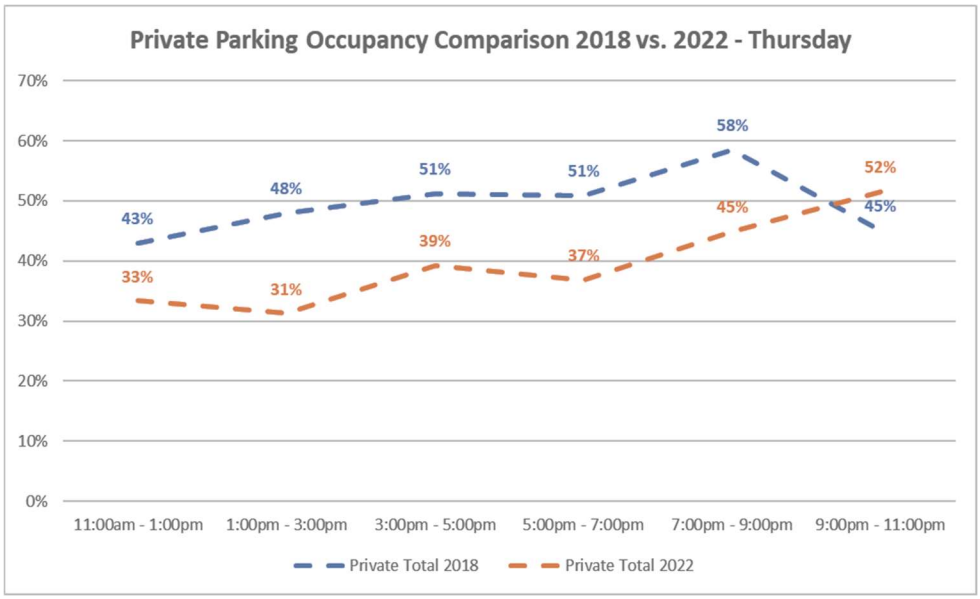


Figure 28 - Private Occupancy Comparison - Thursday 2018 vs. 2022

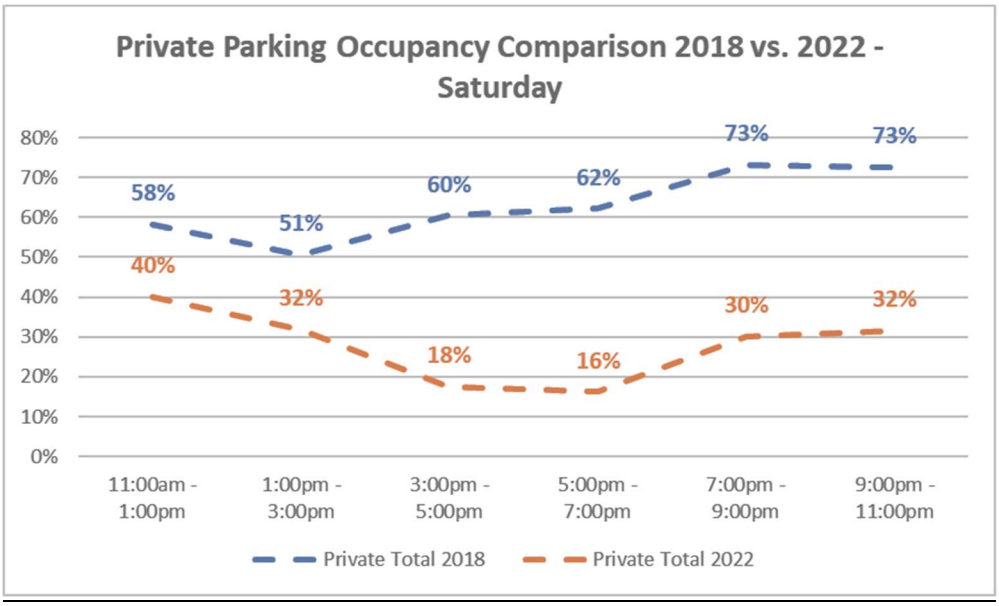
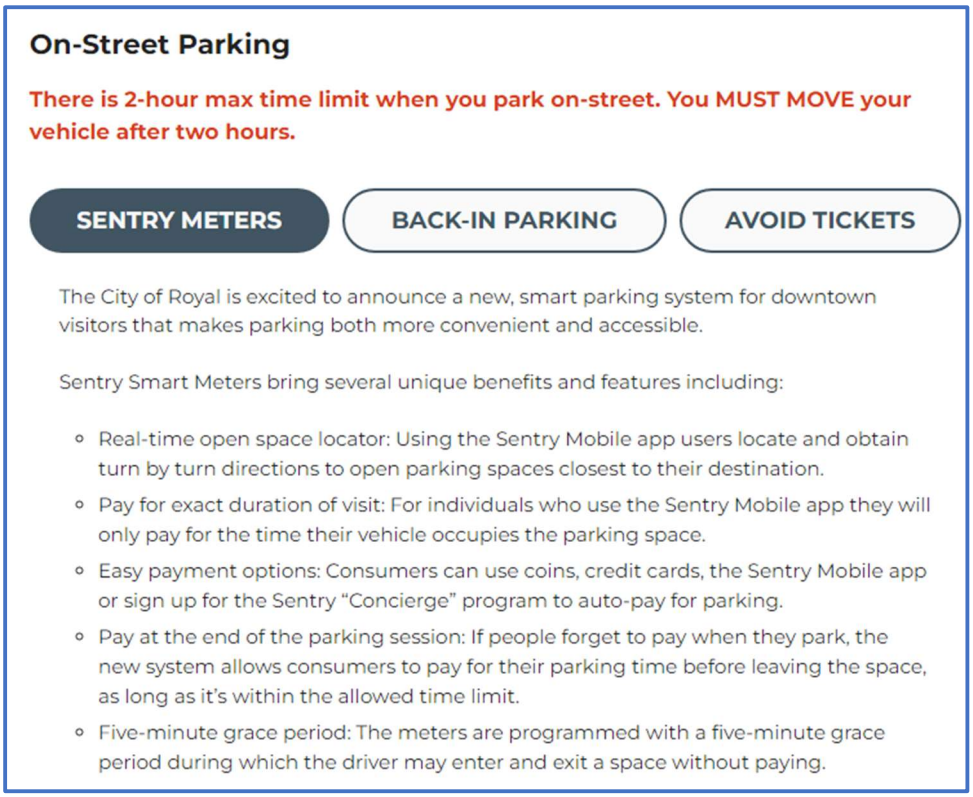


Figure 29 - Private Occupancy Comparison - Saturday 2018 vs. 2022

MPS Analysis

Introduction

In late 2021 the City of Royal Oak installed the on-street parking system that reads license plates automatically. Users of the Sentry mobile app can pay for the exact duration of their visit. It also allows patrons who forget to pay when parking initially, may pay before exiting the space and no violation will be issued. For those that don't pay, stay beyond the limit or don't pay the correct amount for the time used, a violation will be automatically recorded and parking citation mailed to the registered owner of the vehicle. The current policy provides a five-minute grace period. As noted below, a driver may exit and enter a space within this time period without paying.



On-Street Parking

There is 2-hour max time limit when you park on-street. You MUST MOVE your vehicle after two hours.

SENTRY METERS | **BACK-IN PARKING** | **AVOID TICKETS**

The City of Royal is excited to announce a new, smart parking system for downtown visitors that makes parking both more convenient and accessible.

Sentry Smart Meters bring several unique benefits and features including:

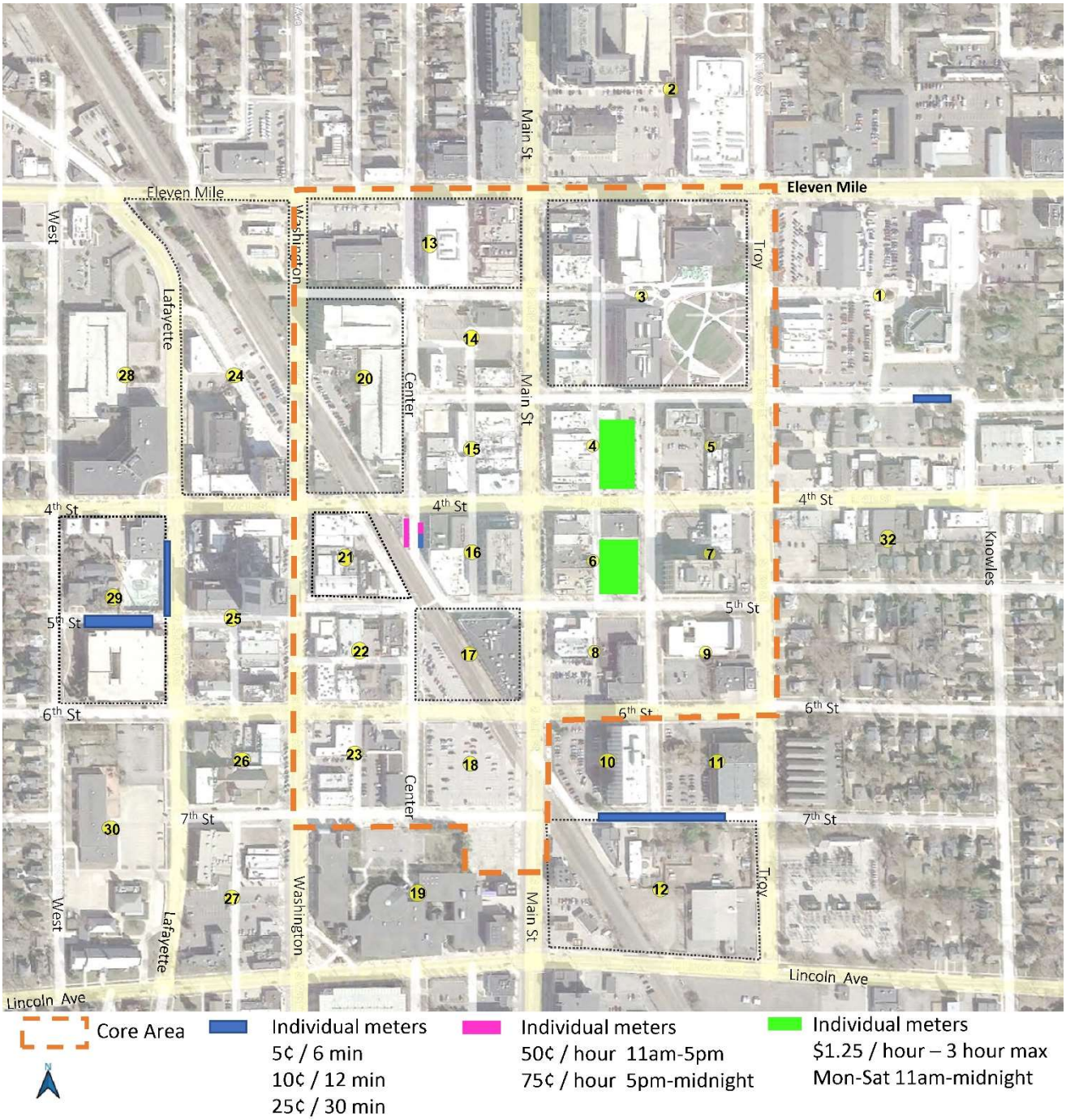
- Real-time open space locator: Using the Sentry Mobile app users locate and obtain turn by turn directions to open parking spaces closest to their destination.
- Pay for exact duration of visit: For individuals who use the Sentry Mobile app they will only pay for the time their vehicle occupies the parking space.
- Easy payment options: Consumers can use coins, credit cards, the Sentry Mobile app or sign up for the Sentry "Concierge" program to auto-pay for parking.
- Pay at the end of the parking session: If people forget to pay when they park, the new system allows consumers to pay for their parking time before leaving the space, as long as it's within the allowed time limit.
- Five-minute grace period: The meters are programmed with a five-minute grace period during which the driver may enter and exit a space without paying.

Source: https://www.romi.gov/1553/Parking-in-Downtown-Royal-Oak

Parking Pay Schedule

The City's parking schedule charges lower rates in the daytime (before 5:00 pm) and higher hourly rates for on-street parking after 5:00 pm. Most on-street parking is $1.25 per hour before 5:00 pm and $1.50 per hour after 5:00 pm. Off-Street lots are $0.75 per hour before 5:00 and $1.00 per hour after 5:00 pm. Royal Oak also offers two hours of free parking in each of its parking garages. There are still a few individual meters or locations with rates that differ from those noted above. These are shown by **Map 23** on the following page.

Map 23 Individual Meters (older style)



Parking Violation Assessment

The MPS system provides information on parking utilization of the on-street spaces throughout downtown. Analysis of this information has provided Rich & Associates statistics on violation rates (by type), number of citations issued by violation and length of stay for various classifications. The system which apparently went live in December 2021 had a period of several months before citations were routinely issued and thus on which the statistics can be considered valid. Detailed data showing total interactions per month ranging from 53,000 to 79,000 was provided for the months of:

- December 2021
- April 2022
- June 2022
- August 2022

An example of one report provided to Rich is shown by **Figure 30** below. In addition to the duration of each vehicle interaction, this report provided information such as:

- No Violation
- Grace Period Exceeded
- Time Expired
- Maximum Time Limit Exceeded
- Handicap Violation
- Combined Violations (Time Expired & Time Limit Exceeded, etc.)

meter	spot_name	parked_timestamp	exited_timestamp	session_duration	violation_reason
521	520	2022-04-01 11:00:04	2022-04-01 11:06:10	00:06:06	
3827	3829	2022-04-01 11:01:02	2022-04-01 11:45:00	00:43:58	Initial Grace Period Exceeded
1108	1108	2022-04-01 11:01:14	2022-04-01 12:10:53	01:09:39	Initial Grace Period Exceeded
2919-2920	2922	2022-04-01 11:01:33	2022-04-01 11:12:22	00:10:49	
1207	1208	2022-04-01 11:03:21	2022-04-01 11:57:22	00:54:01	
702	703	2022-04-01 11:03:22	2022-04-01 11:10:05	00:06:43	Initial Grace Period Exceeded
332	331	2022-04-01 11:04:03	2022-04-01 11:10:13	00:06:10	Initial Grace Period Exceeded
2206	2206	2022-04-01 11:04:20	2022-04-01 13:06:29	02:02:09	
3904-3905	3907	2022-04-01 11:04:21	2022-04-01 14:09:36	03:05:15	Maxtime Exceeded
1502	1503	2022-04-01 11:04:46	2022-04-01 11:12:30	00:07:44	Initial Grace Period Exceeded
3415	3415	2022-04-01 11:14:49	2022-04-01 13:24:48	02:09:59	Time Expired
1013	1014	2022-04-01 11:15:02	2022-04-01 11:33:19	00:18:17	Initial Grace Period Exceeded
904	905	2022-04-01 11:15:01	2022-04-01 13:10:13	01:55:12	
2006	2007	2022-04-01 11:15:24	2022-04-01 12:01:47	00:46:23	Time Expired
332	331	2022-04-01 11:15:19	2022-04-01 11:26:24	00:11:05	Initial Grace Period Exceeded

Figure 30 – Example of Violation Report

Rich's initial analysis of the original four months of detailed data appeared to show that just under 50 percent (47.8%) of all interactions with the MPS system resulted in a violation. Of the average of 31,000 violations per month over this four-month period, between 75 percent and 80 percent of these violations were for exceeding the initial five-minute grace period. The other significant violations were for staying beyond the two-hour maximum time limit or not paying for the time used.

Table 6 - Initial Violation Data MPS System

City of Royal Oak - Violations Summary						
	December 2021	April 2022	June 2022	August 2022	Average	Estimated Annual
No Violation	32,373	34,781	29,384	40,302	**34,210**	**410,520**
Pct of Total	**52.7%**	**50.6%**	**55.6%**	**50.9%**	**52.2%**	**52.2%**
Initial 5 Minute Grace Period Exceeded	21,748	26,271	18,380	30,577	**24,244**	**290,928**
Pct of Total	**35.4%**	**38.2%**	**34.8%**	**38.6%**	**37.0%**	**37.0%**
Maxtime Exceeded	2,699	2,798	2,009	2,812	**2,580**	**30,954**
Pct of Total	**4.4%**	**4.1%**	**3.8%**	**3.6%**	**3.9%**	**3.9%**
Time Expired	3,023	3,128	2,223	3,553	**2,982**	**35,781**
Pct of Total	**4.9%**	**4.6%**	**4.2%**	**4.5%**	**4.5%**	**4.5%**
Combined Violations & Other Violations	1,637	1,712	841	1,928	**1,530**	**18,354**
Pct of Total	**2.7%**	**2.5%**	**1.6%**	**2.4%**	**2.3%**	**2.3%**
Total	61,480	68,690	52,837	79,172	65,545	786,537
	100.0%	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Total Cars with Violations	**29,107**	**33,909**	**23,453**	**38,870**	**31,335**	**376,017**
Pct of Total	**47.3%**	**49.4%**	**44.4%**	**49.1%**	**47.8%**	**47.8%**

While this information *appeared* to show a very high violation rate which partially led to the question posed by the City of whether it would be appropriate to extend the initial grace period, an additional part of this question is the fact that not every violation committed is or was issued a citation. Subsequent data was provided for the months of:

- July 2022
- September 2022
- October 2022

In addition to the data provided by the initial four months of records, these additional months provided statistics on whether a citation was actually issued. If the records included an officer's name with the violation, then a citation was issued. Rich is calling these "valid" violations. Rich applied average data from these three months to derive approximately how many of the violations noted by **Table 6** above could have been issued a citation. The data from the newest three months and how this was extrapolated for the initial four months is demonstrated by **Table 7** on the following page.

Table 7 - Valid Violation Determination (2022)

City of Royal Oak - Violations Summary										
	Data Valid Violations				Extrapolated Valid Violations					
	July 2022	September 2022	October 2022	Average	December 2021	April 2022	June 2022	August 2022	Average	Estimated Annual
Total No Violation	57,662	49,397	63,810	56,956	32,373	34,781	29,384	40,302	**43,958**	**527,501**
Pct of Total Interactions	**64.3%**	**59.6%**	**63.7%**	**62.7%**	**52.7%**	**50.6%**	**55.6%**	**50.9%**	**57.5%**	**57.5%**
Total Initial 5 Minute Grace Period Exceeded Violations	24,904	25,256	28,556	26,239	21,748	26,271	18,380	30,577	**25,099**	**301,186**
Number of Valid Violations (Citation Issued)	10,993	10,103	12,117	11,071	9,176	11,085	7,755	12,901	**10,590**	**127,081**
Valid Citations to Total Grace Period Violations	**44.1%**	**40.0%**	**42.4%**	**42.2%**	**42.2%**	**42.2%**	**42.2%**	**42.2%**	**42.2%**	**42.2%**
Total Time Expired Violations	2,893	2,880	3,355	3,043	2,699	2,798	2,009	2,812	**2,778**	**33,336**
Number of Valid Violations (Citations Issued)	1,795	1,652	2,051	1,833	1,626	1,685	1,210	1,694	**1,673**	**20,079**
Valid Time Expired Citations to Total Time Expired Violations	**62.0%**	**57.4%**	**61.1%**	**60.2%**	**60.2%**	**60.2%**	**60.2%**	**60.2%**	**60.2%**	**60.2%**
Total Maximum Time Limit Exceeded Violations	2,737	2,195	2,667	2,533	3,023	3,128	2,223	3,553	**2,789**	**33,473**
Number of Valid Violations (Citations Issued)	1,915	1,346	1,679	1,647	1,965	2,033	1,445	2,310	**1,813**	**21,760**
Valid Time Limit Citations to Total Time Limit Violations	**70.0%**	**61.3%**	**63.0%**	**65.0%**	**65.0%**	**65.0%**	**65.0%**	**65.0%**	**65.0%**	**65.0%**
All Other Violations	1,425	3,137	1,854	2,139	1,637	1,712	841	1,928	**1,791**	**21,487**
Number of Valid Violations (Citations Issued)	560	912	1,119	864	661	691	340	779	**723**	**8,677**
Valid All Other to Total All Other Violations	**39.3%**	**29.1%**	**60.4%**	**40.4%**	**40.4%**	**40.4%**	**40.4%**	**40.4%**	**40.4%**	**40.4%**
Total Interactions	89,621	82,865	100,242	90,909	**61,480**	**68,690**	**52,837**	**79,172**	**76,415**	**916,983**
Total Cars with Violations	**31,959**	**33,468**	**36,432**	**33,953**	**29,107**	**33,909**	**23,453**	**38,870**	**32,457**	**389,482**
Pct of Total	**35.7%**	**40.4%**	**36.3%**	**37.3%**	**47.3%**	**49.4%**	**44.4%**	**49.1%**	**42.5%**	**42.5%**
Number of Valid Violations (Citations Issued)	**15,263**	**14,013**	**16,966**	**15,414**	**13,428**	**15,495**	**10,750**	**17,684**	**14,800**	**177,597**
Proportion of Cars with Violations Issued Citations	**47.8%**	**41.9%**	**46.6%**	**45.4%**	**46.1%**	**45.7%**	**45.8%**	**45.5%**	**45.6%**	**45.6%**
Fine Amount					$10.00	$10.00	$20.00	$20.00	$20.00	$20.00
Fine Revenue Estimate					**$134,282**	**$154,948**	**$215,000**	**$353,671**	**$295,996**	**$3,551,949**

Table 7 shows that for the months detailing "valid" violations (July, September, October), the violation rate is down about 10 percent (averaging 37 percent) from the initial data shown by **Table 6,** on **page 49**, which had a violation rate of about 47 percent. Combining these seven months together has the effect of reducing the violation rate for these analyzed months to 43 percent. This is still very high.

In any parking system, a high violation rate would very likely disenfranchise many downtown patrons. Any patron visiting downtown and intending to support the shops, bars and restaurants who then receives a parking citation either because of rules too strict or policies that they don't understand or have difficulty following is very likely to tell others of their negative experience and may ultimately limit their future visits. In order to avoid this means having reasonable regulations that can be easily understood and followed.

In this regard, the City and DDA have posed two questions regarding the current operation of the on-street parking system.

1) Should the 5-minute grace period be extended to 15-minutes?

2) Should the on-street maximum time limit be extended from two hours to three hours?

Violation of these two conditions represent about 85 percent of all violations incurred in downtown Royal Oak. The grace period violation accounts for an average of 25,000 violations per month out of an average of 32,500 total monthly violations (77 percent). Exceeding the maximum two-hour time limit accounts for an additional 2,800 (9 percent). Adjusting either the grace period together with the maximum time permitted to be parked should be expected to significantly reduce these values.

While the data shows that not everyone who committed a violation did in fact receive a citation in the mail, the key point of this table however is still that nearly half the patrons using on-street parking in downtown Royal Oak are effectively committing a parking violation and nearly half of these are issued a citation. Assuming $20.00 per citation, the revenue is estimated at about $3.5 million per year.

Addressing these questions, Rich's analysis of the provided data allowed a determination of the average lengths of stay for those who committed no violation as well as the grace period, maximum time limit exceeded and time expired violations.

Patrons who adhered to the on-street parking regulations were staying from 30 to 60 minutes. Patrons who exceeded the 5-minute grace period were parked from 40 to 55 minutes. This means that extending the grace period, will reduce some but not all violations for this category. Those patrons who stayed beyond the two-hour time limit were parked nearly three hours. Extending the permissible time parked on street should eliminate a significant proportion of these violators. Finally, those patrons who did not pay for all time parked and allowed the time to expire were staying from 60 to 90 minutes on average. This data is demonstrated by **Table 8** on the following page.

