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## INTRODUCTION

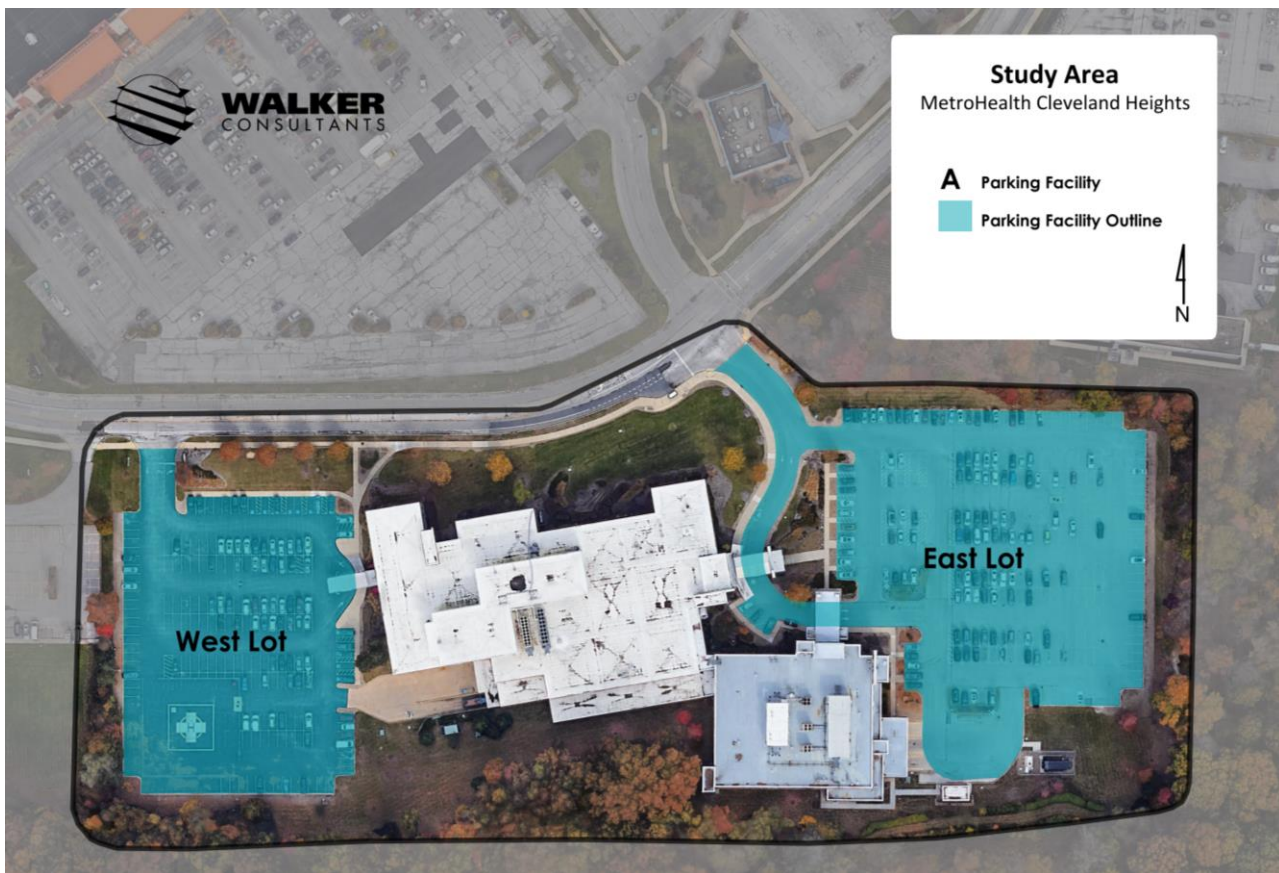
MetroHealth Cleveland Heights Medical Center (“MetroHealth”) in Cleveland Heights, Ohio seeks to expand current services with the addition of a Behavioral Health services building. In the exploration of expansion, Walker Consultants (“Walker”) was engaged by Anchor Health Properties (on behalf of MetroHealth) to perform a parking needs assessment of their campus, including a supply and demand analysis for both current and future projections.