Table 8 - Calculated Average Lengths of Stay

	Average Length of Stay			
Data Month Provided	Patron's with no Violation	Grace Period Exceeded	Maximum Time Exceeded	Time Expired
	mm:ss	mm:ss	h:mm:ss	h:mm:ss
December 2021	54:35	43:02	2:52:29	1:28:56
April 2022	58:47	51:25	2:53:43	1:35:02
June 2022	59:48	53:37	2:54:54	1:36:00
July 2022	40:53	48:49	2:53:02	0:58:56
August 2022	56:32	48:35	2:53:36	1:31:29
September 2022	39:59	42:10	2:52:46	0:54:06
October 2022	34:04	44:15	2:51:33	0:59:34
	minutes:seconds		hours:minutes:seconds	

Extend Grace Period to 15 Minutes

Rich analyzed the July, September and October 2022 data which detailed the violation committed, length of stay and whether a citation was issued. Looking at violations which listed "Grace Period Exceeded", Rich looked at the length of the parking session. If the session was under 15 minutes, no violation was counted. This gave a new count for violations of the grace period. We then tabulated the number of citations issued. We then extrapolated the data from these three months to the four initial months (December 2021, April, June & August 2022). This resulted in **Table 9** below.

Table 9 - 5-Minute to 15-Minute Grace Period Violation Change

	5 Minute Grace Period			15 Minute Grace Period		
	Violations	Citations Issued	% "Valid"	Violations	Citations Issued	% "Valid"
July 2022	24,904	10,993	44%	15,498	6,482	42%
September 2022	25,256	10,103	40%	14,873	5,441	37%
October 2022	28,556	12,117	42%	16,991	6,706	39%
December 2021	21,748	9,176	42%	13,085	5,147	39%
April 2022	26,271	11,085	42%	15,807	6,217	39%
June 2022	18,380	7,755	42%	11,059	4,350	39%
August 2022	30,577	12,901	42%	18,398	7,236	39%
7-Month Average	**25,099**	**10,590**	**42%**	**15,102**	**5,940**	**39%**

Although extending the grace period will now mean patrons who stayed for up to 15 minutes without paying for their time would now be in compliance, many of the patrons who were issued these citations were staying an average of 40 to 50 minutes. However, extending the grace period would reduce the average number of monthly grace period violations by about 10,000 to an average of about 15,000 per month.

Extend Two-Hour Maximum On-Street Time Limit to Three-Hours

As **Table 8** above showed, many of the patrons being issued citations for violating the two-hour time limit are, in fact, parking for an average of nearly three hours. It would seem then that increasing the time limit would mean many more patrons would be in compliance. Similar as was done for the grace period example, Rich analyzed the three months of detailed data which provided information on each parking session as well as if a violation occurred and whether a citation was in fact issued. Using this data, Rich reviewed the length of stay for time limit violators and evaluated whether they would have been issued a violation if the time limit was three hours. We then compared this updated total to those patrons who were marked as committing a time limit violation. Using the data from these three months was again extrapolated to the additional four months to calculate the number of time limit violations under the new paradigm. This is demonstrated by **Table 10** below. As the table shows, the number of patrons in violation would drop by an average of nearly 2,000 per month (2,789 vs. 821) with the number of citations issued dropping by nearly 1,300 per month.

Table 10 - Two-Hour Time Limit to Three-Hour Time Limit Violation Change

	2-Hour Maximum Time Limit			3-Hour Maximum Time Limit		
	Violations	Citations Issued	% "Valid"	Violations	Citations Issued	% "Valid"
July 2022	2,737	1,915	70%	792	552	70%
September 2022	2,195	1,346	61%	649	391	60%
October 2022	2,667	1,679	63%	797	490	61%
December 2021	3,023	1,965	65%	890	570	64%
April 2022	3,128	2,033	65%	921	590	64%
June 2022	2,223	1,445	65%	655	419	64%
August 2022	3,553	2,310	65%	1,046	670	64%
7-Month Average	**2,789**	**1,813**	**65%**	**821**	**526**	**64%**

Fine Revenue Reduction

While changes such as these being contemplated would seem to generate some goodwill among patrons, another consideration is the economic impact that such changes would mean in operational revenue. While some of this may be recouped from additional payment of parking fees, the $20.00 fine amount per occurrence is not likely to be exceeded by added parking fees. This means there is likely to be a net loss to the system from the new policies.

Using the seven-month average for citations issued for the grace period violations results in an average monthly reduction of 4,650 issued citations. Carried out to 12 months at $20.00 per citation could mean an estimated reduction of $1,115,000 in fine revenue (assuming all issued citations are collected).

Using the methodology for the Time Limit extension would reduce the average number of issued citations by 1,287 per month. Carrying this out for 12 months again at $20.00 per citation could mean a reduction of $309,000 annually. Some of this lost revenue could be recouped by charging a premium fee for the third hour of on-street parking. While this is possible, it is also possible that such a policy would simply encourage patrons to move their vehicle to start a new session at the standard rate. The patrons who do this are still utilizing an on-street space and limiting the turnover if patrons are simply shuffling between spaces.

Handicap Accessible Parking

There are a number of elements which are critical in the provision of handicap accessible spaces. The first of these is meeting the required number of spaces to be provided. In off-street lots, this is a function of the total capacity of the lot and is specified in the Americans with Disabilities Act (ADA) regulations. The second element is having handicap accessible spaces which are sufficiently convenient to various destinations. This means that where public off-street parking may not be convenient enough, handicap accessible spaces can be provided using on-street spaces. At this time, there are no regulations for the number of handicap accessible spaces which must be provided. The regulations do allow the spaces required in a parking lot or facility to be located elsewhere "if *they are more convenient or along a more accessible path".* In this regard, Rich is of the opinion that if a lot is deficient in providing the required number of spaces, the requirement is met if appropriate on-street accessible spaces are provided more conveniently. The number of spaces to be provided determined by the size of the parking lot is demonstrated by **Table 11** on the following page.

Table 11 - Handicap Accessible Parking Requirements

Minimum Number of Accessible Parking Spaces
ADA Standards for Accessible Design 4.1.2 (5)

Total Number of Parking spaces Provided (per lot)	Total Minimum Number of Accessible Parking Spaces (60" & 96" aisles)	**Van Accessible Parking Spaces with min. 96" wide access aisle**	**Accessible Parking Spaces with min. 60" wide access aisle**
	Column A		
1 to 25	1	**1**	**0**
26 to 50	2	**1**	**1**
51 to 75	3	**1**	**2**
76 to 100	4	**1**	**3**
101 to 150	5	**1**	**4**
151 to 200	6	**1**	**5**
201 to 300	7	**1**	**6**
301 to 400	8	**1**	**7**
401 to 500	9	**2**	**7**
501 to 1000	2% of total parking provided in each lot	**1/8 of Column A***	**7/8 of Column A****
1001 and over	20 plus 1 for each 100 over 1000	**1/8 of Column A***	**7/8 of Column A****

*** one out of every 8 accessible spaces** **** 7 out of every 8 accessible parking spaces**

Rich has analyzed the number of spaces provided in various publicly available lots as well in on-street locations throughout downtown Royal Oak. **Table 12** on the following page, considers the "core area" of the study area and evaluates the off-street facility parking against the requirements per the ADA as demonstrated in **Table 11** above. This comparison is shown by the upper portion of **Table 12** and demonstrates that three public facilities are deficient in providing the number of spaces required. However, the table further demonstrates that overall, the City of Royal Oak is providing seven spaces more than required in these seven facilities.

The lower portion of the chart shows the on-street spaces where handicap accessible spaces are provided within the core blocks. This shows 13 provided on-street handicap accessible spaces. At this time, there is no requirement to provide handicap accessible spaces on-street. Therefore, these 13 spaces exceed any requirements and combined, the city is providing 20 handicap accessible spaces more than required within the core blocks.

Table 12 - Core Blocks Handicap Accessible Parking

Core Area Blocks - Off-Street Lots & Garages							
Block	Lot Letter	Deck, Lot or Street	Description	Total Spaces in Lot	Required Number of Barrier Free Spaces	Provided Hcp Accessible	Above (+ / Below - Require - ment
3		Deck	11 Mile Garage	581	12	20	**8**
4	A1	Lot	3 Hr Meters	61	3	6	**3**
6	B1	Lot	City Lot #1	54	3	3	**0**
17	A1	Lot	City Lot #3	52	3	2	**(1)**
18	A1	Lot	City Lot #7	160	6	6	**0**
20	A	Lot	Part of Garage	46	2	0	**(2)**
20		Deck	Center Street Garage	985	20	19	**(1)**
			TOTAL	**1939**	**49**	**56**	**7**

Core Area Blocks - On-Street Handicap Accessible							
Block	Lot Letter	Deck, Lot or Street	Description	Total Spaces in Lot	Required Number of Barrier Free Spaces	Provided Hcp Accessible	Above (+ / Below - Require - ment
3	Face F	Street	Alley Adjacent 11 Mile Garage	20	0	4	**4**
13	Face E	Street	Alley (East Side of Bldg)	15	0	2	**2**
13	Face F	Street	Alley (West Side of Bldg)	15	0	2	**2**
16	Face D	Street	West Side Center St.	6	0	1	**1**
21	Face D	Street	Back Angle (Washington)	9	0	1	**1**
22	Face D	Street	Washington Ave	11	0	1	**1**
23	Face D	Street	Washington Ave	6	0	2	**2**
			TOTAL	**82**	**0**	**13**	**13**

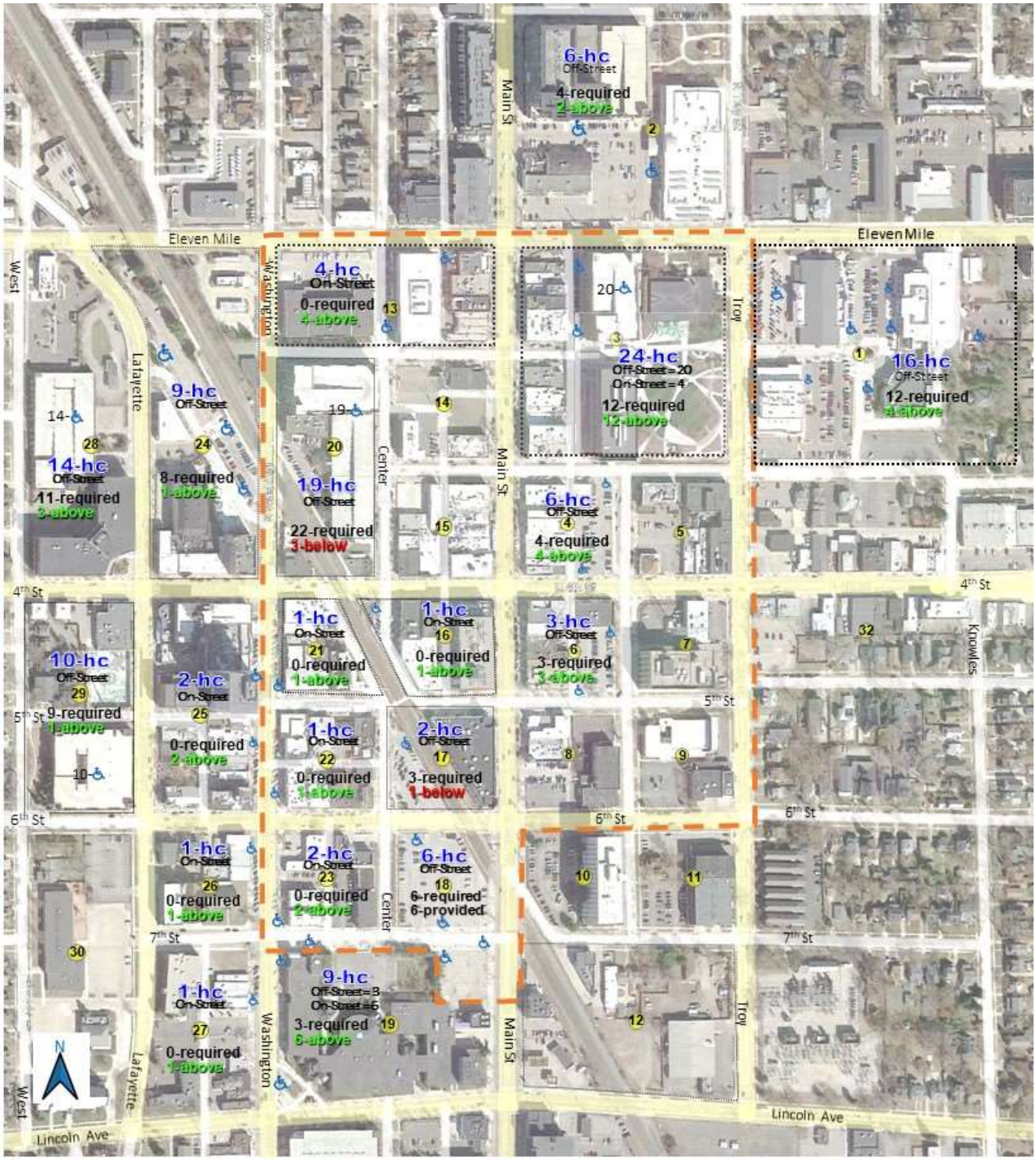
TOTAL	**2021**	**49**	**69**	**20**

Table 13 below shows similar information for the blocks outside the core study area. This appears to shown that City Lot #9 (also known as the Sherman Drive Lot) has a combined requirement of eight spaces. However, there is no physical barrier between the two portions of the lot which means it may be counted as one large lot with a capacity of 156 spaces. On this basis, the number of handicap accessible spaces required is just six spaces and eight are provided for a true surplus of two spaces. **Table 13** below shows this as two separate lots with a combined requirement of eight spaces with nine spaces provided. In either case, the city is providing more than the required number of handicap accessible spaces. **Map 24** showing the number of provided spaces, required spaces and surplus or deficiency of handicap accessible spaces by block is provided on **page 58**. The map and tables demonstrate the public facilities and on-street locations where parking is provided. Most blocks (both within and outside the core blocks) are providing publicly available handicap accessible spaces. Those blocks that are not showing any handicap accessible spaces do not have public off-street spaces. As such, any private businesses should be providing the required number of spaces since it is likely that any spaces in their lots would be the most convenient and accessible to their entrances. Therefore, Rich is of the opinion that sufficient handicap accessible parking is being provided.

Table 13 - Non-Core Blocks Handicap Accessible Parking

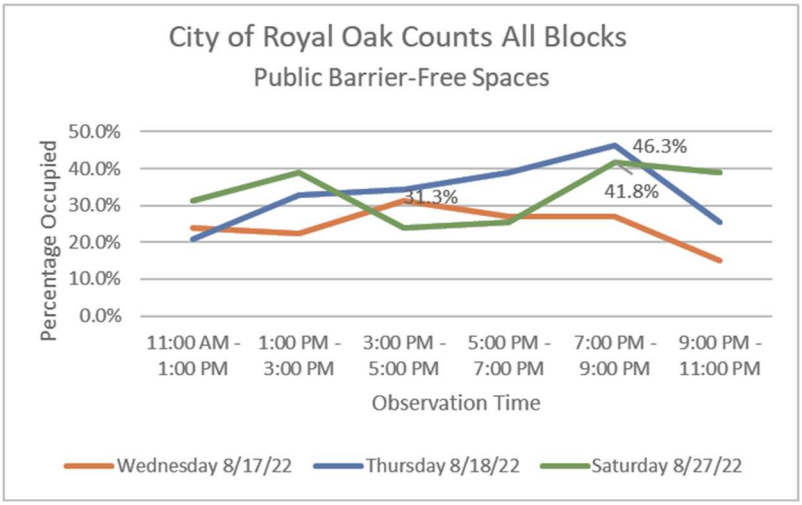
Non-Core Area Blocks - Off-Street Lots & Garages						
Block	Lot Letter	Description	Total Spaces in Lot	Required Number of Barrier Free Spaces	Provided Hcp Accessible	Above (+ / Below - Require - ment
1	A	Farmers Market	44	2	2	0
1	B1	City Lot #10	77	4	6	2
1	B3	30 Min in front Courthse	7	1	2	1
1	E1	City Hall Lot	124	5	6	1
19	B	City Lot #8	53	3	3	0
24	A	City Lot #9	76	4	2	(2)
24	B1	City Lot #9	80	4	7	3
28		4th & Lafayette Garage	517	11	14	3
29		6th & Lafayette Garage	451	9	10	1
		TOTAL	**1,429**	**43**	**52**	**9**
Non-Core Area Blocks - On-Street Handicap Accessible						
Block	Lot Letter	Description	Total Spaces in Lot	Required Number of Barrier Free Spaces	Provided Hcp Accessible	Above (+ / Below - Require - ment
19	Face A	7th Street	34	0	4	4
19	Face D	Washington Ave	24	0	2	2
25	Face B	Washington Ave	22	0	2	2
26	Face B	Washington Ave	13	0	1	1
27	Face B	Washington Ave	14	0	1	1
		TOTAL	**107**	**0**	**10**	**10**
		Grand Total Non-Core Blocks	**1,536**	**43**	**62**	**19**

Map 24 - Handicap Spaces Per Block



Barrier Free Parking Occupancy

Rich was also asked by the City of Royal Oak to assess the use of barrier-free (handicap accessible) spaces. Although the supply assessment (shown by **Table 3**) shows a total of 205 barrier-free spaces within the entire study area, not all were included in the occupancy assessment. Rich observed 106 of the 205 (52%) barrier-free spaces in the total study area. Sixty-seven of these 106 observed spaces were public lots or on-street.



This analysis showed that the public spaces considering all blocks in the study area peaked at just 46 percent occupancy on the Thursday survey date during the 7:00 pm to 9:00 pm observations. The Saturday observations showed this at 42 percent at this same time.

Figure 31 – Three Days Percentage Occupancy Public Barrier Free Spaces - All Blocks

Considering the public spaces on just the core blocks, the peak occupancy was approximately 50 percent of the provided barrier free spaces occupied at the daily peak. On Thursday, peak occupancy occurred coincident with the 7:00 to 9:00 pm observations. On the Wednesday survey date, peak occupancy of the barrier free spaces occurred between 3:00 and 5:00 pm, whereas on Saturday it was between 9:00 pm and 11:00 pm.

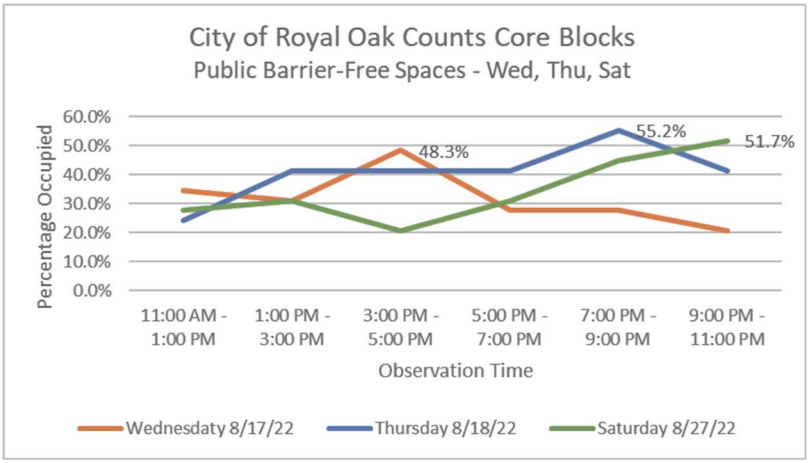


Figure 32 – Three Days Percentage Occupancy Public Barrier Free– Core Blocks

Disability Parking (Yellow Sticker)

Rich & Associates were also asked to investigate the "yellow sticker" policy for disabled patrons. Per the Michigan.gov website, "Some residents with disabilities under very limited, specified circumstances are eligible to apply for a yellow sticker that is placed on their permanent disability parking placard and permits them to park for free at public meters and ramps.

The patrons' physician, chiropractor, nurse practitioner or physician's assistant must provide authorization on the Disability Parking Placard Application.

Patrons must first qualify for a disability parking placard. In order to qualify for the free parking sticker, in addition to the physician's (or others) certification noted above, patrons must be unable to do one or more of the following:

- Insert coins or tokens in a parking meter or accept a ticket from a parking lot machine due to a lack of fine motor control of both hands.
- Reach above your head to a height of 42 inches from the ground, due to lack of finger, hand or upper extremity strength or mobility.
- Approach a parking meter due to the use of a wheelchair or other ambulatory device.
- Walk more than 20 feet due to an orthopedic, cardiovascular or lung condition in which the degree of debilitation is so severe that it almost completely impedes your ability to walk.

Reverse Angle Parking

Reverse angle parking is a relatively new construct being implemented in more and more communities. Proponents cite the benefits of being able to more easily exit a parking space because of the greater ability to see approaching traffic as opposed to backing out of an angled stall which leaves the driver blind until well within the travel lane. Angle parking, whether straight in or reverse angle, allows greater capacity along the given curb length compared to traditional parallel parked spaces. Other benefits of angle parking include not opening a vehicle door into passing vehicle traffic or bicycles. Opponents will cite the difficulty in backing into a parking space. Other potentially negative issues cited will often mention the inability to see an available space which may be blocked by a larger vehicle until nearly past the space and then the inability to back into the space because of a following vehicle being too close. Other potential issues refer to the fact that the vehicle exhaust is now directed at the sidewalk and passerby. This may be especially concerning if a restaurant is using sidewalk space for outdoor dining.

Whether straight in or reverse angle, the geometry for the roadway width is the same for the requirement for a travel lane. While with drive in angle parking, the initial parking maneuver will be quicker than parallel parking, exiting will be much slower as caution must be employed when leaving a parking space. With reverse angle parking, these conditions will reverse as the initial parking maneuver will be slightly longer while the exit will be quicker. One analysis cited[1] shows the average time to complete a parallel parking maneuver is 21 seconds while the time for a “drive-in” or “back-in” maneuver for an angled space is only 11 to 12 seconds. These values suggest that the use of angled parking spaces will be quicker causing less disruption to vehicle flows. Other considerations for the use of angle parking include that a parallel parked lane will provide 8 to 9 feet of buffer between traffic while an angled lane can increase this to as much as 18 to 20 feet. While these “benefits” would seem to make most streets candidates for conversion to angled parking, the width of the street as noted is one constraint as converting to angle parking may limit the travel lane and force the roadway to become one way. In this regard another important consideration is the vehicle volumes.

Data Rich found on the SEMCOG (Southeastern Michigan Council of Governments) website had traffic count data for various jurisdictions. Relevant data for Royal Oak had traffic counts for Washington Avenue and Main Street. At present, reverse angle parking is provided in downtown Royal Oak on a short stretch of 7th Street between Main Street and Washington Avenue and along the 8 block faces of Washington Avenue between 4th Street and Lincoln Avenue. In the same article cited above, the criteria for angle parking appears to be 10,000 to 12,000 cars per day above which angle parking would not be recommended because of the disruption in traffic flow caused by parking maneuvers. While on the face of it, this would appear to be conflicting since parallel parking takes more time, the implication is that with parallel parking, a through travel lane can be maintained that otherwise may not be available with angled parking.

[1] Edwards, J. D. (February 2022). Changing On-Street Parallel Parking to Angle Parking. *ITE Journal*, 28-33.

Traffic vehicle data showed 7th Street with AADT (average annual daily traffic) of just 1,800 AADT while Washington Avenue is just 3,700 per day between 4th Street and 7th Street and 5,100 AADT between 7th Street and Lincoln Avenue. Main Street within these same blocks is approximately 14,300 to 19,700 AADT. Against these criteria, neither Washington Avenue nor 7th Street are in conflict with AADT maximum permissible volumes.

Rich also analyzed the occupancy of the existing reverse angle parking spaces which are provided along eight block faces of Washington Avenue between Lincoln and Eleven Mile and along the south side of 7th Street between Main Street and Washington Avenue. These 9 block faces had a total of 129 reverse angle stalls. Generally, the occupancy of the reverse angle spaces followed similar patterns to the occupancy of on-street parking in general after excluding the reverse angle spaces but at lower occupancy rates. The highest occupancy for the reverse angle spaces occurred coincident with the Wednesday survey date between 7:00 pm and 9:00 pm when 53.5 percent of the reverse angle spaces were occupied. At this same the on-street spaces in general were 67 percent occupied. On the Thursday survey date when 76 percent of on-street spaces were occupied, the reverse angle spaces were 50 percent occupied. The values varied only slightly for the Saturday counts with 71 percent of on-street spaces occupied at peak time (7:00 pm – 9:00 pm) compared to 51 percent of the reverse angle spaces.

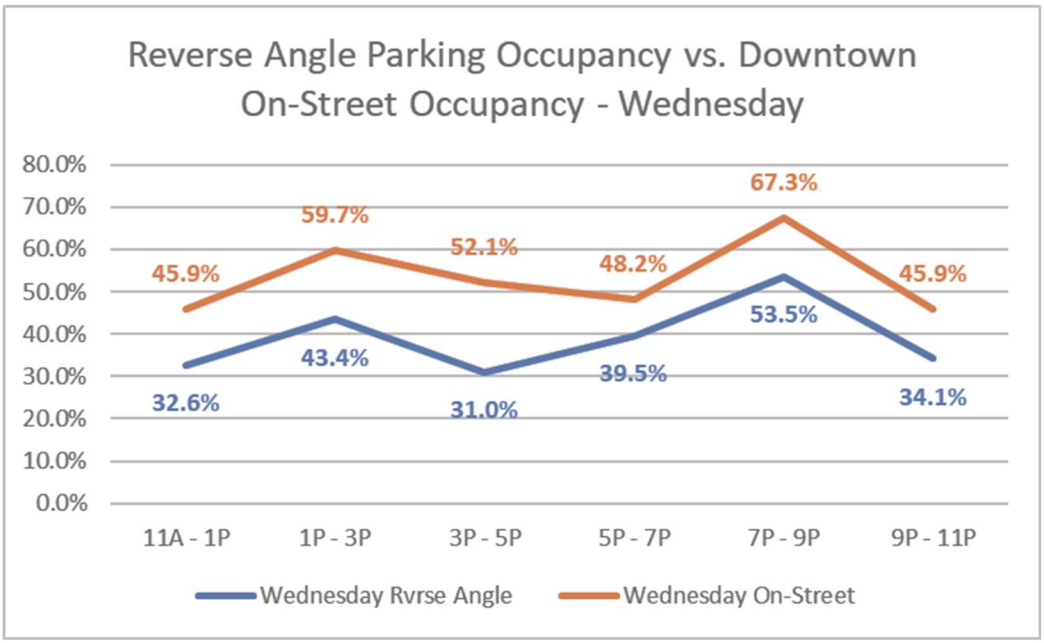


Figure 33 - Wednesday Comparison Reverse Angle Spaces to On-Street Parking Occupancy

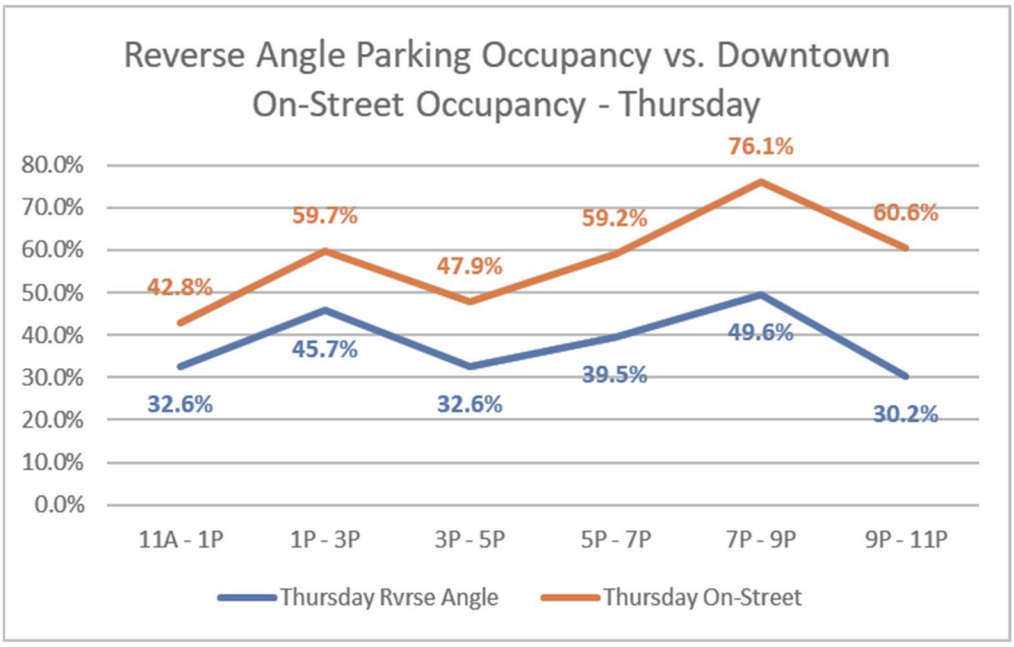


Figure 34 - Thursday Comparison Reverse Angle Spaces to On-Street Parking Occupancy

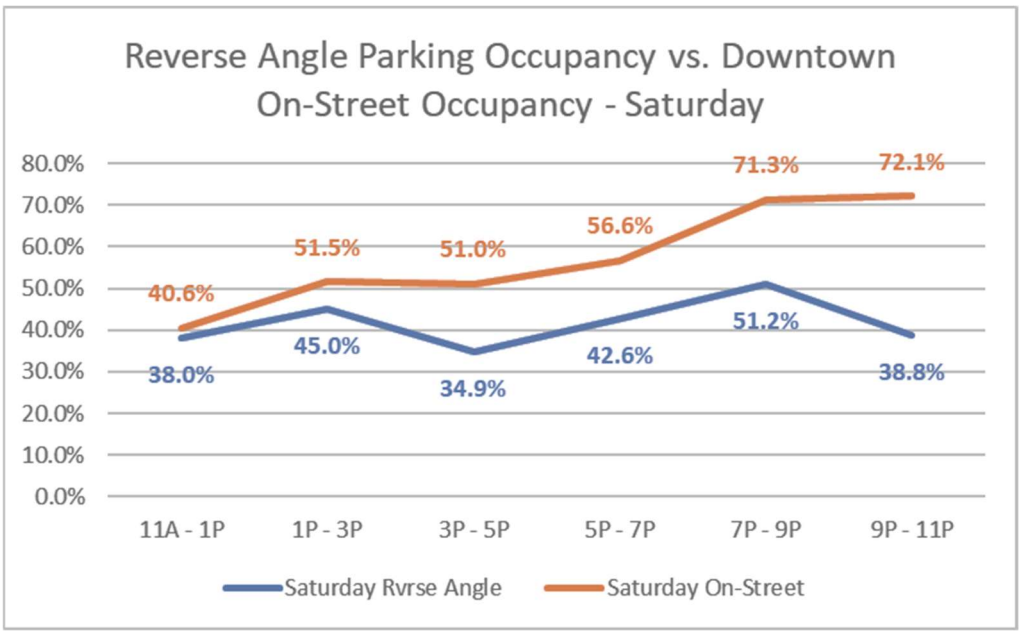


Figure 35 - Saturday Comparison Reverse Angle Spaces to On-Street Parking Occupancy

However, a further review of the reverse angle occupancy data showed that the 34 spaces along 7th Street between Main and Washington had very low occupancy rates ranging from zero to a maximum of 10 percent (3 spaces occupied). Since these spaces represented one-quarter of the total number of reverse angle parking and likely negatively affected the reverse angle occupancy, Rich analyzed the reverse angle parking rates after excluding the very low use 7th Street spaces. These results show percentage occupancy rates that more closely match the overall on-street parking occupancy and in some cases exceed the proportion of on-street spaces in general which are occupied.

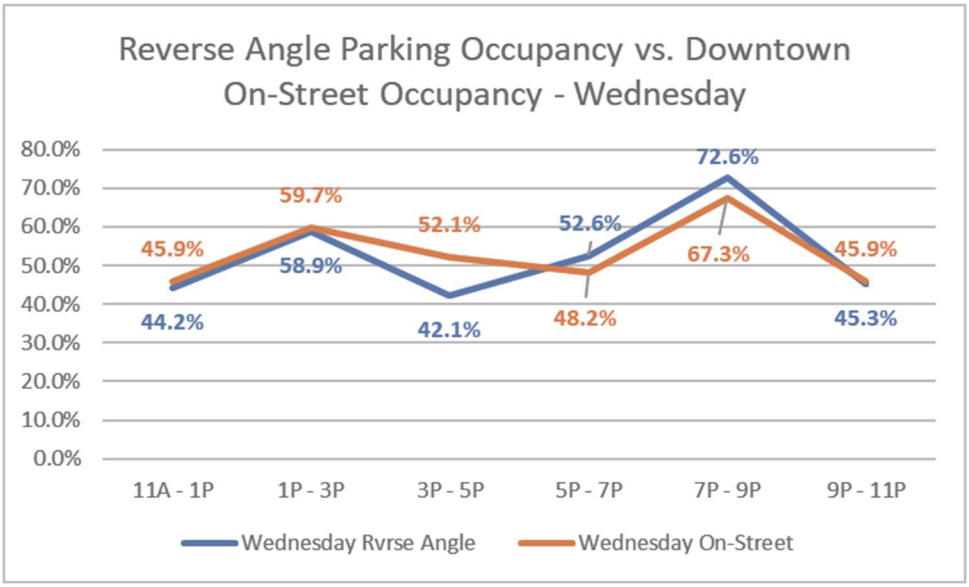


Figure 36 - Adjusted Wednesday Comparison Reverse Angle Parking to On-Street Occupancy

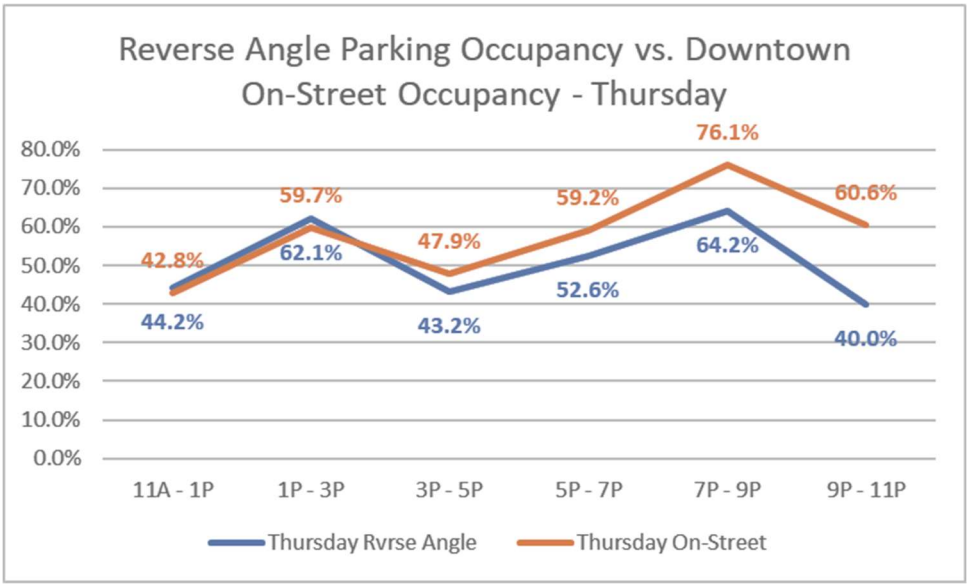


Figure 37 - Adjusted Thursday Comparison Reverse Angle Parking to On-Street Occupancy

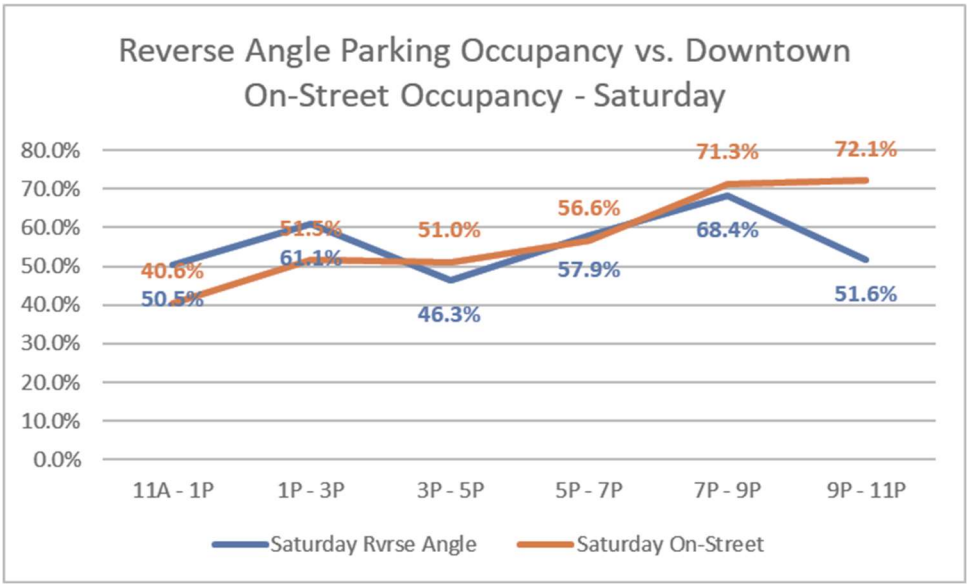


Figure 38- Adjusted Saturday Comparison Reverse Angle to On-Street Occupancy

In summary, for angled parking there will be both advantages and disadvantages. While to some opponents, simply the fact that, in Rich's opinion, it is different is enough reason to oppose it. Many articles are citing the increased safety for its increased adoption. The State of Michigan mandates that reverse angle be used on State trunklines. While the safety issue may be one reason this system was employed in Royal Oak, another reason is the MPS system which reads license plates to perform the parking enforcement function.

Since Michigan does not have front plates, reverse angle parking is the only methodology that would work with the MPS system unless the on-street parking capacity was reduced by the use of parallel spaces or a second method of parking enforcement. In Rich's opinion, drive-in angle parking would increase downtown confusion by introducing an alternative method of operation and paying for parking since the MPS system could not read the plates and would require the driver to manually interact with a payment device or phone app in certain parts of downtown and not others. In Rich's opinion, a system that is consistent will over time lead to greater compliance as patrons become more familiar with it. Just as the use of round-a-bouts is becoming more common across the country, Rich believes that reverse angle parking will also become more common and have greater acceptance as drivers get use to the maneuvers required.

PEV Assessment

An element of parking operations that is becoming more prevalent and a question being asked by municipalities is providing for electric vehicles to become more universal. As such, it would seem that more destinations will find it advantageous to ensure that these vehicles can be recharged while the owners/drivers are working in or visiting a downtown commercial district.

Rich's understanding is that presently the City of Royal Oak has Charge Point Fast Chargers installed in four of the five city parking structures. There is some confusion because data provided by the City stated that these are 5.8 kWh AC shared units. This level of charging would indicate that these are Level 2 chargers which provide approximately 32 miles of range for each hour of charging. The cost to charge a vehicle is presently $0.20 per kWh.

Alternatively Fast Chargers, per a page on the US Department of Transportation website states that Fast Chargers are designated as Type 3 and have output that ranges from 50 Kw to 350 Kw. Vehicle batteries are rated in kWh (kilowatt-hours). Electric vehicles are rated for their use such as 37 kWh per 100 miles. Therefore, a battery with a capacity of 73 kWh would have a range of about 200 miles (73 kWh / 37 kWh). Finally, assuming a vehicle with a battery capacity of 73 kWh connected to a charging station that outputs 100 kw would take about 45 minutes to fully charge and use 75 kWh. In this very simple example, at the current rates (0.20 per kWh) the cost to charge a vehicle would be approximately $15.00.

Therefore, if it is assumed that the provided data is that the 5.8 kWh AC shared units are in fact 58 Kw units then the same 73 kWh vehicle would take approximately an hour and 15 minutes to reach a full charge. This needs to be reviewed with the City.

The major question often posed however is providing a sufficient number charging stations and the timing to do so. Because the number of electric vehicles is still a question as the market penetration is still relatively small, Cities are questioning how much to invest in the charging stations. Additional data that Rich collected as part of addressing this question for another client was that Fast-Charging units cost from $10,000 to $40,000 plus from $4,000 to $50,000 for the labor to install. The data provided by the City noted that the units in the City garages were placed on the first floor close to the electrical rooms in order to reduce the cost of installation. Therefore, it becomes somewhat of an economic issue to invest in the stations unless there is some sort of federal or other subsidy since the likely electrical rate necessary to recoup the costs of acquisition, operation and maintenance if too high could in fact discourage use by patrons.

As noted above, the current market penetration of electric vehicles is still relatively low[2]. Part of the problem with electric vehicle adoption may be concern with having fast charging infrastructure near travel paths while concerns for providers may be investing in the necessary fast chargers that may not

[2] A Bloomberg NEF study reveals that the global electric vehicle market size and adoption will grow in the long run. The report shows that electric vehicles (EV's) currently make up only 3% of car sales worldwide. By 2025 electric vehicles (EV's) will reach 10% of global passenger vehicle sales, growing to 28% in 2030 and 58% by 2040.

have sufficient market in the short-term. Certainly, US automakers are recognizing the likely importance of the electric vehicle market as electric vehicle models are beginning to be rolled out and research and development continues. In Rich's opinion, in order to function effectively for many users in a downtown environment, Rich believes that the Level 3 fast chargers will be necessary since the level 2 charges would only be able to provide limited added range within the time frame of a typical downtown visit. This is really a chicken and egg dilemma. Should the charging stations be provided in multiple convenient locations in order to encourage adoption of electric vehicles or should there be a sufficient market to help recover the costs of providing such units?

In recent years many municipalities across the country and in the state of Michigan have revised their parking standards / codes to require some levels of EV charging or infrastructure to support future EV charging in new parking lots and structures. For example, the City of Ann Arbor has updated their development standards requiring that new parking lots and garages provide for three levels of EV readiness. These levels include EV Capable, EV Ready and EV Installed. The following are how they define the three levels of EV readiness.

1. EV-C – Electric Vehicle Capable
EV-C Parking Spaces shall have an installed electrical panel capacity with a dedicated branch circuits(s) and cable/raceway that is capped for future EV Parking Space(s). The dedicated branch circuit panel space shall be stenciled or marked legibly with the following text: Future Electric Vehicle Charging Circuit.

2. EV-R – Electric Vehicle Ready
EV-R Parking Spaces shall have an installed electrical panel capacity with a dedicated branch circuit(s) including conductor in a raceway or direct buried, terminated in an approved method in a junction box, for an EV Parking Space(s). The junction box shall be clearly marked and labeled with the following text: EV Ready Circuit.

3. EV-1 – Electric Vehicle Installed
EV-I Parking Spaces shall have an installed electrical panel capacity with a dedicated branch circuit(s) including conductor in a raceway or direct buried, and an Electric Vehicle Charging Station (EVCS) capable of providing charge energy to an EV Parking Space(s). EV-I Parking Spaces shall include signage indicating the space is to be exclusively used for EVs.

The Ann Arbor Development Standards also require that a minimum number of EV charging stations installed meet accessibility requirements or installed in barrier free van accessible or standard accessible spaces. For instance, if a parking facility requires between 5 and 50 EV charging stations installed, at least 1 is required at a barrier free van accessible space and 1 is required at a barrier free standard accessible space.

The City of Ferndale has recently adopted similar requirements in their code. We expect to see more municipalities making similar changes to their codes or standards as the push for and growth of electric vehicles gains even more momentum.

Recommendations

In the 2018 report prepared and submitted to the City of Royal Oak, Rich evaluated the parking conditions at that time and made a series of recommendations. Since that time, as a result of the Covid-19 pandemic and other changes in downtown Royal Oak, parking conditions have changed to some extent. Therefore, the City has asked Rich to evaluate these updated conditions and make recommendations recognizing the current parking environment.

1. **Handicap Accessible Parking –** The analysis of handicap accessible spaces was a two-part process. The first analysis analyzed the number of provided spaces against the requirements per the Americans with Disabilities Act (ADA). This details the number of spaces required based on the capacity of individual parking lots owned or controlled by the City (Public Spaces). At this time, there are no regulations for the number of barrier free spaces that must be provided on-street. For the core blocks of the study area, there are two lots that are deficient a total of three spaces from the number required per the ADA. The fourth facility, the Center Street Garage, is deficient by one space with 20 called for per the regulations and only 19 provided. (985 spaces x 2% = 19.7 ~ 20 spaces.). Overall, the off-street facilities are providing seven spaces more than required. Additionally, 13 spaces are provided on-street within the boundaries of the core blocks. Therefore, the city is providing 20 more handicap accessible spaces than are required. If these spaces are provided more conveniently or "along a more accessible path" then in Rich's opinion the city is meeting the requirement.

   For the area outside the core blocks, in the off-street parking locations, the city is providing 9 more handicap accessible spaces than required based on the individual lot capacity requirements. These spaces are supplemented with 10 on-street handicap accessible spaces for a total of 19 spaces more than required within the non-core blocks.

   The second part of the handicap accessible analysis is the actual utilization of these spaces. This analysis found that at peak time only about one-half of the barrier free spaces are occupied within downtown Royal Oak.

   While on the basis of parking capacity and utilization it would not appear that additional handicap accessible spaces are required, Rich does feel that some additional handicap should be provided. Near the post office, the closest spaces are on Center Street adjacent the 150 W Second Street Building. While these spaces give access to the curb cut at the corner, users of these spaces must then traverse the half block to access the handicap accessible path and ramp that begins near the post office front steps. Rich feels that handicap accessible spaces provided closer to this point would be better suited.

   Recommendation: Provide two handicap accessible spaces on W. Second Street near the point where the handicap accessible ramp begins. Provide appropriate curb cuts to provide patron access and stall length to accommodate handicap vehicles.

2. **Reverse Angle Parking** – Reverse angle parking is a relatively new method that, in Rich's experience, has been employed very infrequently in previous communities studied. While planners are beginning to recognize the benefits of being able to exit an angled parking space with a clearer view of approaching traffic, the public in many communities has not been as quick to accept the concept. However, in Royal Oak when considering the core block spaces, Rich's analysis of the utilization of the reverse angle spaces compared to on-street spaces in general found comparable levels of utilization.

   Studies showing the quicker time to angle park compared to parallel parking also show a benefit. Even logic supports that it should be easier to back into an angled space as opposed to the back-in maneuvers required to access a parallel parked stall between two vehicles. In Royal Oak, the back-in angle parking is as much about improved safety as to accommodate the Sentry Meters which read license plates to provide for paid parking. While not necessarily appropriate on all streets or roadways due to street dimensions or traffic volumes, these issues do not exist where the reverse angle parking is currently employed in Downtown Royal Oak.

   Recommendation: Continue the reverse angle parking on Washington Avenue and Center Street.

3. **Parking Rates** – The City currently has a policy where parking rates increase after 5:00 pm. This policy follows the documented increase in parking utilization during the evening hours that Rich has recorded for a number of years in previous studies for the City. It follows the standard of supply and demand that as demand increases, the price should increase as well in order to keep supply and demand in line.

   The City also charges a higher rate for on-street parking ($1.25 / hour before 5:00 pm and $1.50 / hour after 5:00 pm) versus off-street parking ($0.75 / hour & $1.00 / hour). Furthermore, the City offers the first two-hours free in the city parking garages after which they are just $0.75 per hour. These rates are consistent with the best practice that the most convenient (on-street) spaces should cost more than less convenient parking. Parking in the off-street lots is limited to four hours while on-street parking is limited to two hours. The city webpage reminds patrons that they must move their vehicle after 2 hours when parking on the street.

   Recommendation: Maintain the rate premium for pre 5:00 pm and after 5:00 pm parking in on-street spaces and off-street lots. Maintain the policy of charging a higher rate for on-street parking compared to off-street parking and the policy of the first two-hours free in the garages. These policies are consistent with best practices and incentives to use the garages.

4. **Parking Time Limits** – The data provided by the MPS system related to both violations and parking durations has been invaluable to assess the functionality of parking in downtown Royal Oak. While on-street spaces are limited to two-hours, data from the system showed that for those who violated the two-hour limit were staying nearly three hours. One question asked was whether the City should extend the on-street time limit to three hours and charge a higher premium for the third hour. Best practice is that on-street parking should be limited to two-hours in order to encourage vehicle

turnover and ensure that the most convenient spaces are available to subsequent customers and visitors.

From the City's webpage: Urban planning experts universally agree that tightly regulated curb-side parking actually fosters higher space turnover and therefore greater parking availability in downtown areas. This results in better access for consumers to downtown offices, shops, restaurants and other entertainment options, and higher customer counts for merchants

Data also showed many patrons were violating the 5-minute grace period. However, when the grace period was extended to 15 minutes in the analysis of the data, the average number of monthly violators showed a calculated drop of about 10,000.

Recommendations:

a) Maintain the two-hour limit for on-street parking to encourage turnover.

b) Discourage the moving of a vehicle to a new on-street space. This is still taking an on-street parking space away from another customer. Longer term parkers should be directed to off-street lots (if under four hours) or one of the garages.

c) Extend the grace period to 15 minutes. While some trips will benefit from the short time free parking, the average length of stay for most patrons means that they still will need to pay for parking when using on-street spaces.

5. **Parking Lot Upgrade** – While most city parking facilities are consistent with their rates and payment methods, there are several locations still using the individual meters. The most prominent of these are City Lots 1 and 2 which has 51± and 61 spaces respectively. These lots charge $1.25 per hour with a three-hour limit compared to the other city lots which charge a maximum of $1.00 per hour (after 5:00 pm) with a four-hour limit. Within the core, there are a few small locations that still have individual meters at rates different from the general parking rates.

   Recommendation: It is being assumed that these lots are in the process of being upgraded. However, if not and if possible, the rates and time limits should be adjusted to be consistent with other downtown off-street parking.

6. **Enforcement (Reverse Angle)** – During the utilization counts, anecdotal data had vehicles noted that had driven in to reverse angle parking. While these vehicles could be afforded free parking because the plate could not be read unless an enforcement or police officer happened by or was notified, there is the added safety issue as the vehicle left the space.

   Recommendation: In addition to receiving a fine for not paying for the parking (if incurred), the driver should also be cited for improper parking carrying a significantly higher fine ($50.00) for improper parking. The higher fine would be intended to discourage this practice due to the increased potential for an accident and/or injury due to a passing driver not expecting a vehicle (that they may not see) to be backing out of a reverse angle stall.

7. **Parking System Marketing** – In order to function effectively and fairly, the method operation and rules of a parking system must be easily understood and easily applied by its customers. As technology moves forward and eliminates the use of individual coin operated meters or parking operations where patrons interact with an attendant, the self-service concept must be easily understood. Again, anecdotal reports by the parking surveyors related their observations of patrons unable to understand how to pay for their on-street parking and simply getting in their car and leaving means that presently the ease of the system is not being understood. Rich's analysis shows the potential confusion with the current on-street system. The pay stations *look* like meters at individual stalls. We can understand how someone may be hesitant to walk up to the pay station as it looks like they would be paying for another vehicle. In other words, the payment method is not clear. While the use of the app would seem to make the process very simply, the use of the app to pay using a smart phone may not always be available. Some users will not have the knowledge to download the app or their phone may not have the memory space to accept the app. The pay stations are not clearly indicated on the web page. The short video regarding the new meters simply refers to them as *smart meters* which in Rich's opinion creates confusion.

   Recommendations:

   a) The pay stations should have a sign or some other indication mounted on top stating that they are pay stations. This should be of a consistent shape and color and this information included on the city webpage.

   b) The webpage should highlight that the pay stations look like meters and that this is where payment should be made.

   c) It may help if the webpage would show video both interacting with the smart meters to make payment what the user would see as well as the interactions with the app for users who choose this route. This should be highlighted on the webpage.

8. **EV Charging Stations** – In recent years many municipalities across the country and in the state of Michigan have revised their parking standards / codes to require some levels of EV charging or infrastructure to support future EV charging in new parking lots and structures. We expect that, as the EV market size continues to increase, the need for more charging stations will also increase. However, the number of electric vehicles on the road does not necessarily directly correlate to the number of charging stations that are needed in a downtown or at the EV owner's destination. Since many EV owners will have the capability to charge their vehicles overnight at home, the number of stations needed is not a one for one. For instance, if projections are accurate, that 28% of vehicles sales in 2030 will be electric vehicles, this does not mean that a municipality should install charging stations at 28% of their total parking supply.

   Recommendation: There is not enough data yet to inform planners as to the appropriate number and location of EV stations in a public parking system. We encourage the City to actively monitor current utilization / occupancy levels of existing charging stations. As utilization / occupancy increases, consideration should be given to increasing the number of stations.

Appendix

Parking Supply Detail

						PRIVATE							PUBLIC									
Blk#	S / L / D	LOT/ FACE ID	SUB-TYPE	P / V/ O	Description	OFF-ST STAFF ONLY	(V) HC	PVT OFF-ST 30M	PVT OFF-ST (LOT)	PVT ON-ST RESERVED	PVT ON-ST 5M	PERMIT (LOT)	OFF-ST DECK	OFF-ST PAY TO PARK LOT	ON-ST PAY TO PARK 2HR	UNMARKED / FREE 2HR	30M	2HR METER	3HR METER	12HR LT METERS	(P) HC	LOAD ZONE
1	L	A1		P	BLOCK 1, LOT A1 - FARMER MARKET									42								
1	L	A2	HC	P	BLOCK 1, LOT A2 - FARMER MARKET - HC																2	
1	L	B1		P	BLOCK 1, LOT B1 - CITY LOT 10									71								
1	L	B2	HC	P	BLOCK 1, LOT B2 - CITY LOT 10 - HC																6	
1	L	B3		V	CITY LOT 10 - POLICE BUSINESS N. SIDE				6													
1	L	B4	30M	V	BLOCK 1, LOT B4 - 30M FRONT OF COURT			7														
1	L	B5	HC	V	BLOCK 1, LOT B5 - FRONT OF COURT-HC		2															
1	L	B6		V	BLOCK 1, LOT B6 - STAFF	10																
1	L	B7		P	BLOCK 1, LOT B7									18								
1	L	C1		P	BLOCK 1, LOT C1 - EAST OF POLICE STATION									33								
1	L	C2	HC	P	BLOCK 1, LOT C2 - HC																2	
1	L	D		V	BLOCK 1, LOT D - PRIVATE LOT				42													
1	L	E1		P	BLOCK 1, LOT E1 - CITY HALL LOT									118								
1	L	E2	HC	P	BLOCK 1, LOT E2 - HC																6	
1	S	C		P	BLOCK 1, FACE C - PAY TO PARK METER										17							
2	S	D		P	BLOCK 2, FACE D - PAY TO PARK METER										10							
2	S	A		P	BLOCK 2, FACE A - PAY TO PARK METER										8							
2	L	A1		V	BLOCK 2, LOT A1 - THEATRE LOT - 3 HR				88													
2	L	A2	HC	V	BLOCK 2, LOT A2 - THEATRE LOT - HC		6															
3	L	B		V	BLOCK 3, LOT B - LIBRARY STAFF ONLY	7																
3	L	C		V	BLOCK 3, LOT C - SIGNED PRIVATE	6																
3	S	A		V	BLOCK 3, FACE A - LIBRARY BOOK DROP OFF						4											
3	S	B		P	BLOCK 3, FACE B - PAY TO PARK METER										11							
3	S	C		P	BLOCK 3, FACE C - PAY TO PARK METER										14							
3	S	D		P	BLOCK 3, FACE D - PAY TO PARK METER										7							
3	S	E		P	BLOCK 3, FACE E - 2ND ST - PAY TO PARK METER										5							
3	S	F1		P	BLOCK 3, FACE F1- ALLEY - PAY TO PARK METER										16							
3	S	F2	HC	P	BLOCK 3, FACE F2 - ALLEY PARKING - HC																4	
3	D			P	BLOCK 3, 11 MILE DECK - PUBLIC								561									
3	D		HC	P	BLOCK 3, 11 MILE DECK - HC																20	
4	L	A1		P	BLOCK 4, LOT A1 - CITY LOT 2 - 3HR METER														55			
4	L	A2	HC	P	BLOCK 4, LOT A2 - CITY LOT 2 3HR - HC																6	
4	S	A		P	BLOCK 4, FACE A - PAY TO PARK METER										6							
4	S	B		P	BLOCK 4, FACE B - PAY TO PARK METER										8							
4	S	C		P	BLOCK 4, FACE C										6							
4	S	D		P	BLOCK 4, FACE D										7							
5	L	A		V	BLOCK 5, LOT A - CITY LOT C PERMIT							23										
5	L	B		V	BLOCK 5, LOT B - RASOR LAW FIRM				15													
5	L	C		V	BLOCK 5, LOT C - AIR GARAGE				9													
5	S	A		P	BLOCK 5, FACE A										6							
5	S	B		P	BLOCK 5, FACE B										6							
5	S	C		P	BLOCK 5, FACE C										7							
5	S	D		P	BLOCK 5, FACE D										5							

						PRIVATE							PUBLIC									
Blk#	S / L / D	LOT/ FACE ID	SUB-TYPE	P / V/ O	Description	OFF-ST STAFF ONLY	(V) HC	PVT OFF-ST 30M	PVT OFF-ST (LOT)	PVT ON-ST RESERVED	PVT ON-ST 5M	PERMIT (LOT)	OFF-ST DECK	OFF-ST PAY TO PARK LOT	ON-ST PAY TO PARK 2HR	UNMARKED / FREE 2HR	30M	2HR METER	3HR METER	12HR LT METERS	(P) HC	LOAD ZONE
6	L	A		V	BLOCK 6, LOT A	3																
6	L	B1	3HR	P	BLOCK 6, LOT B1 - CITY LOT 1														48			
6	L	B2	HC	P	BLOCK 6, LOT B2 - CITY LOT 1 - HC																3	
6	S	A		P	BLOCK 6, FACE A										7							
6	S	B		P	BLOCK 6, FACE B										9							
6	S	C		P	BLOCK 6, FACE C										4							
6	S	D		P	BLOCK 6, FACE D										8							
7	L	A1		V	BLOCK 7, LOT A1 - AT&T LOT GATED	16																
7	L	A2	HC	V	BLOCK 7, LOT A2 - AT&T LOT - HC		1															
7	L	B1		V	BLOCK 7, LOT B1 - VFW ONLY	18																
7	L	B2	HC	V	BLOCK 7, LOT B2 - VFW ONLY-HC		1															
7	L	C		V	BLOCK 7, LOT C - AT&T LOT GATED	7																
7	S	A		P	BLOCK 7, FACE A										7							
7	S	C		P	BLOCK 7, FACE C										7							
7	S	D		P	BLOCK 7, FACE D										7							
8	L	A1		V	BLOCK 8, LOT A1 - SCHOOL CHURCH GATED				20													
8	L	A2	HC	V	BLOCK 8, LOT A2 - SCHOOL CHURCH GATED		1															
8	L	B		V	BLOCK 8, LOT B - SIGNED PVT GATED				6													
8	L	C		V	BLOCK 8, LOT C - SIGNED PVT GATED				20													
8	L	D1		V	BLOCK 8, LOT D1 - SIGNED PVT GATED				19													
8	L	D2	HC	V	BLOCK 8, LOT D2 - SIGNED PVT GATED		1															
8	S	A		P	BLOCK 8, FACE A										7							
8	S	D		P	BLOCK 8, FACE D										6							
9	L	A		V	BLOCK 9, LOT A - SIGNED CHURCH ONLY				10													
9	L	B1		V	BLOCK 9, LOT B1 - SIGNED CHURCH ONLY				33													
9	L	B2	HC	V	BLOCK 9, LOT B2 - SIGNED CHURCH ONLY		6															
9	S	A		P	BLOCK 9, FACE A										7							
9	S	B		V	BLOCK 9, FACE B - SIGNED FIRE DEPT					6												
9	S	C		V	BLOCK 9, FACE C - SIGNED FIRE DEPT					4												
9	S	D		P	BLOCK 9, FACE D										4							
10	L	A1		V	BLOCK 10, LOT A1 - APT BLD GATED				79													
10	L	A2	HC	V	BLOCK 10, LOT A2 - APT BLD GATED		6															
10	S	A		P	BLOCK 10, FACE A										6							
10	S	B		P	BLOCK 10, FACE B										6							
10	S	C		P	BLOCK 10, FACE C										5							
10	S	D		P	BLOCK 10, FACE D										4							
11	L	A		V	BLOCK 11, LOT A - APT BLD GATED				41													
11	S	B		P	BLOCK 11, FACE B - INDIVIDUAL METERS													5				
11	S	C		P	BLOCK 11, FACE C - INDIVIDUAL METERS														4			
11	S	D		P	BLOCK 11, FACE D										7							
12	L	A		V	BLOCK 12, LOT A				13													
12	L	B		V	BLOCK 12, LOT B				15													
12	L	C		V	BLOCK 12, LOT C				7													
12	L	D		V	BLOCK 12, LOT D DIRT LOT				62													
12	L	E		V	BLOCK 12, LOT E				10													
12	S	A		P	BLOCK 12, FACE A - INDIV METERS														7			
12	S	A1		P	BLOCK 12, UNMARKED SPACES (FREE?)											3						
12	S	D		P	BLOCK 12, FACE D - INDIV METERS														9			

						PRIVATE							PUBLIC									
Blk#	S / L / D	LOT/ FACE ID	SUB-TYPE	P / V/ O	Description	OFF-ST STAFF ONLY	(V) HC	PVT OFF-ST 30M	PVT OFF-ST (LOT)	PVT ON-ST RESERVED	PVT ON-ST 5M	PERMIT (LOT)	OFF-ST DECK	OFF-ST PAY TO PARK LOT	ON-ST PAY TO PARK 2HR	UNMARKED / FREE 2HR	30M	2HR METER	3HR METER	12HR LT METERS	(P) HC	LOAD ZONE
13	L	A		V	BLOCK 13, LOT A - POST OFFICE ONLY				35													
13	L	B		V	BLOCK 13, LOT B - ALLEY PRIVATE				5													
13	L	C		V	BENEATH BUILDING				49													
13	L	C1	HC	V	BENEATH BUILDING (HCP)		3															
13	S	B		P	BLOCK 13, FACE B										7							
13	S	C		P	BLOCK 13, FACE C																	
13	S	E1		P	BLOCK 13, FACE E1 - INTERIOR CENTER ST										13							
13	S	E2	HC	P	BLOCK 13, FACE E2 - INTERIOR CENTER -HC																2	
13	S	F1		P	BLOCK 13, FACE F1 - ALLEY										13							
13	S	F2	HC	P	BLOCK 13, FACE F2 - ALLEY - HC																2	
14	L	A1		V	BLOCK 14, LOT A1 - CITIZEN BANK ONLY				16													
14	L	A2	HC	V	BLOCK 14, LOT A2 - CITIZEN BANK ONLY		2															
14	L	B		V	BLOCK 14, LOT B - CITIZEN BANK EMP				10													
14	L	C1		V	BLOCK 14, LOT C1 - SIGNED PVT PERMIT							17										
14	L	C2	HC	V	BLOCK 14, LOT C2 - SIGNED PVT PERMT		1															
14	S	A		P	BLOCK 14, FACE A										7							
14	S	B		P	BLOCK 14, FACE B										5							
14	S	C		P	BLOCK 14, FACE C										6							
14	S	D		P	BLOCK 14, FACE D										5							
15	L	A		V	BLOCK 15, LOT A - SIGNED PVT				16													
15	S	A		P	BLOCK 15, FACE A										6							
15	S	B		P	BLOCK 15, FACE B										7							
15	S	D		P	BLOCK 15, FACE D										9							
16	S	B		P	BLOCK 16, FACE B										7							
16	S	A	LZ	P	BLOCK 16, FACE C																	5
16	S	D1		P	BLOCK 16, FACE D1 - E SIDE CENTER ST										3							
16	S	D2		P	BLOCK 16, FACE D2 - W SIDE CENTER ST										5							
16	S	D3	HC	P	BLOCK 16, FACE D3 - W SIDE CENTER -HC																1	
17	L	A1		P	BLOCK 17, LOT A1 - CITY LOT 3														48			
17	L	A2	HC	P	BLOCK 17, LOT A2 - CITY LOT 3 - HC																2	
17	S	A	LZ	P	BLOCK 17, FACE A - LOADING ZONE																	4
17	S	B		P	BLOCK 17, FACE B										6							
17	S	D		P	BLOCK 17, FACE D														4			
18	L	A1		P	BLOCK 18, LOT A1 - CITY LOT 7										148							
18	L	A2	HC	P	BLOCK 18, LOT A2 - CITY LOT 7																6	
18	S	A		P	BLOCK 18, FACE A (2 Meters)													2				
18	S	D		P	BLOCK 18, FACE D										9							
19	L	A1		V	BLOCK 19, LOT A1 - SIGNED PVT DDC				8													
19	L	A2	HC	V	BLOCK 19, LOT A2 - SIGNED PVT DDC		20															
19	L	B1		P	BLOCK 19, LOT B1 - CITY LOT 8										51							
19	L	B2	HC	P	BLOCK 19, LOT B2 - CITY LOT 8 - HC																2	
19	S	A1		P	BLOCK 19, FACE A1										30							
19	S	A2	HC	P	BLOCK 19, FACE A2																4	
19	S	B		P	BLOCK 19, FACE B										5							
19	S	D1		P	BLOCK 19, FACE D										22							
19	S	D2	HC	P	BLOCK 19, FACE D - HC																2	
20	L	A		P	BLOCK 20, LOT A - PART OF GARAGE									46								
20	S	B		P	BLOCK 20, FACE B										8							
20	S	D		P	BLOCK 20, FACE D										4							
20	D			P	BLOCK 20, CENTER ST DECK								966									
20	D		HC	P	BLOCK 20, CENTER ST DECK - HC																19	

						PRIVATE							PUBLIC									
Blk#	S / L / D	LOT/ FACE ID	SUB-TYPE	P / V/ O	Description	OFF-ST STAFF ONLY	(V) HC	PVT OFF-ST 30M	PVT OFF-ST (LOT)	PVT ON-ST RESERVED	PVT ON-ST 5M	PERMIT (LOT)	OFF-ST DECK	OFF-ST PAY TO PARK LOT	ON-ST PAY TO PARK 2HR	UNMARKED / FREE 2HR	30M	2HR METER	3HR METER	12HR LT METERS	(P) HC	LOAD ZONE
21	L	A		V	BLOCK 21, LOT A - SIGNED PVT				8													
21	L	B		V	BLOCK 21, LOT B - SIGNED PVT				4													
21	S	B1		P	BLOCK 21, FACE B1 - CENTER ST W SIDE										4							
21	S	B2		P	BLOCK 21, FACE B2 - CENTER ST E SIDE										11							
21	S	D1		P	BLOCK 21, FACE D1 - BACK ANGLE(5) 3 PARA										8							
21	S	D2	HC	P	BLOCK 21, FACE D2 - BACK ANGLE - HC																1	
22	L	B		V	BLOCK 22, LOT B - SIGNED PVT				3													
22	L	C		V	BLOCK 22, LOT C - SIGNED PVT				5													
22	L	A		V	BLOCK 22, LOT A - PVT				12													
22	L	D		V	BLOCK 22, LOT D - PVT																	
22	S	B		P	BLOCK 22, FACE B										6							
22	S	C		P	BLOCK 22, FACE C										7							
22	S	D1		P	BLOCK 22, FACE D1										10							
22	S	D2	HC	P	BLOCK 22, FACE D2																1	
23	L	A1		V	BLOCK 23, LOT A1 - SIGNED PVT				8													
23	L	A2	HC	V	BLOCK 23, LOT A2 - SIGNED PVT - HC		1															
23	L	B1		V	BLOCK 23, LOT B1 - SIGNED PVT				4													
23	L	B2	HC	V	BLOCK 23, LOT B2 - SIGNED PVT - HC		1															
23	L	C		V	BLOCK 23, LOT C - SIGNED PVT				30													
23	L	D		V	BLOCK 23, LOT D - SIGNED PVT - ALLEY				8													
23	L	E		V	BLOCK 23, LOT E - SIGNED PVT				16													
23	S	A		P	BLOCK 23, FACE A										5							
23	S	B		P	BLOCK 23, FACE B										9							
23	S	D1		P	BLOCK 23, FACE D1										4							
23	S	D2	HC	P	BLOCK 23, FACE D2 - HC																2	
24	L	A1		P	BLOCK 24, LOT A1 - CITY LOT 9 - LT															74		
24	L	A2	HC	P	BLOCK 24, LOT A2 - CITY LOT 9 - LT																2	
24	L	B1		P	BLOCK 24, LOT B1 - CITY LOT 9														73			
24	L	B2	HC	P	BLOCK 24, LOT B2 - CITY LOT 9 - HC																7	
24	L	C		V	BLOCK 24, LOT C - PVT				30													
24	L	D		V	BLOCK 24, LOT D - PVT				8													
24	S	C		P	BLOCK 24, FACE C										6							
24	S	D		P	BLOCK 24, FACE D										11							
25	L	A		V	BLOCK 25, LOT A - ALLEY LOT				15													
25	L	B		V	BLOCK 25, LOT B - ALLEY LOT 5TH ST				3													
25	L	C		V	BLOCK 25, LOT C - ALLEY LOT				9													
25	S	A		P	BLOCK 25, FACE A										6							
25	S	B1		P	BLOCK 25, FACE B1										20							
25	S	B2	HC	P	BLOCK 25, FACE B2 - HC																2	
25	S	C		P	BLOCK 25, FACE C										5							
25	S	D		P	BLOCK 25, FACE D										16							
26	L	A		V	BLOCK 26, LOT A				12													
26	L	B		V	BLOCK 26, LOT B				4													
26	S	A		P	BLOCK 26, FACE A										5							
26	S	B1		P	BLOCK 26, FACE B1										14							
26	S	B2	HC	P	BLOCK 26, FACE B2 - HC																1	
26	S	C		P	BLOCK 26, FACE C										6							
26	S	D		P	BLOCK 26, FACE D										7							

						PRIVATE							PUBLIC									
Blk#	S / L / D	LOT/ FACE ID	SUB-TYPE	P / V/ O	Description	OFF-ST STAFF ONLY	(V) HC	PVT OFF-ST 30M	PVT OFF-ST (LOT)	PVT ON-ST RESERVED	PVT ON-ST 5M	PERMIT (LOT)	OFF-ST DECK	OFF-ST PAY TO PARK LOT	ON-ST PAY TO PARK 2HR	UNMARKED / FREE 2HR	30M	2HR METER	3HR METER	12HR LT METERS	(P) HC	LOAD ZONE
27	L	A1		V	BLOCK 27, LOT A1 - SIGNED PVT				50													
27	L	A2	HC	V	BLOCK 27, LOT A2 - SIGNED PVT-HC		2															
27	L	B		V	BLOCK 27, LOT B - PVT				16													
27	L	C1		V	BLOCK 27, LOT C1 - PVT				15													
27	L	C2	HC	V	BLOCK 27, LOT C2 - HC		1															
27	L	D		V	BLOCK 27, LOT D - PVT				8													
27	L	E		V	BLOCK 27, LOT E - PVT				5													
27	L	F1		V	BLOCK 27, LOT F1 - PVT				14													
27	L	F2	HC	V	BLOCK 27, LOT FS - PVT - HC		1															
27	S	A		P	BLOCK 27, FACE A										7							
27	S	B1		P	BLOCK 27, FACE B1										13							
27	S	B2	HC	P	BLOCK 27, FACE B2 - HC																1	
27	S	D		P	BLOCK 27, FACE D										7							
28	L	A1		V	BLOCK 28, LOT A1				47													
28	L	A2	HC	V	BLOCK 28, LOT A2 - HC		2															
28	L	B1		V	BLOCK 28, LOT B1 - BANK LOT				6													
28	L	B2	HC	V	BLOCK 28, LOT B2 - BANK LOT - HC		1															
28	L	C		V	BLOCK 28, LOT C - PVT SIGNED				14													
28	L	D		V	BLOCK 28, LOT D - PVT SIGNED				12													
28	S	C		P	BLOCK 28, FACE C										4							
28	D			P	BLOCK 28, 4TH & LAFAYETTE DECK								503									
28	D		HC	P	BLOCK 28, 4TH & LAFAYETTE DECK - HC																14	
29	L	A		V	BLOCK 29, LOT A - PVT SIGNED				12													
29	L	B1		V	BLOCK 29, LOT B1 - PVT SIGNED				26													
29	L	B2	HC	V	BLOCK 29, LOT B2 - PVT - HC		1															
29	L	C		V	BLOCK 29, LOT C - PVT SIGNED				12													
29	S	A		P	BLOCK 29, FACE A										2							
29	S	B		P	BLOCK 29, FACE B										10							
29	S	C		P	BLOCK 29, FACE C										10							
29	S	E		P	BLOCK 29, FACE E - ALLEY										5							4
29	D			P	BLOCK 29, 6TH & LAFAYETTE DECK								441									
29	D		HC	P	BLOCK 29, 6TH & LAFAYETTE DECK - HC																10	
30	*L*	*A1*		*V*	*BLOCK 30, LOT A1 - PVT SIGNED*				*58*													
30	L	A2	HC	V	BLOCK 30, LOT A2 - PVT- HC		3															
30	L	B1		V	BLOCK 30, LOT B1 - PVT SIGNED				84													
30	L	B2	HC	V	BLOCK 30, LOT B2 - PVT - HC		2															
30	L	C1		V	BLOCK 30, LOT C1 - PVT - SIGNED				9													
30	L	C2	HC	V	BLOCK 30, LOT C2 - PVT - HC		4															
30	L	D		V	BLOCK 30, LOT D - PVT SIGNED				43													
30	S	A		P	BLOCK 30, FACE A										8							
30	S	C		P	BLOCK 30, FACE C													7				

						PRIVATE							PUBLIC									
Blk#	S / L / D	LOT/ FACE ID	SUB-TYPE	P / V/ O	Description	OFF-ST STAFF ONLY	(V) HC	PVT OFF-ST 30M	PVT OFF-ST (LOT)	PVT ON-ST RESERVED	PVT ON-ST 5M	PERMIT (LOT)	OFF-ST DECK	OFF-ST PAY TO PARK LOT	ON-ST PAY TO PARK 2HR	UNMARKED / FREE 2HR	30M	2HR METER	3HR METER	12HR LT METERS	(P) HC	LOAD ZONE
31	L	A		V	BLOCK 31, LOT A - PERMIT ASSIGNED							24										
31	L	B1		V	BLOCK 31, LOT B1 - PVT HANNAH BLDG				15													
31	L	B2	HC	V	BLOCK 31, LOT B2 - PVT HANNAH - HC		1															
31	L	C1		V	BLOCK 31, LOT C1 - PVT EAGLES				24													
31	L	C2	HC	V	BLOCK 31, LOT C2 - PVT EAGLES - HC		2															
31	L	D1		V	BLOCK 31, LOT D1 -ALLEY PVT				7													
31	L	D2	HC	V	BLOCK 31, LOT D2 - ALLEY - HC		1															
31	L	E		V	BLOCK 31, LOT E - PVT SIGNED				6													
31	L	F		V	BLOCK 31, LOT F - GRAVITY NETWORK				8													
31	L	G		V	BLOCK 31, LOT G - AUTO REPAIR				18													
31	L	H		V	BLOCK 31, LOT H - PVT SIGNED				6													
31	L	I		V	BLOCK 31, LOT I - PVT SIGNED				3													
31	L	J		V	BLOCK 31, LOT J - PVT SIGNED				6													
31	S	A		P	BLOCK 31, FACE A										13							
31	S	B		P	BLOCK 31, FACE B - FREE 2HR											6						
31	S	C		P	BLOCK 31, FACE C										14							
32	L	A1		V	BLOCK 32, LOT A1- CORNERSTONE				38													
32	L	A2	HC	V	BLOCK 32, LOT A2 - CORNERSTONE		2															
32	L	B		V	BLOCK 32, LOT B - CORNERSTONE -DIRT				15													
32	S	C		P	BLOCK 32, FACE C ONSTREET										6							
32	S	A		P	BLOCK 32, FACE A										10							
TOTAL						**67**	**75**	**7**	**1,390**	**10**	**4**	**64**	**2,471**	**328**	**885**	**9**	**0**	**14**	**248**	**74**	**130**	**13**

MOVED by Director Dunstan
SUPPORTED by Director London

Be it resolved, the Downtown Development Authority hereby accepts the Rich & Associates January 12, 2023, Downtown Parking Assessment and the recommendations contained within the document subject to the following adjustments:

Recommendation #1 – Handicap Spaces – not only should two handicap accessible spaces be added on W 2nd St. in front of post office but a complete review of potential locations for additional handicap spaces both on-street and in decks be considered, particularly in the core area.

Recommendation #2 – Reverse Angle Parking – should be eliminated and converted back to the standard “pull-in” angle parking configuration.

Recommendation #4 – Parking Time Limits – the two-hour limit should be increased to a maximum of three (3) hours for all on-street parking.

Recommendation #4b – Parking Time Limits – the grace period should be increased to 20 minutes.

Recommendation #6 – Enforcement – with the elimination of reverse angle parking this should not be an issue. However, should reverse angle parking not be eliminated no additional fine should be imposed.

Be it further resolved, one member of the DDA’s infrastructure committee should be included in all interface meetings with MPS.

MOTION APPROVED UNANIMOUSLY.

Royal Oak Questions and MPS responses (in bold)

Data base questions

1. For those receiving violations, what is the number of those using the on-street parking system who later come back receiving a second or multiple violations? Can MPS search the data base (we don't want to know who) of license plates or drivers that come back even after receiving a violation? We hear from individuals who say, "I am never coming back" after getting a ticket. Do certain people come back despite receiving a ticket? What is the total number? How does that number compare to those receive only one violation (on a percentage basis)?

We only retain license plate data for violations. As a result, it is difficult to determine the number of drivers who come back after receiving a violation. That said, it is clear that a high percentage do come back. Indeed, nearly a quarter of multi-violators received tickets in two or more different months.

Some relevant stats:

- 12% of gross parking sessions (over 5 minutes) resulted in a mailed violation.
- 86% of violators only have only 1 violation.
- 14% of violators (9,000+) have multiple violations.
- ~500 parkers with 5+ violations. **Half (51%) of these scofflaws/frequent abusers NEVER paid for parking, yet parked for nearly an hour on average (53 minutes)**.

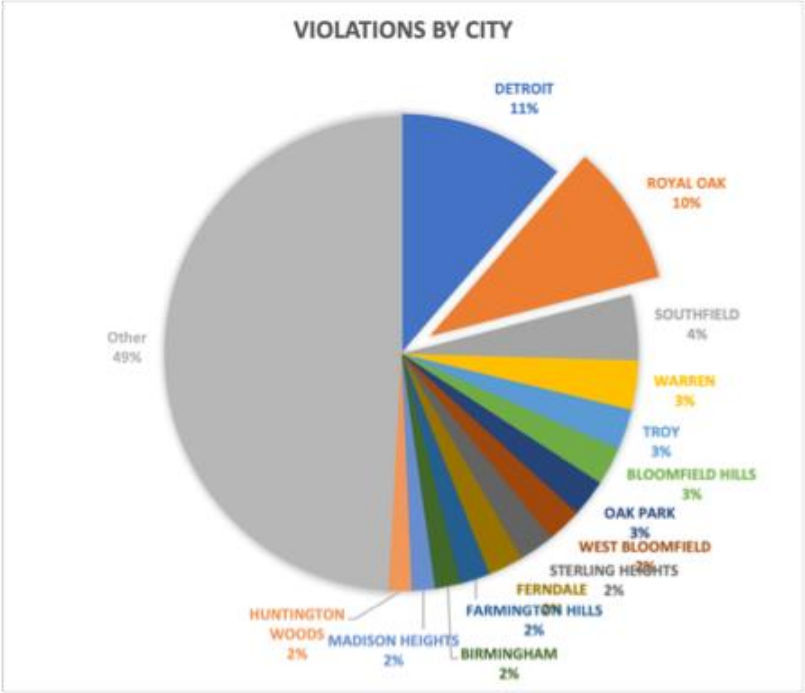
2. For multi-violators, how soon do those individuals come back to Royal Oak? Could they be receiving a second violation before they receive notice of the first violation in the mail?

As noted above, it's hard to determine the frequency of visits from multi-violator vehicles since we do not retain plate information for regular parking sessions (only violations).

For multi-violators, approximately 28% of them incurred a second parking violation within 7 days of the first violation date. It takes roughly a week for a violation to reach the registered owner, so 28% of multi-violators could have incurred a second separate violation before they received notice of the first. This does not excuse the behavior of these parkers and their decision to not pay for parking. Interestingly, 56% of multi-violators have never paid for their parking – and have stayed an average of 47 minutes.

3. Can we get the number of violators per zip code? It would be helpful to know what percentage of communities, areas and regions visitors are traveling from (and ignoring the pay station). Further, this would be helpful to channel communications and how educate visitors on how to use the meters.

92% of mailed violations were to Michigan residents. However, only 10% were Royal Oak residents.



4. Can we get a data analysis of empty parking spaces per block per hour. This would give us an indicator of capacity in certain areas of the core downtown (as defined by Rich & Associates in the Parking Study)

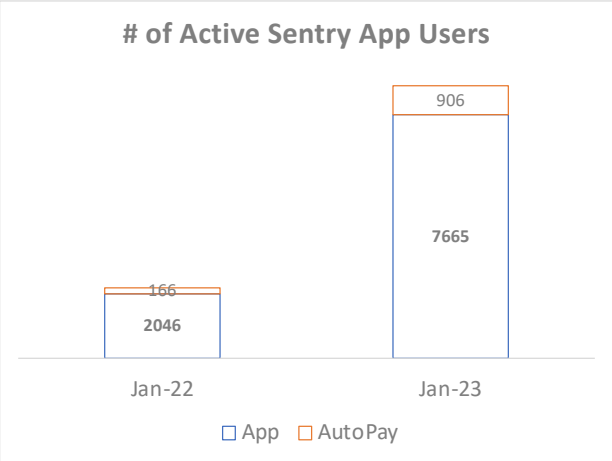
We need specific block information and the corresponding space numbers in order to answer this question.

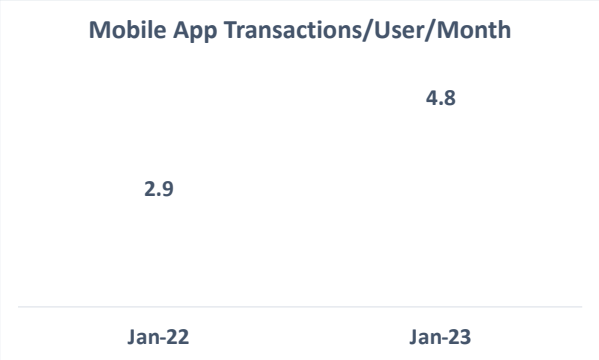
Below is the occupancy rate for the City's 660+ on-street parking spaces monitored by MPS's technology and a sample of the most highly utilized spaces.

		Aug	Sep	Oct	Nov	Dec	Jan
Total Systemwide Occupancy		**39%**	**43%**	**44%**	**42%**	**41%**	**31%**
Sample of Highest Utilized Spaces							
516	**108 W THIRD ST**	82%	84%	92%	89%	93%	89%
806	**302 S MAIN ST**	85%	76%	94%	95%	94%	85%
1815	**411 S MAIN ST**	91%	92%	93%	91%	94%	82%
3024	**508 S WASHINGTON AVE**	69%	72%	83%	89%	94%	81%
808	**302 S MAIN ST**	89%	88%	95%	95%	94%	81%
2921	**406 S WASHINGTON AVE**	81%	75%	94%	92%	93%	80%
1901	**416 S MAIN ST**	77%	49%	41%	80%	72%	80%
910	**107 W THIRD ST**	82%	91%	90%	85%	95%	79%
2917	**408 S WASHINGTON AVE**	64%	68%	79%	82%	81%	79%
1816	**411 S MAIN ST**	92%	96%	88%	89%	92%	79%
3102	**423 S WASHINGTON AVE**	51%	74%	75%	82%	81%	79%

5. How many people are using the Sentry Mobile App?

In Royal Oak, there are more than 10,000 individual registered Sentry Mobile App users as of today. The amount of mobile app activity in January of 2022 versus 2023 are shown below.





6. How many people pay for the wrong parking spot?

There is no way for us (or any parking operator) to precisely calculate this information. We cannot distinguish between a good versus erroneous payment when someone inadvertently pays for a space that is already occupied (we can't tell if it was the actual owner re-upping or the parker who paid for the wrong spot).

Re-engineering capacity

1. Pay stations, for on-street parking, have a plate recognition system upon detection. When the parker goes to the pay station, have AI confirm with the user, "Does this plate belong to you?" This would eliminate the confusion on the bollard number. The surface lots have a plate recognition system back to the pay station. Why can't the AI be incorporated on the on-street meters?

Our system is not designed for near real-time plate detection and propagation of this information for user interface interactions. Plate information is utilized during violation processing which generally is done 24-48 hours later and plate information may be determined from the time the vehicle enters a space all the way to the end of violation processing (some 48 hrs later). Image processing may occur anytime during this window of processing; hence it would be a massive design change and not something we plan on undertaking.

2. Can AI be programmed to store credit card information associated with a plate number? This would simplify and improve the customer experience on subsequent visits.

As a reminder, once a parker has downloaded the mobile app they can load their account with any amount of funds they desire and any parked time will be deducted from the account.

If this question is referring to the ability to have your credit card "automatically reload" the mobile app account when it reaches a minimum threshold, this feature is currently in our design pipeline and we anticipate that it will be available sometime this Summer. The parker will need to simply go into the app and select the auto reload check box.

BUSINESS FEEDBACK – DOWNTOWN ON-STREET PARKING
COMPILED BY DANIEL HILL, DOWNTOWN MANAGER
SUBMITTED FEBRUARY 21, 2023

OVERVIEW

At the request of the City Manager's Office and Mayor Fournier, a collection of input from business owners and general managers has been gathered in the shared interest of ensuring the on-street parking experience is beneficial for all stakeholders.

This report is not holistic to every business in Downtown Royal Oak, however, it does capture significant shares of those in operation in Downtown Royal Oak. Further, it can be noted that the most businesses engaged were on Washington Avenue, which is due to the prioritization of these businesses that are impacted by the current grace period and maximum time limit, as well as, the transition of on-street parking on S. Washington from forward-angled to rear-angled parking.

EXTENDING THE MAXIMUM TIME LIMIT

Overall, the downtown business community has expressed desire for transitioning the two-hour time limit to a three-hour time limit for on-street parking meters (one retailer suggested moving to 4 hours.) This sentiment was expressed due to the following reasons:

- Customers like to enjoy very targeted areas of Downtown without having to traverse across different areas where surface lots or garages are. This is especially true of the two major corridors: S. Main Street and S. Washington Ave. It becomes inconvenient for customers who have a brief meal at a restaurant and then discover retailers to move their vehicle just to expand their time in downtown, most visitors choose to leave rather than move to a garage or lot for more time. The current time limit is seen as rushing customers out of the district and causing a stressful interaction that leads them to lose interest in browsing at retailers while they wait for their reservations or after their meal, since there is no flexibility with the time limit.
- There must be consideration that older customers typically do not want to park in a parking garage due to a host of factors such as mobility concerns, icy conditions in Winter, excessive heat in summer, and historical perception of 'dark and dangerous' garages. Some business owners have stated that the current system is essentially barring older customers from visiting downtown due to this and potentially deficiencies with utilizing technology.
- There must be consideration for young families which have to unload and load multiple children, along with strollers. The garages are not seen as friendly for strollers due to the arrangement of parking and many elevators being out of order, and the maximum time limit keeps young families in downtown for a very limited time frame, negatively impacting restaurant and retailers. This sentiment both came from some business owners, as well as, members of the general public who attended a listening session back in September 2022.
- Businesses are having difficulty with contractors and vendors, including for regular operations and pop-up events. The maximum time limit heavily penalizes those that utilize regular contractors and offers contractors to choose between a $20 ticket for exceeding the time limit or following proper channels where they pay $25 to reserve a spot for a whole 24-hour period. This system does not take into account needs for maintenance or contractors, and business owners are expressing that they are finding it more difficult to have work done on their businesses as more vendors and contractors steer away from accepting work in downtown due to parking issues and unloading needs for equipment or supplies. Additionally, Jeff Bubeck the

owner of UHF Music and an additional yet-to-be-opened business on Second Street, expressed that when he attempted to prevent his contractors from getting tickets for working on his up and coming storefront in downtown, he was met with a physical form and confusion why he would have to pay more for a space rental than for just paying the parking tickets each day. Further, he expressed that he does not have a need to reserve a space at $25/day for 24-hours, he simply would like to be able to reserve a space so contractors can be there for 8 hours to work on the space since they cannot leave their truck with tools over in the garage while they work.

- Salons have expressed concerns relating to the maximum time limit due to the time it takes for a woman's cut and color treatment. Since the meters cannot be extended past time and customers must move their car or face violation, there are less customers coming back to Royal Oak for salon treatments.
    - 6 Salon has reported that they have experienced a significant decline in their clientele utilizing the Royal Oak location, rather their appointments at locations in Detroit and Birmingham have increased substantially. This poses a ripple effect on the neighboring retailers and restaurants as they no longer can capture the same foot traffic from salon visitors.
- Metals In Time, a retailer on S. Main, suggested focusing the maximum time limit using busy hours. In essence they suggested that the time limit be 2-hours during the daytime hours, and 3-hours after 5 PM when the downtown has more visitors coming from meals and shopping.
- Businesses have expressed acknowledgment that time limits are effective at preventing downtown employees from parking on-street and clogging spaces, and further expressed that moving the system to 3-hours would still prevent employees from using spaces since most shifts are at least 4 to 5 hours for most employees in the food and retail industries
- Businesses in the Southern portion of the District along Main Street (near Fifth, Sixth, and Seventh Streets) expressed that encouraging customers to use parking garages is not advantageous for them since the garages are focused more on the northern and western areas of the district.

Every business owner spoken to, regardless of industry (food, retail, salons, or services) expressed that a 3 hour time limit would be more attractive to their customer base since the current MPS meter system very strictly enforces the time limit. The owner of Le Don Collection on S. Washington expressed that a 4-hour limit would be beneficial for retailers that host pop-up events, including events like grand openings.

Data from Main Street Oakland County, utilizing the software Placer.Ai, has indicated that from January 1, 2018 through January 28, 2023 there were 39.5 million visits to Downtown Royal Oak with an average stay of 157 minutes.

In comparing the downtown districts often used for benchmarking for Downtown Royal Oak:

- Downtown Birmingham: 2-, 4-, and 12-hour limits depending on areas in Downtown
- Downtown Ferndale: 2-hour limit
- Downtown Rochester: 3-Hour limit

EXTENDING THE GRACE PERIOD

Overall, business owners have expressed desire for the grace period for on-street parking to extend to at least 15-minutes. The following are some of their rationales:

- Customers are expressing difficulty using the Pay Stations, especially those who are not residents of Royal Oak, and that often causes them to take more time that 5-minutes to understand how to pay for their parking. This is crucial for those trying to pre-pay, there are many anecdotes about customers trying to use the Pay Station without success, only to pull away frustrated without shopping the local businesses, and then still receiving a violation in the mail since they violated the 5-minute period.
- Retailers express that this will help with customers loading and unloading orders that they come and pick-up.
    - Many retailers have expressed that their in-person shopping has decreased and their online orders have increased significantly. While this issue seems beneficial to individual businesses, this could have a spillover effect and cause reduced foot traffic to adjacent businesses as many customers come to "grab and go."
- Bakeries, Cafes, and Restaurants have expressed difficulty for food orders done through delivery services like Door Dash, Grub Hub, or Uber Eats to be completed. Give Thanks Bakery highlighted that many of their customers experience their orders being cancelled or find difficulty in a driver selection since many of the drivers avoid Downtown Royal Oak because they have received violations for exceeding 5-minutes while simply trying to pick up a delivery order.
- The owners of Sidetrack Bookshop have expressed that expanding the grace period may create more confusion but also understands the concerns about 5 minutes not being enough.

WASHINGTON AVENUE

The Washington Avenue corridor businesses in particular are finding issue with the MPS system, predominantly due to the change of the on-street spaces to rear-angled parking. Major concerns for the rear-angle parking include:

- A magnified potential for accidents as many parkers in the area are not accustomed to rear-angle parking as opposed to options like parallel and forward-angle.
- Increased road rage incidents where there is outbursts from drivers yelling out their window or honking for extended periods due to back-ups occurring from parkers backing into spaces. The increase in honking and yelling directly impacts businesses since it can often be heard inside their storefronts and especially on sidewalk cafes at businesses, ultimately creating a less than pleasant atmosphere for pedestrians and shoppers in the area.
- Businesses are expressing that their older clientele are finding it especially difficult to back into spaces, which is causing them to frequent this area of downtown less. This policy "scaring off" older patrons and is seen as directly contradicting with Aging in Place plans that seek to ensure older customers can enjoy the downtown area as well.
- When faced with the alternative options, the owner of Paper Trail Books stated that it directly impacts the number of older clients that frequent his store and further the number of clients that not only buys books from them but also sells.

In conversation with Downtown Royal Oak's County Liaison with Main Street Oakland County, Annaka Norris, she indicated that there are definitely concerns with vehicle exhaust directly pointing at sidewalk cafes on Washington. Although other areas are impacted by street fumes via parallel parking, it is not the same extent as when the exhaust pipe is directly pointed at the cafes.

INFORMAL STRAW-POLL RESULTS FOR ALTERNATIVES

REMAIN REAR-ANGLE	FORWARD-ANGLE	PARALLEL	NO PREF.
The Accessories Shop (Focus on Max Time)	Rail & Anchor	Five15	Sidetrack – Need more data
Le Don (focus on Max time)	UHF Music	Pronto!	Le Crepe – Not directly impacted
	Rare Old Prints		
	La Roche Gifts		
	Blu Jean Blues		
	Lost & Found Vintage		
	Paper Trail Books (parallel would be ok)		
	Keller Williams		
	Prism Park Optical		

BUSINESS PATRONAGE

Many businesses spoken to have expressed that their total bottom line has been impacted by the new meter system in Downtown. Many of the businesses have expressed that their total business is down between 20-50% from prior years.

Additionally, the businesses expressed an uptick in foot traffic and sales on days that the meter system is taken out of the overall equation, specifically holidays where the meters are all offline. Veterans Day in 2022 saw many businesses have significant increases, The Fern on E. Fourth Street opened in August 2022 and expressed that they tripled their average day sales just on Veterans Day since the meters were offline. Rail and Anchor additionally expressed that many of their best days for sales are when the meters are offline for holidays or Sundays.

While they are not directly named in this report as such, there are multiple businesses that have suggested that they will seek to relocate outside of Downtown Royal Oak due to the current parking environment.

BUSINESSES WHO PROVIDED FEEDBACK		
6 Salon	Iron Horse	Pronto
Acorn Associates*	Keller Williams	Rail & Anchor
Ale Mary's Beer Hall	La Roche	Rare Old Prints
Atomic Coffee	Le Crepe	Rock on Third
Bar Louie	Le Don Collection	Sidetrack Bookshop
Blu Jean Blues	Lily's Seafood	The Accessories Shop
Chrome	Lost & Found Vintage	The Fern
D'Amato	Mesa	The Office Coffee Shop*
Fifth Avenue*	Metals In Time	The sidebar*
Five 15	Motor City Gas	Tom's Oyster Bar
Freshii	Noir Leather*	Toyology
Funky 7	O'Tooles	UHF Music
Give Thanks Bakery	Paper Trail Books	Write Impressions*
	Prism Park Optical	

*Business Owner / GM provided feedback through service on DDA Board

Attachment 6

Royal Oak COMMUNITY DEVELOPMENT

5-year Crash History Related to Parking
S. Washington Avenue - Lincoln to Fourth

	UD10	Date	Approx. Location	Hazardous Action	Details
Angled Parking in place	1592666	12/27/2018	North of Sixth St.	Improper Backing	Hit car driving on Washington while backing
	1786161	8/8/2019	South of Fourth St.	Improper Backing	Hit car driving on Washington while backing
	1996054	4/11/2020	South of Fourth St.	Improper Backing	Swiped adjacent car while backing
	2254540	4/1/2021	North of Seventh St.	Failed to yield (shoul	Hit car driving on Washington while backing
	2287354	5/23/2021	North of Lincoln	Improper Backing	Swiped adjacent car while backing
Back-in Angle Parking in place	2450234	11/21/2021	North of Lincoln	Improper Backing	Tried to reverse angle from left turn lane southbound at Lincoln
	2543557	3/11/2022	South of Sixth St.	Improper Backing	Parked face-in, hit car driving on Washington trying to reverse out
	2605152	5/2/2022	South of Fifth St.	Other	Backed into space and hit MPS meter
	2605164	6/1/2022	North of Lincoln	Improper Backing	Damaged adjacent car when backing into space
	2686728	9/17/2022	North of Lincoln	Failed to yield	Damaged adjacent car when pulling out from parking space

Transportation Improvement Association

Crash Detail for 1/1/2018 - 12/31/2022

Criteria: WHERE A.AGENCY_ID = 14 AND A.LATITUDE IS NOT NULL AND A.LONGITUDE IS NOT NULL AND geometry::STGeomFromText('Polygon((-83.146696 42.487144,-83.146428 42.487159,-83.146267 42.483425,-83.14661 42.483401,-83.146578 42.485443,-83.146588 42.48576

#1 **Location:** S WASHINGTON (0.745) 100 feet Nof W FIFTH ST **Crash ID:** 1287117

Date: 01/16/2018 **Day:** Tue **Hour:** 10a **Weather:** clear **Roadway:** dry **LIght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 1 **How:** other

CVT: Royal Oak **Area:** parking **HBD:** N **Drugs:** N **Complaint #:** 180001924

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	W	nodriver parked	veh in transpt	none	none	none	none	car	lftside
2	W	enter parking	veh parked	none	none	none	imprp turn	car	rtfront

UD10: 1287117

#2 **Location:** S WASHINGTON (0.676) 50 feet Nof W SIXTH ST **Crash ID:** 1310009

Date: 02/07/2018 **Day:** Wed **Hour:** 4pm **Weather:** clear **Roadway:** dry **LIght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 3 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 180004599

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	go straight	veh in transpt	none	none	none	failed to yield	pickup	ctrfront
2	S	stop on road	veh in transpt	none	none	none	none	car	ctrrear
3	S	stop on road	veh in transpt	none	none	none	none	car	ctrrear

UD10: 1310009

#3 **Location:** S WASHINGTON (0.732) 30 feet Nof W FIFTH ST **Crash ID:** 1345777

Date: 03/24/2018 **Day:** Sat **Hour:** 6pm **Weather:** clear **Roadway:** dry **LIght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 3 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 180010498

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	go straight	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	N	go straight	veh in transpt	none	none	none	none	car	lftrear

UD10: 1345777

#4 **Location:** S WASHINGTON (0.712) 75 feet Sof W FIFTH ST **Crash ID:** 1348341

Date: 03/28/2018 **Day:** Wed **Hour:** 6pm **Weather:** clear **Roadway:** dry **LIght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 180010975

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	slow/stop on rd	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	N	slow/stop on rd	veh in transpt	none	none	none	none	car	ctrrear

UD10: 1348341

#5 **Location:** S WASHINGTON (0.527) 50 feet NEof LINCOLN **Crash ID:** 1368023

Date: 04/21/2018 **Day:** Sat **Hour:** 9pm **Weather:** clear **Roadway:** dry **Llght:** dark/ltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 5 **How:** other

CVT: Royal Oak **Area:** inter driveway **HBD:** N **Drugs:** N **Complaint #:** 180001529

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	right turn	veh in transpt	none	none	none	failed to yield	car	rtfront
2	S	go straight	veh in transpt	none	none	none	none	car	lftfront

UD10: 1368023

#6 **Location:** S WASHINGTON (0.61) 5 feet Nof W SEVENTH ST **Crash ID:** 1386373

Date: 05/14/2018 **Day:** Mon **Hour:** 5pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** angle

CVT: Royal Oak **Area:** w/i intersection **HBD:** N **Drugs:** N **Complaint #:** 180016840

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	W	go straight	veh in transpt	none	none	none	failed to yield	car	rtfront
2	S	go straight	veh in transpt	none	none	none	none	car	lftfront

UD10: 1386373

#7 **Location:** S WASHINGTON (0.68) 70 feet Nof W 6TH ST **Crash ID:** 1401209

Date: 05/31/2018 **Day:** Thu **Hour:** 9pm **Weather:** clear **Roadway:** dry **Llght:** dark/ltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 180019114

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	go straight	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	N	slow/stop on rd	veh in transpt	none	none	none	none	car	ctrrear

UD10: 1401209

#8 **Location:** S WASHINGTON (0.663) 20 feet Sof W SIXTH ST **Crash ID:** 1494076

Date: 09/21/2018 **Day:** Fri **Hour:** 6pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 1 **Injy 0:** 2 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 180034475

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	slow/stop on rd	veh in transpt	none	none	none	unable to stop	truck/bus	rtfront
2	S	go straight	veh in transpt	none	none	none	none	car	lftrear

UD10: 1494076

#9 **Location:** S WASHINGTON (0.686) 100 feet Nof W SIXTH ST **Crash ID:** 1592666

Date: 12/27/2018 **Day:** Thu **Hour:** 1pm **Weather:** rain **Roadway:** wet **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** angle

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 180046880

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	W	backing	veh in transpt	none	none	none	imprp backing	car	ctrrear
2	N	go straight	veh in transpt	none	none	none	none	car	rtside

UD10: 1592666

#10 **Location:** NB S WASHINGTON (0.562) 231 feet Nof W LINCOLN **Crash ID:** 1620753

Date: 01/19/2019 **Day:** Sat **Hour:** 2pm **Weather:** snow **Roadway:** snow **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 5 **How:** ss-same

CVT: Royal Oak **Area:** driveway **HBD:** N **Drugs:** N **Complaint #:** 190012719

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	change lanes	loss of control	none	none	none	other	pickup	rtside
2	N	stop on road	veh in transpt	none	none	none	none	car	lftrear

UD10: 1620753

#11 **Location:** S WASHINGTON (0.663) 20 feet Sof W SIXTH ST **Crash ID:** 1623313

Date: 01/25/2019 **Day:** Fri **Hour:** 9am **Weather:** cloudy **Roadway:** wet **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** rr-end

CVT: Royal Oak **Area:** inter other **HBD:** N **Drugs:** N **Complaint #:** 190003331

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	start on rdwy	veh in transpt	none	none	none	unable to stop	truck/bus	ctrfront
2	N	stop on road	veh in transpt	none	none	none	none	car	ctrrear

UD10: 1623313

#12 **Location:** S WASHINGTON (0.663) 20 feet Sof W SIXTH ST **Crash ID:** 1642900

Date: 02/14/2019 **Day:** Thu **Hour:** 9am **Weather:** cloudy **Roadway:** wet **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 3 **How:** rr-end

CVT: Royal Oak **Area:** inter other **HBD:** N **Drugs:** N **Complaint #:** 190005984

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	start on rdwy	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	N	stop on road	veh in transpt	none	none	none	none	pickup	ctrrear

UD10: 1642900

#13 **Location:** W SIXTH (0.4) 5 feet Nof S WASHINGTON AVE **Crash ID:** 1656140

Date: 03/01/2019 **Day:** Fri **Hour:** 10a **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** angle

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 190007981

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	left turn	veh in transpt	none	none	none	failed to yield	car	rtrear
2	E	go straight	veh in transpt	none	none	none	none	car	ctrfront

UD10: 1656140

#14 **Location:** W FIFTH (0.002) 10 feet Nof S WASHINGTON AVE **Crash ID:** 1688947

Date: 04/12/2019 **Day:** Fri **Hour:** 5pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 190013716

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	go straight	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	N	go straight	veh in transpt	none	none	none	none	car	ctrrear

UD10: 1688947

#15 **Location:** S WASHINGTON (0.562) 250 feet Sof W SEVENTH ST **Crash ID:** 1725795

Date: 05/28/2019 **Day:** Tue **Hour:** 4pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** ss-same

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 190019927

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	go straight	veh in transpt	none	none	none	imprp lane use	car	lftfront
2	N	go straight	veh in transpt	none	none	none	none	car	rtside

UD10: 1725795

#16 **Location:** S WASHINGTON (0.776) 50 feet Sof E FOURTH ST **Crash ID:** 1774267

Date: 07/25/2019 **Day:** Thu **Hour:** 7pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 4 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 190028229

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	go straight	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	S	stop on road	veh in transpt	none	none	none	none	car	ctrrear
3	S	stop on road	veh in transpt	none	none	none	none	car	ctrrear

UD10: 1774267

#17 **Location:** S WASHINGTON (0.669) 10 feet Nof W SIXTH ST **Crash ID:** 1901442

Date: 07/27/2019 **Day:** Sat **Hour:** 4pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 190046531

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1		go straight	veh in transpt	none	none	none	failed to yield	uncoded	none
2	S	slow/stop on rd	veh in transpt	none	none	none	none	car	ctrrear

UD10: 1901442

#18 **Location:** WASHINGTON (0.776) 50 feet Sof FOURTH ST **Crash ID:** 1786161

Date: 08/08/2019 **Day:** Thu **Hour:** 3pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** back

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 190030244

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	E	backing	veh in transpt	none	none	none	imprp backing	car	lftrear
2	N	go straight	veh in transpt	none	none	none	none	car	rtrear

UD10: 1786161

#19 **Location:** S WASHINGTON (0.67) 15 feet Nof W SIXTH ST **Crash ID:** 1803611

Date: 08/28/2019 **Day:** Wed **Hour:** 1pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** ss-same

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 190033437

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	change lanes	veh in transpt	none	none	none	imprp lane use	car	rtside
2	S	go straight	veh in transpt	none	none	none	none	car	lftside

UD10: 1803611

#20 **Location:** S WASHINGTON (0.723) 15 feet Sof W FIFTH ST **Crash ID:** 1806835

Date: 09/05/2019 **Day:** Thu **Hour:** 3pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 3 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 190034627

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	go straight	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	S	slow/stop on rd	veh in transpt	none	none	none	none	car	lftrear

UD10: 1806835

#21 **Location:** S WASHINGTON (0.661) 32 feet Sof W SIXTH ST **Crash ID:** 1932963

Date: 01/07/2020 **Day:** Tue **Hour:** 7pm **Weather:** clear **Roadway:** dry **Llght:** dark/ltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** rr-end

CVT: Royal Oak **Area:** inter other **HBD:** N **Drugs:** N **Complaint #:** 200000908

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	slow/stop on rd	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	N	stop on road	veh in transpt	none	none	none	none	car	ctrrear

UD10: 1932963

#22 **Location:** S WASHINGTON (0.537) 100 feet Nof W LINCOLN AVE **Crash ID:** 1940579

Date: 01/11/2020 **Day:** Sat **Hour:** 10p **Weather:** unknown **Roadway:** unknown **Llght:** dark/ltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 0 **How:** unknown

CVT: Royal Oak **Area:** parking **HBD:** N **Drugs:** N **Complaint #:** 200002082

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1		none	veh in transpt	none	none	none	unknown	car	none
2	E	nodriver parked	veh in transpt	none	none	none	none	car	rtrear

UD10: 1940579

#23 **Location:** S WASHINGTON (0.666) 5 feet Sof W SIXTH ST **Crash ID:** 1978256

Date: 02/26/2020 **Day:** Wed **Hour:** 5pm **Weather:** snow **Roadway:** ice **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** rr-end

CVT: Royal Oak **Area:** inter other **HBD:** N **Drugs:** N **Complaint #:** 200007969

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	go straight	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	N	stop on road	veh in transpt	none	none	none	none	pickup	ctrrear

UD10: 1978256

#24 **Location:** S WASHINGTON (0.777) 42 feet Sof W FOURTH **Crash ID:** 1996054

Date: 04/11/2020 **Day:** Sat **Hour:** 4pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 1 **How:** back

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 200012524

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	SW	backing	veh parked	none	none	none	imprp backing	car	rtrear
2	NE	nodriver parked	veh in transpt	none	none	none	none	car	lftrear

UD10: 1996054

#25 **Location:** S WASHINGTON (0.618) 50 feet Nof W 7TH ST **Crash ID:** 2121455

Date: 10/13/2020 **Day:** Tue **Hour:** 7pm **Weather:** clear **Roadway:** dry **Llght:** dark/ltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** angle

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 200035745

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	passing	veh in transpt	none	none	none	imprp passing	car	lftside
2	W	right turn	veh in transpt	none	none	none	none	car	rtfront

UD10: 2121455

#26 **Location:** NB S WASHINGTON (0.724) 10 feet Sof W W 5TH ST **Crash ID:** 2142040

Date: 11/03/2020 **Day:** Tue **Hour:** 5pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 3 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 200038368

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	go straight	veh in transpt	none	none	none	unable to stop	pickup	ctrfront
2	N	slow/stop on rd	veh in transpt	none	none	none	none	car	ctrrear

UD10: 2142040

#27 **Location:** S WASHINGTON (0.728) 10 feet Nof W 5TH ST **Crash ID:** 2155431

Date: 11/20/2020 **Day:** Fri **Hour:** 1pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 3 **How:** other

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 200040472

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	left turn	veh in transpt	none	none	none	other	car	ctrfront
2	S	go straight	veh in transpt	none	none	none	none	car	lftside

UD10: 2155431

#28 **Location:** S WASHINGTON (0.667) 0 feet Xof W 6TH ST **Crash ID:** 2204055

Date: 01/12/2021 **Day:** Tue **Hour:** 6pm **Weather:** unknown **Roadway:** unknown **Llght:** unknown

Injy K: 0 **Injy A:** 1 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 0 **How:** other

CVT: Royal Oak **Area:** w/i intersection **HBD:** N **Drugs:** N **Complaint #:** 210001413

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1		unknown	pedestrian	none	none	none	unknown	car	none
2		crossing at inter	veh in transpt	none	none	none	none	uncoded	none

UD10: 2204055

#29 **Location:** S WASHINGTON (0.618) 48 feet Nof W 7TH ST **Crash ID:** 2254540

Date: 04/01/2021 **Day:** Thu **Hour:** 3pm **Weather:** clear **Roadway:** dry **LIght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** back

CVT: Royal Oak **Area:** w/i intersection **HBD:** N **Drugs:** N **Complaint #:** 210010781

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	backing	veh in transpt	none	none	none	failed to yield	car	ctrfront
2	S	go straight	veh in transpt	none	none	none	none	car	ctrfront

UD10: 2254540

#30 **Location:** S WASHINGTON (0.575) 180 feet Nof W LINCOLN AVE **Crash ID:** 2256059

Date: 04/09/2021 **Day:** Fri **Hour:** 11p **Weather:** clear **Roadway:** dry **LIght:** dark/ltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** angle

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 210010942

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	go straight	veh parked	none	none	none	other	car	rtfront
2	W	nodriver parked	veh parked	none	none	none	none	car	lftrear
3	W	nodriver parked	veh parked	none	none	none	none	car	lftrear

UD10: 2256059

#31 **Location:** S WASHINGTON (0.527) 48 feet Nof W LINCOLN AVE **Crash ID:** 2287354

Date: 05/23/2021 **Day:** Sun **Hour:** 7pm **Weather:** rain **Roadway:** wet **LIght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 4 **How:** back

CVT: Royal Oak **Area:** parking **HBD:** N **Drugs:** N **Complaint #:** 210015741

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	W	backing	veh in transpt	none	none	none	imprp backing	car	rtside
2	W	nodriver parked	veh in transpt	none	none	none	none	car	lftrear

UD10: 2287354

#32 **Location:** W 6TH (0.4) 5 feet Wof S WASHINGTON **Crash ID:** 2293040

Date: 05/30/2021 **Day:** Sun **Hour:** 1pm **Weather:** clear **Roadway:** dry **LIght:** dark/unltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** ss-same

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 210016494

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	E	enter rdwy	re-enter rdwy	none	none	none	carels driving	car	lftfront
2	E	go straight	veh in transpt	none	none	none	none	car	rtside

UD10: 2293040

#33 **Location:** S WASHINGTON (0.647) 106 feet Sof W 6TH ST **Crash ID:** 2303598

Date: 06/11/2021 **Day:** Fri **Hour:** 8pm **Weather:** unknown **Roadway:** unknown **Llght:** unknown

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 1 **How:** ss-same

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 210018062

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	NE	nodriver parked	veh in transpt	none	none	none	none	car	lftside
2	NE	unknown	veh in transpt	none	none	none	unknown	car	none

UD10: 2303598

#34 **Location:** S WASHINGTON (0.61) 5 feet Nof W 7TH ST **Crash ID:** 2309834

Date: 06/19/2021 **Day:** Sat **Hour:** 7pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 3 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 210018996

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	go straight	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	S	slow/stop on rd	veh in transpt	none	none	none	none	car	ctrrear

UD10: 2309834

#35 **Location:** S WASHINGTON (0.662) 26 feet Sof W 6TH ST **Crash ID:** 2336275

Date: 07/24/2021 **Day:** Sat **Hour:** 9pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 3 **How:** ss-same

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 210023465

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	stop on road	veh in transpt	none	none	none	imprp lane use	car	lftside
2	N	go straight	veh in transpt	none	none	none	unknown	car	rtside

UD10: 2336275

#36 **Location:** S WASHINGTON (0.724) 11 feet Sof W 5TH ST **Crash ID:** 2392889

Date: 09/30/2021 **Day:** Thu **Hour:** 8am **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 3 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 210031713

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	go straight	veh in transpt	none	none	none	unable to stop	car	rtfront
2	N	go straight	veh in transpt	none	none	none	none	car	lftrear

UD10: 2392889

#37 **Location:** S WASHINGTON (0.675) 40 feet Nof W 6TH ST **Crash ID:** 2445343

Date: 11/19/2021 **Day:** Fri **Hour:** 10a **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 210037107

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	go straight	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	S	stop on road	veh in transpt	none	none	none	none	pickup	ctrrear

UD10: 2445343

#38 **Location:** S WASHINGTON (0.527) 50 feet Nof W LINCOLN AVE **Crash ID:** 2450234

Date: 11/21/2021 **Day:** Sun **Hour:** 9pm **Weather:** clear **Roadway:** dry **Llght:** dark/unltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** back

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 210037428

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	backing	veh in transpt	none	none	none	imprp backing	car	rtside
2	S	leaving parking	veh in transpt	none	none	none	none	car	ctrfront

UD10: 2450234

#39 **Location:** W 6TH (0.402) 1 feet Eof S WASHINGTON **Crash ID:** 2533734

Date: 02/25/2022 **Day:** Fri **Hour:** 10a **Weather:** blowing snow **Roadway:** wet **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** angle

CVT: Royal Oak **Area:** w/i intersection **HBD:** N **Drugs:** N **Complaint #:** 220007127

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	go straight	veh in transpt	none	none	none	disrgd traffic cntrl	pickup	rtside
2	W	go straight	veh in transpt	none	none	none	none	car	ctrfront

UD10: 2533734

#40 **Location:** S WASHINGTON (0.658) 50 feet Sof W 6TH ST **Crash ID:** 2543557

Date: 03/11/2022 **Day:** Fri **Hour:** 8pm **Weather:** clear **Roadway:** dry **Llght:** dark/ltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 4 **How:** back

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 220008964

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	E	backing	veh in transpt	none	none	none	imprp backing	car	ctrrear
2	N	stop on road	veh in transpt	none	none	none	none	car	lftside

UD10: 2543557

#41 **Location:** W 6TH (0.401) 0 feet Xof S WASHINGTON **Crash ID:** 2566904

Date: 04/12/2022 **Day:** Tue **Hour:** 8am **Weather:** clear **Roadway:** dry **LIght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 1 **How:** rr-end

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 220013200

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	go straight	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	S	stop on road	veh in transpt	none	none	none	none	car	ctrrear

UD10: 2566904

#42 **Location:** S WASHINGTON (0.705) 110 feet Sof W 5TH ST **Crash ID:** 2605152

Date: 05/02/2022 **Day:** Mon **Hour:** 3pm **Weather:** clear **Roadway:** dry **LIght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 1 **How:** other

CVT: Royal Oak **Area:** parking **HBD:** N **Drugs:** N **Complaint #:** 220015498

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	E	backing	other fixed obj	none	none	none	other	car	rtrear

UD10: 2605152

#43 **Location:** S WASHINGTON (0.726) 0 feet Xof W 5TH ST **Crash ID:** 2586020

Date: 05/04/2022 **Day:** Wed **Hour:** 3pm **Weather:** clear **Roadway:** dry **LIght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** rr-end

CVT: Royal Oak **Area:** w/i intersection **HBD:** N **Drugs:** N **Complaint #:** 220015511

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	go straight	veh in transpt	none	none	none	unable to stop	car	ctrfront
2	S	stop on road	veh in transpt	none	none	none	none	car	ctrrear

UD10: 2586020

#44 **Location:** WASHINGTON (0.524) 30 feet Nof LINCOLN **Crash ID:** 2605164

Date: 06/01/2022 **Day:** Wed **Hour:** 5pm **Weather:** clear **Roadway:** dry **LIght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 1 **How:** back

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 220019156

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	backing	veh in transpt	none	none	none	imprp backing	car	lftrear
2	NW	nodriver parked	veh in transpt	none	none	none	none	car	lftside

UD10: 2605164

#45 **Location:** S WASHINGTON (0.629) 200 feet Sof W 6TH ST **Crash ID:** 2606901

Date: 06/03/2022 **Day:** Fri **Hour:** 11p **Weather:** clear **Roadway:** dry **Llght:** dark/ltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 0 **How:** unknown

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 220019472

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1		none	veh in transpt	none	none	none	unknown	uncoded	none
2	E	nodriver parked	veh in transpt	none	none	none	none	car	lftfront

UD10: 2606901

#46 **Location:** S WASHINGTON (0.676) 48 feet Nof W 6TH ST **Crash ID:** 2622588

Date: 06/20/2022 **Day:** Mon **Hour:** 6pm **Weather:** clear **Roadway:** dry **Llght:** day

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 0 **How:** angle

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 220022003

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1		unknown	veh in transpt	none	none	none	unknown	uncoded	none
2	E	nodriver parked	veh parked	none	none	none	none	car	rtrear

UD10: 2622588

#47 **Location:** S WASHINGTON (0.672) 26 feet Nof W 6TH ST **Crash ID:** 2679831

Date: 09/10/2022 **Day:** Sat **Hour:** 1am **Weather:** clear **Roadway:** dry **Llght:** dark/ltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 1 **Injy 0:** 0 **How:** other

CVT: Royal Oak **Area:** straight **HBD:** Y **Drugs:** N **Complaint #:** 220032532

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	N	go straight	veh parked	none	none	none	other	car	rtfront
2	SE	nodriver parked	veh in transpt	none	none	none	none	car	rtside
3	W	nodriver parked	veh parked	none	none	none	none	car	lftside
4	E	nodriver parked	veh parked	none	none	none	none	car	rtside

UD10: 2679831

#48 **Location:** S WASHINGTON (0.686) 100 feet Nof W 6TH ST **Crash ID:** 2685599

Date: 09/16/2022 **Day:** Fri **Hour:** 7pm **Weather:** clear **Roadway:** dry **Llght:** dark/ltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 3 **How:** angle

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 220033475

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	go straight	veh in transpt	none	none	none	unable to stop	car	rtfront
2	E	go straight	veh in transpt	none	none	none	none	car	lftfront

UD10: 2685599

#49 **Location:** S WASHINGTON (0.524) 32 feet Nof W LINCOLN AVE **Crash ID:** 2686728

Date: 09/17/2022 **Day:** Sat **Hour:** 7pm **Weather:** clear **Roadway:** dry **LIght:** dark/ltd

Injy K: 0 **Injy A:** 0 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 2 **How:** ss-same

CVT: Royal Oak **Area:** straight **HBD:** N **Drugs:** N **Complaint #:** 220033639

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	leaving parking	veh in transpt	none	none	none	failed to yield	car	lftfront
2	S	go straight	veh in transpt	none	none	none	none	car	rtside

UD10: 2686728

#50 **Location:** S WASHINGTON (0.556) 200 feet Nof LINCOLN AVE **Crash ID:** 2693243

Date: 09/25/2022 **Day:** Sun **Hour:** 2am **Weather:** rain **Roadway:** wet **LIght:** dark/ltd

Injy K: 0 **Injy A:** 1 **Injy B:** 0 **Injy C:** 0 **Injy 0:** 0 **How:** single

CVT: Royal Oak **Area:** straight **HBD:** Y **Drugs:** N **Complaint #:** 220034667

Unit#	Veh Dir	Action Prior	Event 1	Event 2	Event 3	Event 4	Haz Action	Veh Type	Damage
1	S	go straight	pedestrian	none	none	none	reckls driving	car	lftfront
2		stand/lying in rdwy	veh in transpt	none	none	none	none	uncoded	none

UD10: 2693243

Crash Type

Count	Type
0	uncoded
1	single
0	head-on
0	head-on/lt
8	angle
19	rr-end
0	rr-end/lt
0	rr-end/rt
7	ss-same
0	ss-opp
7	back
6	other
2	unknown
Totals	50

Lighting Conditions

Count	Type
0	uncoded
34	day
0	dawn
0	dusk
12	dark/ltd
2	dark/unltd
0	other
2	unknown
Totals	50

Weather Conditions

Count	Type
0	uncoded
39	clear
2	cloudy
0	fog
3	rain
2	snow
0	wind
0	sleet/hail
1	blowing snow
0	blowing sand
0	smoke
3	unknown
Totals	50

Road Condition

Count	Type
0	uncoded
39	dry
6	wet
1	ice
1	snow
0	mud
0	slush
0	debris
0	water
0	sand
0	oily
0	other
3	unknown
Totals	50

Crashes by Month

Count	Type
6	January
4	February
4	March
6	April
7	May
5	June
3	July
2	August
7	September
1	October
4	November
1	December
Totals	50

Hazardous Action

Count	Type
53	none
0	speeding
0	spd too slow
7	failed to yield
1	disrgd traffic cntrl
0	wrong way
0	left of center
1	imprp passing
3	imprp lane use
1	imprp turn
0	imprp/no signal
7	imprp backing
18	unable to stop
5	other
6	unknown
1	reckls driving
1	carels driving
Totals	104

Unit Type

Count	Type
0	Bicyclist
0	Engineer
102	Vehicle
2	Pedestrian
Totals	104

Crashes by Year

Count	Type
9	2018
11	2019
7	2020
11	2021
12	2022
Totals	50

Crash Severity

	Fatal	A	B	C	No Injy	Total
Persons	0	2	0	2	0	4
Crashes	0	2	0	2	46	50

Alcohol in Crashes

	Fatal	A	B	C	PDO	Total
Drinking	0	1	0	1	0	2
Not Drinking	0	1	0	1	46	48
Totals	0	2	0	2	46	50

Crashes per Hour by Day

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Total
12a-1a	0	0	0	0	0	0	0	0
1a-2a	0	0	0	0	0	0	1	1
2a-3a	1	0	0	0	0	0	0	1
3a-4a	0	0	0	0	0	0	0	0
4a-5a	0	0	0	0	0	0	0	0
5a-6a	0	0	0	0	0	0	0	0
6a-7a	0	0	0	0	0	0	0	0
7a-8a	0	0	0	0	0	0	0	0
8a-9a	0	0	1	0	1	0	0	2
9a-10a	0	0	0	0	1	1	0	2
10a-11a	0	0	1	0	0	3	0	4
11a-12p	0	0	0	0	0	0	0	0
12p-1p	0	0	0	0	0	0	0	0
1p-2p	1	0	0	1	1	1	0	4
2p-3p	0	0	0	0	0	0	1	1
3p-4p	0	1	0	1	3	0	0	5
4p-5p	0	0	1	1	0	0	2	4
5p-6p	0	1	1	2	0	1	0	5
6p-7p	0	1	1	1	0	1	1	5
7p-8p	1	0	2	0	1	1	2	7
8p-9p	0	0	0	0	0	2	0	2
9p-10p	1	0	0	0	1	0	2	4
10p-11p	0	0	0	0	0	0	1	1
11p-12a	0	0	0	0	0	2	0	2
Totals	4	3	7	6	8	12	10	50

Attachment 7

	CONCERN RAISED:	FINDING OF ROPD | MPS:
Parking Customer #1	Customer reported they believed they had fully paid for two-hours, however, received a violation.	Possible cause is customer paid for space number in front of their car.
Parking Customer #2	App had an error which would not allow the customer to pay.	System, in the case the app, worked as designed. The customer had exceeded the maximum parking time allowed at in this area - adjacent to the post office parking spaces have a 30-minute maximum.
Parking Customer #3	Customer possess a "yellow" ADA hanging placard from the secretary of state which permits free parking in all ADA (handicapped) parking spaces.	System worked as designed. The placard was a hang tag and the cameras can only detect if customers have the ADA yellow tag (sticker) on their license plate. Customer would like to address ADA parking issues with city officials.
Parking Customer #4	Customer was dissatisfied with a two-hour maximum parking time allowance because restaurant service is now slower and therefore takes longer time when going out for a meal.	System worked as designed, issuing a violation after the customer exceeded the two-hour maximum parking time allowed.
Parking Customer #5	Customer did not leave the car and was therefore legally "standing". Confusion was also caused as the customer was using a company-owned vehicle and therefore the violation went to their place of business.	System worked as designed. Standing is not permitted and the parking space was being utilized even if the individual did not leave their vehicle. Also the violation is issued to the vehicle license plate registered owner and not to individual committing the violation.
Parking Customer #6	Customer operates as a Lyft driver and was issued a violation for "standing" while waiting for their fare to come to the vehicle.	System worked as designed. Driver would like to address Lyft/Grub Hub issues.
Parking Customer #7	Customer reported paying in full for parking used and still receiving a violation. Customer used coins to pay for the parking fees.	Possible cause is the meter did not read the payment properly since it was made with coins.
Parking Customer #8	Customer states they paid for the parking in full. Further, customer did not received the parking violation and did not know about the violation until they received a lates notice. Customer is also dissatisfied with the back-in parking method.	System worked as designed, customer had paid for only two-hours of parking and exceeded this by 20-minutes.
Parking Customer #9	Customer received violation, reported in an apologetic one feeling they may have done something in error or confusion to cause the violation.	System failed. Customer had successfully paid after the initial five-minute grace had expired and the violation was automatically generated. The system was supposed to then void the violation since the parking was paid in full following the automatic issuance.

	CONCERN RAISED:	FINDING OF ROPD | MPS:
Parking Customer #10	Customer states they paid for the parking and was actually overcharged. Customer further asserts they have had past experiences with the parking system that were frustrating and also resulted in receiving violations.	ROPD is awaiting license plate information from this customer to complete research into this and possibly the other past parking concerns.
Parking Customer #11	Customer was angry believing the photographic images from the system showed them exiting parking space when meter expired.	System worked as designed as customer had exited the parking space 10-minutes after the time expired on the meter.
Parking Customer #12	Customer believed they had paid for full two-hours and had a receipt for the parking fees, but the customer received a violation. The customer also stated they found the system very confusing.	System worked as designed. Customer had actually had two parking sessions in the same day and had not paid for the second session. The violation was issued for the second unpaid parking session.
Parking Customer #13	Customer believed they had paid in full for their parking, however, they subsequently received a violation.	System worked as designed. Customer paid for the wrong parking space.
Parking Customer #14	Customer was a first time visitor RO. The first parking space customer attempted to use was in violation (red light on meter). Customer moved their vehicle to difference space and attempted to pay at two pay stations, both resulted in the parking space being flagged as in violation. Customer finally moved two parking spaces away and was able to pay without difficulty.	ROPD research is unable to determine an exact cause. The customer may have had the wrong parking space information when initially trying to pay. Or, there could have been a system fail with the camera not being able to detect the imaging of the license plate.
Parking Customer #16	Customer admits not paying for the parking they used. Stated they were just running into a store. Customer was then upset by the violation fee of $20.00 which was assessed. Customer felt the fee was too expensive.	System worked as designed. The parking space was used an unpaid for 14.5-minutes.
Parking Customer #16	Customer admits they did not pay for parking space because they were assisting their child whose vehicle had a flat tire and was parked in an adjacent parking space. Customer further states a positive history regarding their Royal Oak parking experiences.	System worked as designed as the parking space had not been paid for properly, however, if parking enforcement were performed by humans able to make these judgments, this could have prevented a violation being issued under these circumstances.
Parking Customer #17	Customer had an unsatisfactory experience with the parking system causing them to eventually leave the city without fulfilling their original intent of their visit. Customer attempted to pay for parking using coins, credit card, and the app. ROPD was called and a parking enforcement officer responded. Because so much time had elapsed, the customer ran out of time to have lunch and left.	ROPD was unable to determine the cause of the payment method failures. No violation was issued to the customer.

	CONCERN RAISED:	FINDING OF ROPD | MPS:
Parking Customer #18	Customer reported they were not able to use their credit card for payment at meters adjacent to the post office. Customer did use Text-My-Gov to report to report the incident and further stated "meters are troublesome on a good day".	ROPD research showed that meter worked properly all day, including accepting credit card payments. They were unable to make an exact determination as to what had caused the error for this particular customer.
Parking Customer #19	Customer had trouble figuring out how to pay for their initial parking space and gave up after a six-minute time period. They found parking in a different parking space and were able to pay successfully. However, customer did receive a parking violation for the overage since the six-minutes violation the grace period.	System worked as designed. Customer did fail to pay for the original space after exceeding the grace period.
Parking Customer #20	Customer parked and paid and then repositioned vehicle causing the meter to reset. The customer has not received a violation but is concerned because the violations are mailed it could be delivered past the due date. This has happened previously to the customer.	System worked as designed. Repositioning a vehicle after payment will void the parking session as the system detects this as the vehicle leaving. ROPD determined there was no violation issued.
Parking Customer #21	An out of state customer's feedback included the meters were confusing and lacking information. Customer paid with credit card, but no confirmation was received and therefore thinks may have paid twice, or paid for wrong spot. Customer is monitoring their credit card statements and will update ROPD if there is a double charge.	System was found to be working properly all day processing credit cards.
Parking Customer #22	Customer reported having issues paying with money in past. On their most recent experience the meter showed the space as expired. Local business the customer visited categorized the meters as "problematic".	System was probably working as designed. Failure to first enter the space number first will cause the meters to reject coin payments. A meter indicating a violation on arrival indicates the customer probably used an incorrect space number. Violations do not occur upon arrival.
Parking Customer #23	Customer reported they had paid for parking in full but received a violation for "no payment". Further the customer commented the minimum payment establish an account on the app is too high, customer is not in RO often enough. Stated other municipalities have less complicated app which allow customers to enter a zones. This customer expressed belief the parking is a deterrent to come to RO.	System worked as designed as research showed this customer entered the wrong parking space number. The customer was appreciative of the follow-up and accepted instruction for future use.
Parking Customer #24	Customer is a frequent traveler and uses apps in various geographic locations. However, found the MPS app to be less intuitive than others and therefore did not complete the app download. Customer moved to a parking structure, but did receive a violation for the time parked while trying to download and figure out the app.	System worked as designed. It is not uncommon for people to stay in a spot longer than the five-minute grace period while they assess the meters or app. Also, this customer reported the two-hours free in the structure was a factor in their decision.

	CONCERN RAISED:	FINDING OF ROPD | MPS:
Parking Customer #25	Customer paid for parking and had receipts and pictures. Customer did not express positive experience using the meters and had to move their vehicle when their evening continued longer than two-hours.	System worked as designed, customer used the wrong parking space number.
Parking Customer #26	Customer paid and then repositioned their vehicle in the parking space.	System worked as expected. Warnings are on the pay station tell drivers that moving a vehicle after payment will result in a voided payment. The system detects the movement and interprets it as the vehicle leaving the parking space and the session ending.
Parking Customer #27	Customer is a Grub Hub driver and reported receiving a violation they were unhappy about.	System is working as designed and research into this concern indicated the customer has received three violations. All were short sessions (5 min, 6 min, 14 min) and the customer acknowledged they have not been paying and did not think they had to for short periods. Customer has agreed it would be better to download and utilize the app in the future.
Parking Customer #28	Customer requested assistance from ROPD explaining they were rushed the day of the incident but did see from the pictures in sent with the violation they had paid for the wrong parking space.	System worked as designed. Customer was friendly and already knew he made an honest mistake.
Parking Customer #29	Customer was from out of state. Passenger left vehicle to pick up a curbside order from vendor, customer remained in the vehicle and reported the meter was green therefore customer believed there was time on the meter from a previous customer.	System worked as designed. By ordinance "standing" requires payment. It was also determined the customer was looking at the wrong meter, it was the adjacent space with time remaining. Customer was appreciative of follow-up and better understands the system after conversation.
Parking Customer #30	Customer received violation and was surprised as they had paid for parking in full and although their visit to the post office was longer than expected, it was still under the 30 minute maximum stay.	System worked as designed. Customer paid for the wrong parking space.
Parking Customer #31	Customer was dissatisfied receiving a violation for being one minute over the "three hour" limit.	System worked as designed. Customer was parked in a two-hour street side parking space.
Parking Customer #32	Customer was unable to get streetside credit card reader to work. Moved their vehicle to other side of street and paid without difficulty. However, received a violation as in the first parking space beyond the five-minute grace period.	Research was unable to determine an exact cause. It impossible credit card reader malfunctioned when the customer attempted to pay for the first parking space. .
Parking Customer #33	Customer was issued a violation for "standing" and was unhappy as stated only in the parking space six-minutes. Customer was also unhappy they never received the original violation in the mail and became aware of the violation when receiving the late notice from the court.	System worked as designed. Records show that the violation was mailed to customer's address of record the day after the parking session, this same address was used from the late notice customer received.

	CONCERN RAISED:	FINDING OF ROPD | MPS:
Parking Customer #34	Customer was dissatisfied they paid for the parking space, has proof, and still received a violation.	System worked as designed. Research indicates the customer paid for the wrong parking space.
Parking Customer #35	Customer related complete frustration with the pay stations. States they have attempted to use both coin and credit card with no success and has even left coin on top of the meters in attempts to pay. Also, expressed difficulty in communicating with court employees over the phone, and states they have had to go in-person to have conversation in attempts to receive answers.	System is working as designed, after conversation with customer instructed them they need to put the parking space number in the pay station before entering payment.
Parking Customer #36	Customer was unsuccessful in attempting to pay and stated the meter was green and would not accept their credit card. Customer attempted to pay at a different pay station with same result and then gave up as they were late and in the rain.	No exact determination was made as to the cause. The meter did take credit card payments on that date.
Parking Customer #37	Customer received a violation although they reported paying in full for parking space.	System worked as designed, customer used the wrong parking space number when paying.
Parking Customer #38	Customer paid using coin and the meter was not registering the coins as they were deposited into the meter.	Unable to determine an exact cause, however, it is probable the coins were hamming in the meter.
Parking Customer #39	Customer found the system to be too complicated.	In follow-up conversation, customer received instructions on how the meters function.
Parking Customer #40	Customer was unable to confirm if they were using the correct parking space number. Downloaded the app, but it was no help in clarifying. Customer guessed at the parking space number in order to pay and received a violation as it was not the correct number. Customer left RO in frustration and never went to their original retail destination.	System worked as designed, customer used the wrong parking space number.
Parking Customer #41	Customer was unhappy they had received a violation after paying for their parking.	System worked as designed. Customer was unaware they meter they had parked at had a two-hour maximum and customer was at their appointment 2.5 hours.

Attachment 8

Date	>=	01/01/2022
Date	<=	12/31/2022
Type	in	single usage

Duration Of Stay	Visitors
single usage	
< 15 Minutes	68279
< 30 Minutes	71575
< 1 Hour	143744
< 2 Hours	219957
< 3 Hours	122049
< 4 Hours	75434
< 5 Hours	49699
< 6 Hours	37134
< 7 Hours	25883
< 8 Hours	23828
< 9 Hours	24446
< 10 Hours	11158
< 11 Hours	5748
< 12 Hours	3039
< 13 Hours	1800
< 14 Hours	1144
< 15 Hours	930
< 16 Hours	606
< 17 Hours	482
< 18 Hours	360
< 19 Hours	302
< 20 Hours	250
< 21 Hours	209
< 22 Hours	185
< 23 Hours	160
< 1 Day	307
< 2 Days	793
< 3 Days	281
< 4 Days	149
< 1 Week	114
< 2 Weeks	49
> 2 Weeks	22
∑ single usage	890116

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OAKLAND COUNTY MICHIGAN
ECONOMIC DEVELOPMENT & COMMUNITY AFFAIRS

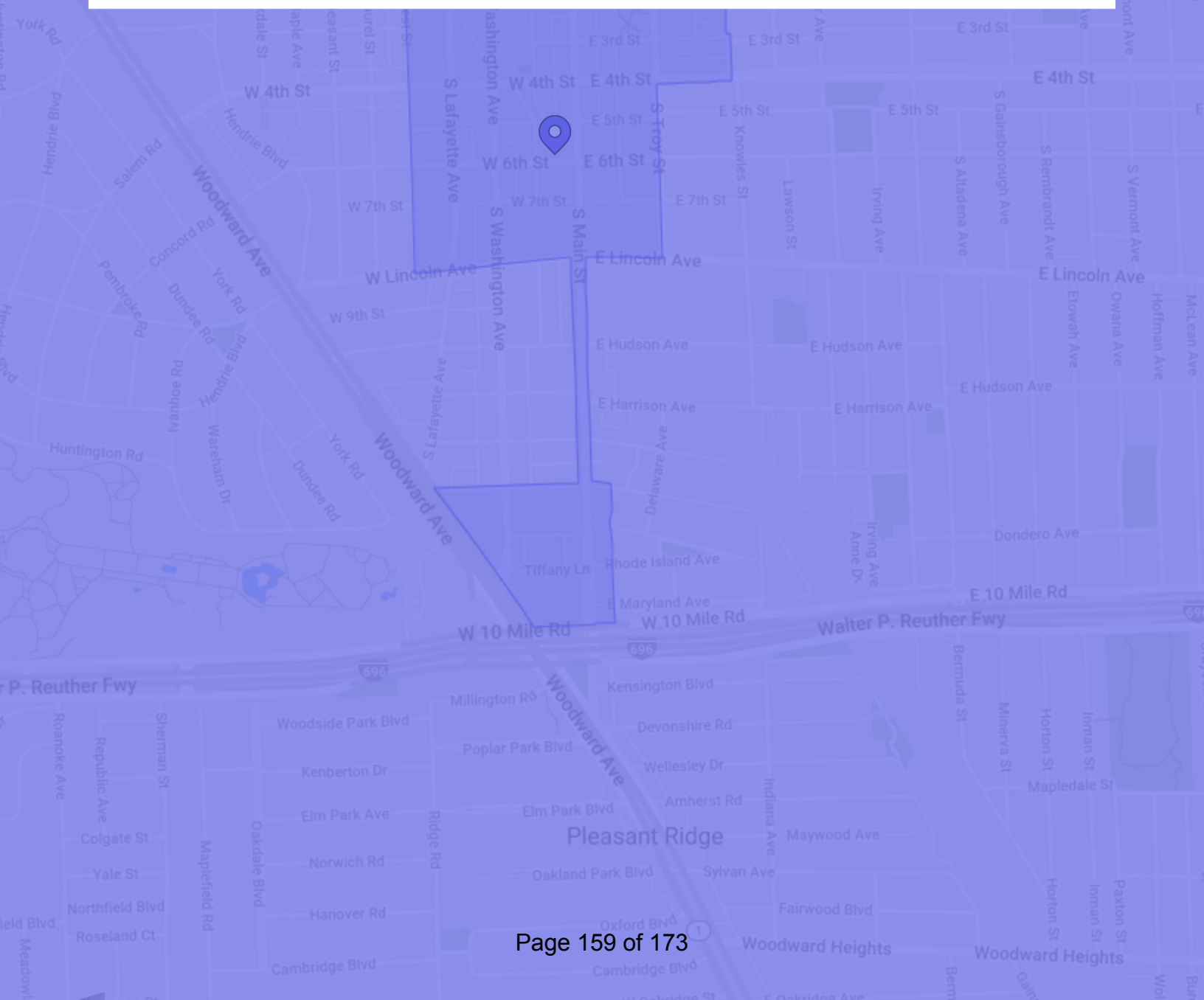
Property Overview

Jan 1, 2018 - Jan 28, 2023

Property:

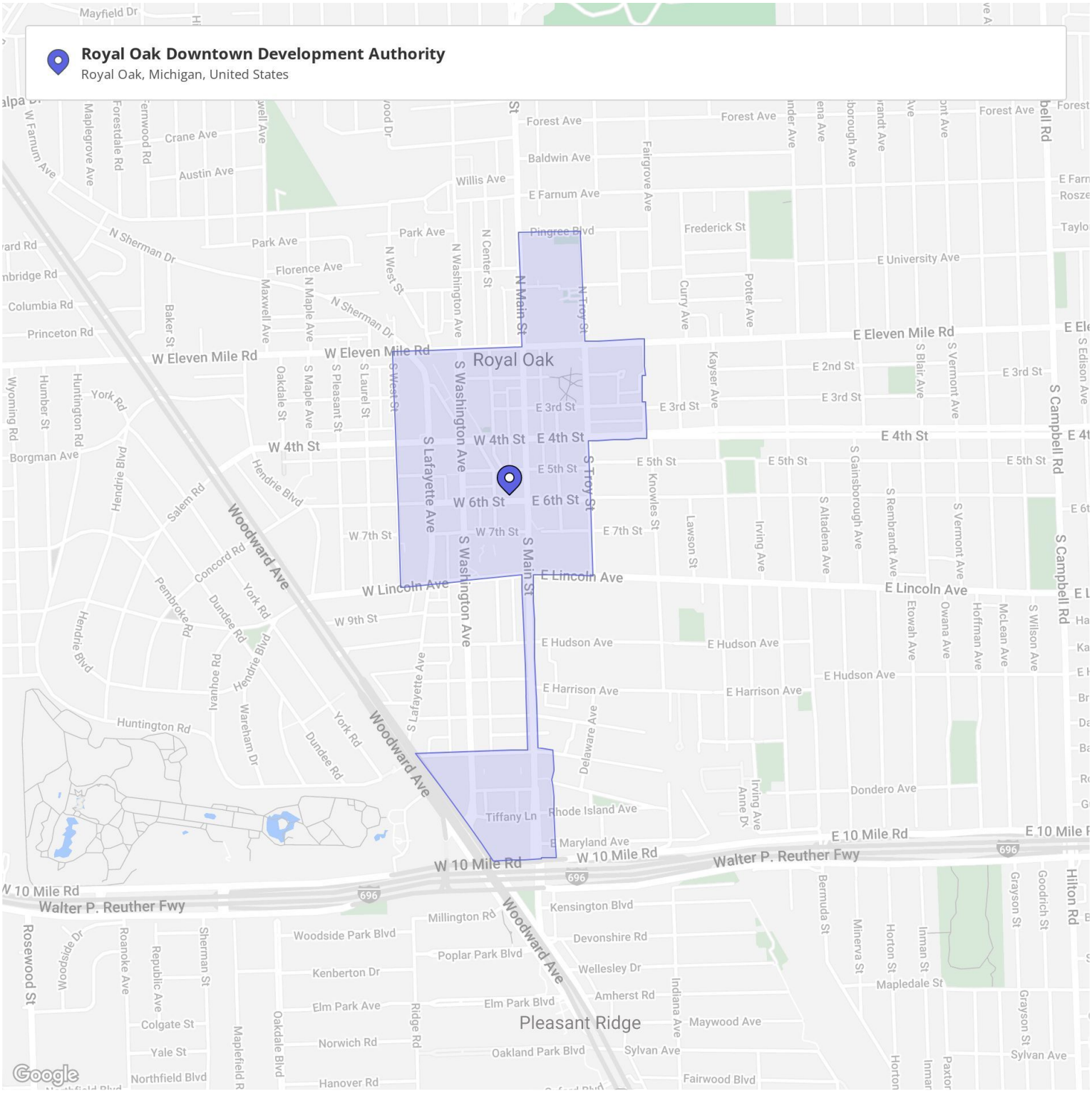
RO

Royal Oak Downtown Development Authority
Royal Oak, Michigan, United States



Property Overview

Jan 1, 2018 - Jan 28, 2023



Property Overview

Jan 1, 2018 - Jan 28, 2023

Metrics

Royal Oak Downtown Dev...
, Royal Oak, MI

Visits	39.5M	Avg. Dwell Time	157 min
Visits / sq ft	N/A	Panel Visits	729.9K
Size - sq ft	N/A	Visits YoY	-3.5%
Visitors	2.1M	Visits Yo2Y	N/A
Visit Frequency	18.78	Visits Yo3Y	N/A

Jan 1st, 2018 - Jan 28th, 2023
Data provided by Placer Labs Inc. (www.placer.ai)

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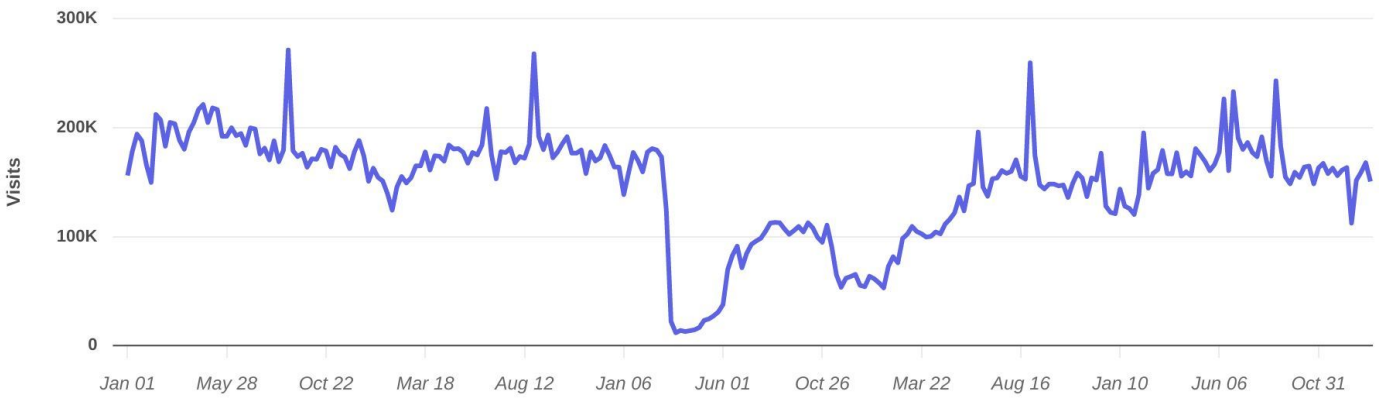
Visits Trend

Royal Oak Downtown D...
Royal Oak, MI



Weekly | Visits | Jan 1st, 2018 - Jan 28th, 2023
Data provided by Placer Labs Inc. (www.placer.ai)

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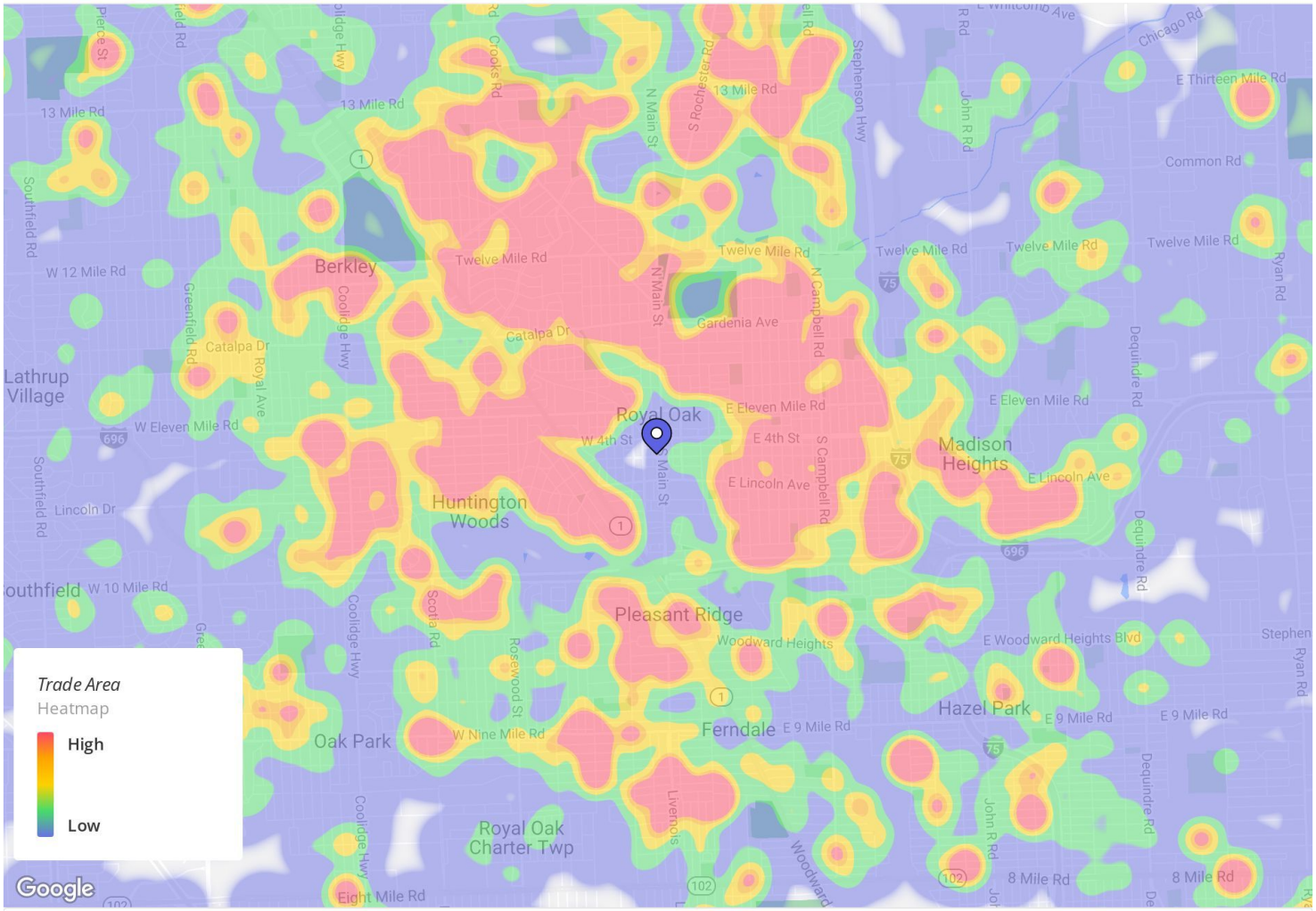
Property Overview

Jan 1, 2018 - Jan 28, 2023

Market Landscape



The locations shown are obfuscated for privacy and randomly placed within a census block. They do not represent actual home addresses.

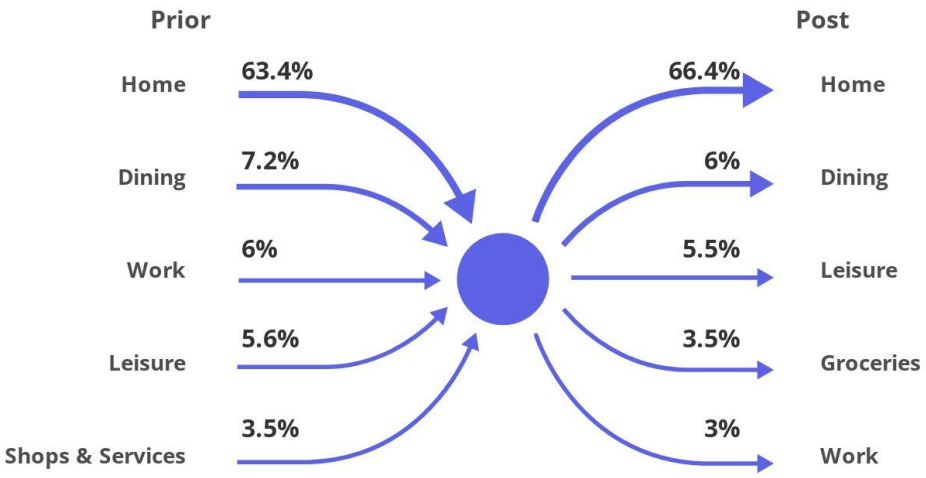
Royal Oak Downtown Development Authority | Jan 1st, 2018 - Jan 28th, 2023
Data provided by Placer Labs Inc. (www.placer.ai)

Property Overview

Jan 1, 2018 - Jan 28, 2023

Visitor Journey

Royal Oak Downtown Development Authority
, Royal Oak, MI



Show by: Category Group | Jan 1st, 2018 - Jan 28th, 2023
Data provided by Placer Labs Inc. (www.placer.ai)

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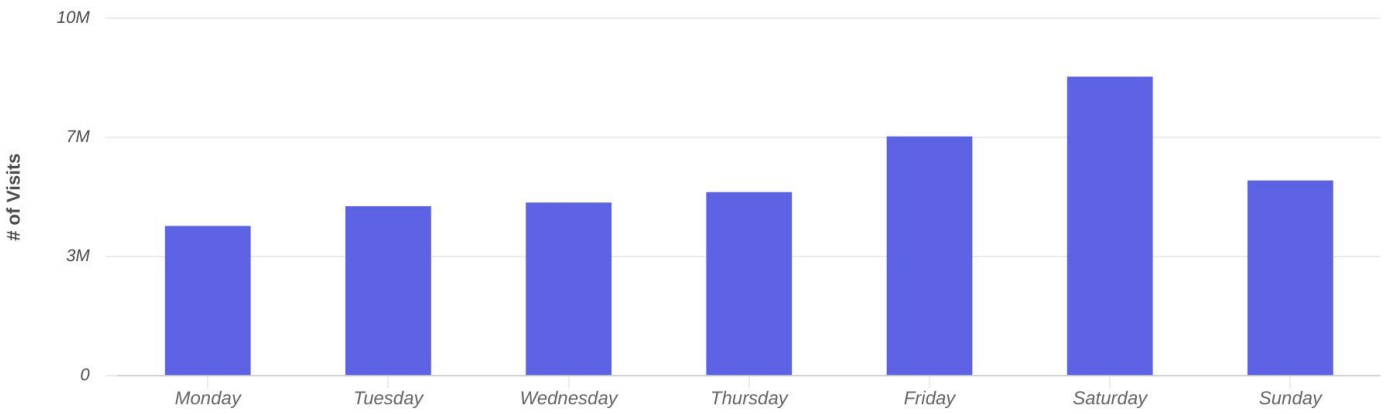
Daily Visits

Royal Oak Downtown D...
, Royal Oak, MI



Visits | Jan 1st, 2018 - Jan 28th, 2023
Data provided by Placer Labs Inc. (www.placer.ai)

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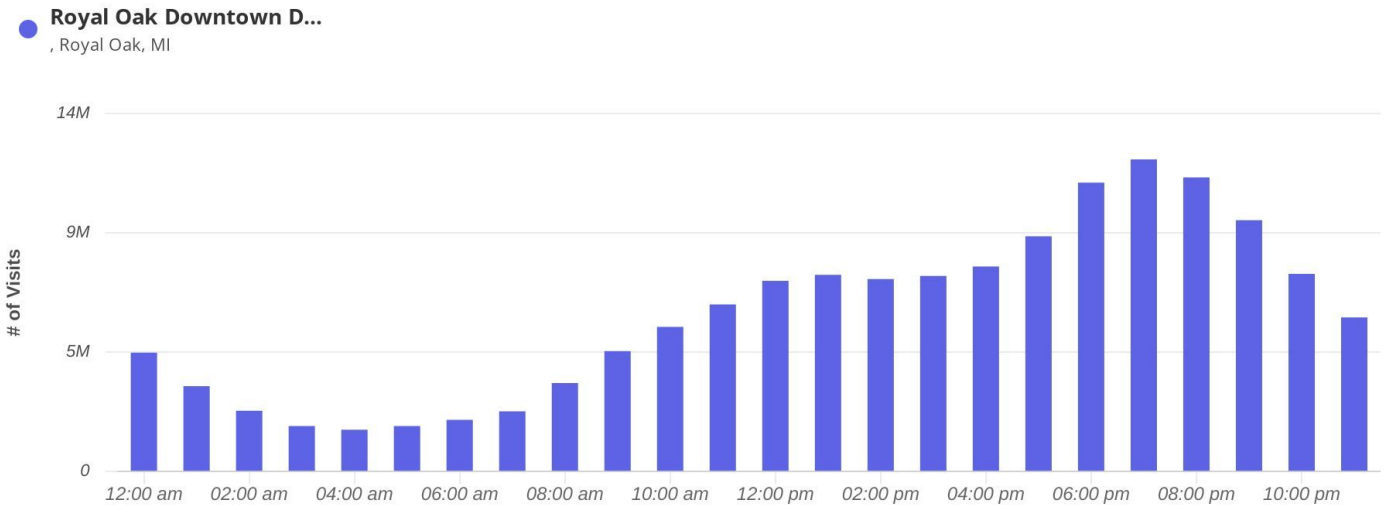
Property Overview

Jan 1, 2018 - Jan 28, 2023

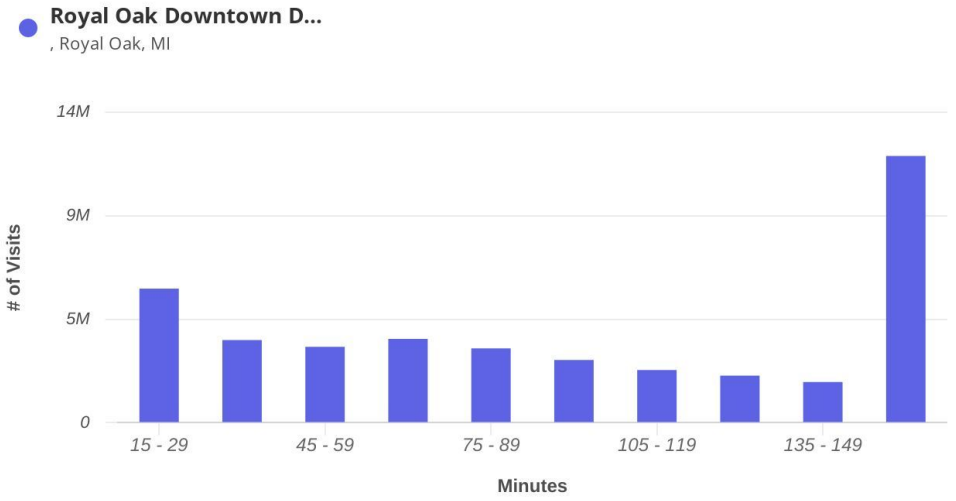
Hourly Visits



Visits | Jan 1st, 2018 - Jan 28th, 2023
Data provided by Placer Labs Inc. (www.placer.ai)

Placer.ai

Length of Stay



Average Stay	157 min
Median Stay	92 min

Visits | Jan 1st, 2018 - Jan 28th, 2023
Data provided by Placer Labs Inc. (www.placer.ai)

Placer.ai

Royal Oak
DOWNTOWN
DEVELOPMENT AUTHORITY

Communication and PR Impact Report

May 2024

Prepared by: SIREN

Executive Summary

In May, our partnership focused on generating media coverage to raise awareness for various downtown Royal Oak events including Royal Oak in Bloom, Wine Stroll, and Restaurant Week - all were a big hit with local outlets across metro Detroit!
Moving forward, we are preparing to close out our four year partnership with a final media campaign focused on Royal Oak Live and Taco Week.

Instead of providing a impact report for solely June, we will provide an impact report reviewing July 2023 through June 2024 as a whole.

525.7M+

reached through media

Media Results

Earned

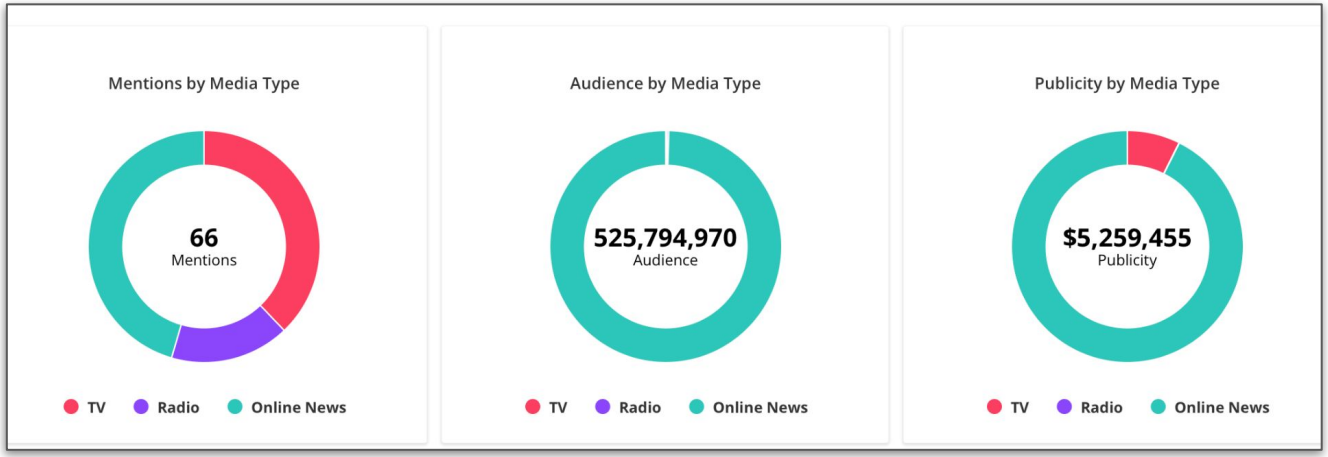
EARNED MEDIA

Impact:

- In May, our media efforts focused heavily on generating media coverage for the Wine Stroll.We secured an interview on Fox 2 with North End Taproom to promote Wine Stroll.
- Additionally, we began organizing and spreading the word for Restaurant Week. We secured an interview for Lockhart's BBQ and Royal Oak Brewery on Fox 2 to share their special menus and raise awareness for the upcoming event.

525.7M+ audience reach

May Media Coverage

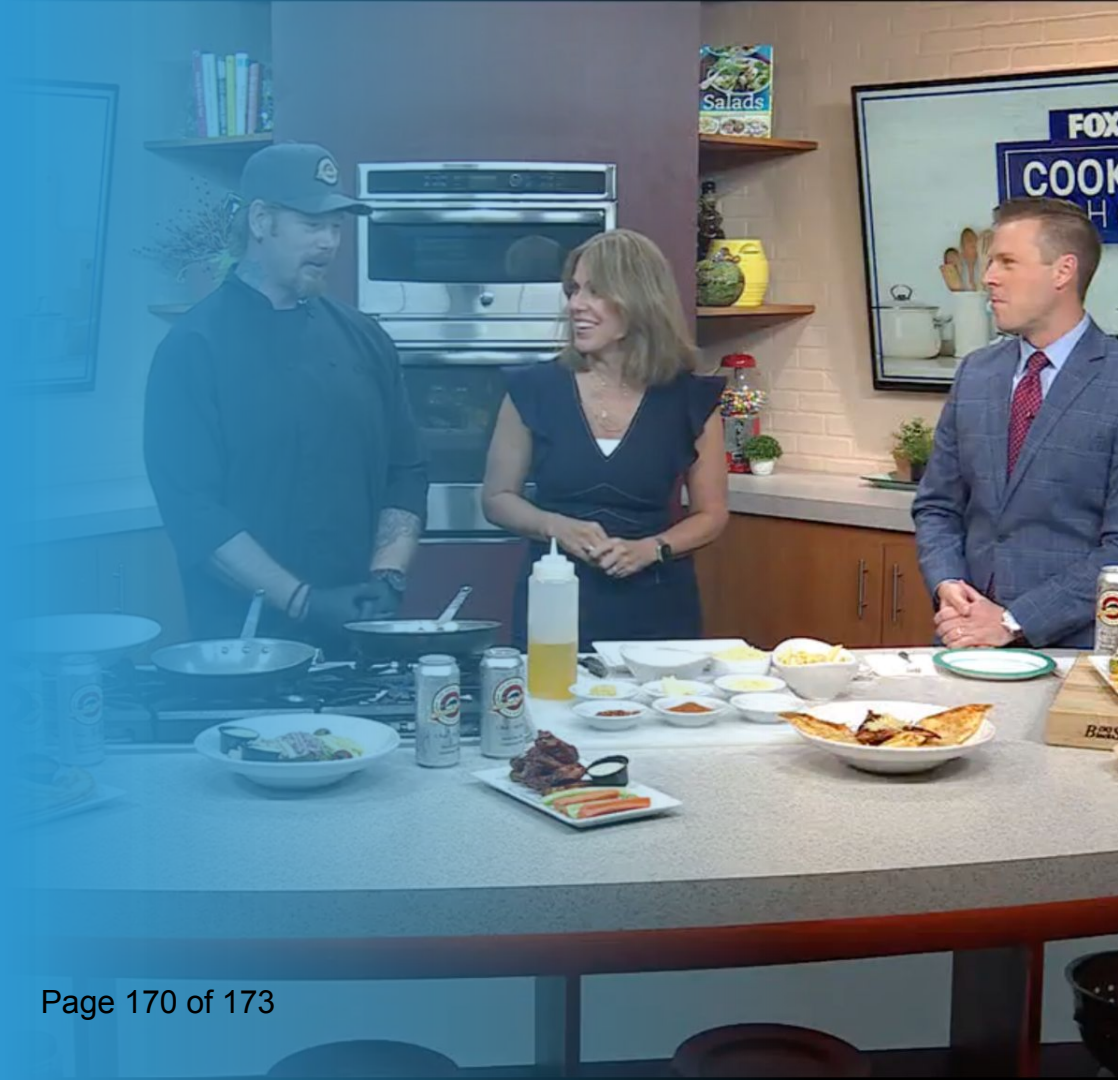


Click here for the full media report for May 2024

FOX 2 DETROIT

May Media Coverage

KPI Progress



KPIs

(March - June 2024)

GOAL	Clearly and effectively communicate key initiatives and programs	Generate positive stories about Downtown Royal Oak	Raise awareness for the value of the Downtown Development Authority
Q2	• Hit 12,000 followers on Instagram *The Downtown Royal Oak account is at 11,600 followers*	• Set up 5-6 interviews with DDA and businesses ✅*We have secured six interviews* • Secure 2-3 TV segments featuring Downtown Royal Oak businesses ✅*We secured four TV segments in April and May*	• Finalize copy for Welcome Packet for businesses ✅*Daniel has welcome packet*

This & That (other deliverables +)

Strategy

- Participated in strategy meetings and calls with the DDA's Downtown Manager throughout the month.
- Continued working with stakeholders on the Wine Stroll and Restaurant Week, including the Royal Oak Restaurant Association.
- Amplified Royal Oak Chamber efforts to secure additional media related to Royal Oak in Bloom.
- Actively participated in strategic conversations with the client and their partners to ensure goals and priorities were met.
- Collaborated with DDA partners on media strategy and across all of the DDA's communication channels.

What’s next?

- **Launch upcoming campaigns with local media:**
  - Royal Oak Live
  - Taco Week
  - LGBTQ+ businesses for Pride Month

- **Support Downtown Manager in promoting local businesses and sharing key initiatives through e-newsletters, social media, and media campaigns.**