The goal of this assignment is to quantify the current and future parking supply and demand needs and to ensure the parking system is adequate with the anticipated developments on campus.

## STUDY AREA

The campus is generally bounded by Severance Circle to the north, the New Song Church to the west, residential neighborhoods to the south, and the former Millikin Early Childhood Center to the east. All parking on campus is located on grade. A map of the campus depicting parking locations is provided below.

Figure 1: Study Area



Source: Walker Consultants

## SUPPLY/DEMAND ANALYSIS

The methodology of this study consists of reviewing background information, user group statistics, prospective project plans, and parking occupancy counts administered by Walker Consultants. This data is used to develop parking demand ratios for various user groups, which are considered to be representative of overall parking demand. These ratios are used to project current parking adequacy, and are also applied to future statistics for the same user groups in conjunction with anticipated changes in the parking space supply to project future parking adequacy. Parking adequacy is expressed in terms of parking space surpluses and deficits.

It is important to define the conditions upon which a parking system should be designed. Some organizations intend to provide adequate parking for every potential parking facility user, every day of the year. Consequently, a substantial number of parking spaces are vacant throughout most of the year. The benefit of such a parking system is that parkers, whether it is employees, visitors, or patients, always have adequate parking. As is commonly the case, most organizations would rather have fewer of their assets utilized as parking; therefore, these organizations plan for a parking system that meets the needs of its parking patrons most days of the year, but less than every day of the year. The disadvantage of this type of parking system is that from time to time, parking demand may exceed the parking supply. This could become critical when a large event is scheduled at times when parking demand is expected, under normal conditions, to be at its highest.

The level at which parking demand should be accommodated is a policy decision that must be made by the client. For the purposes of this analysis, adequate parking conditions are defined as those that satisfy the design statistics recommended in this study.

### PARKING SUPPLY

Walker inventoried the parking supply at MetoHealth to determine the number of spaces, the user assignments (e.g. employee, physician, and patient) and any restrictions pertaining to campus parking. This inventory includes spaces used by patients/visitors, ADA, employees, and police. The total inventory was 413 spaces segmented by user group. The following table reflects the totals by facility and user group, separated by facility.

Table 1: Parking Supply

West Lot		East Lot		Total	
Space Type	Number of Spaces	Space Type	Number of Spaces	Space Type	Number of Spaces
ADA (regular)	14	Police	2	ADA	45
ADA (van)	3	ADA (regular)	18	Visitor	218
ADA (total)	17	ADA (van)	10	Employee	148
Visitor (striped)	149	ADA (total)	28	Police	2
Helipad (unusable)	16	Visitor	69	<b>Total</b>	<b>413</b>
Employee	0	Employee	148		
<b>Total</b>	<b>166</b>	<b>Total</b>	<b>247</b>		

Note: The estimated number of parking spaces unusable due to the helipad have been omitted from this analysis and are not included in the total inventory.

Source: Walker Consultants

### EFFECTIVE SUPPLY

Walker Consultants estimates the effective parking supply by applying an effective supply factor to the physical parking supply for each user group in the parking system inventory. It is a generally accepted principle in parking supply/demand analyses that a supply of parking operates at optimum efficiency when occupancy is no more than 85% to 95% of the total supply. The unused stalls provide a "cushion" to allow for the dynamics of vehicles moving in and out of parking stalls and to reduce the time required to search for the last few available spaces. This cushion also allows for daily, weekly and seasonal variations as well as vacancies created by restricting facilities to certain users, mis-parked vehicles, snow cover and minor construction.

When occupancy exceeds the optimum level, there may be delays and frustration in finding a space or the patron may be forced to use an undesirable space, such as one at a greater or uncomfortable walking distance. The parking supply may be perceived as inadequate even though vacant spaces are still available in the system.

As a result, the effective parking supply is used for analysis of the adequacy of the parking system rather than the total supply. This cushion typically varies between 5% and 15% of the total parking capacity depending on the type of parking supply and type of user.

In this case, patients/visitor and ADA parking is adjusted to 90% of capacity, physician and staff parking is adjusted to 95% of capacity, and valet is not adjusted, as there should be no buffer for valet operators to find a parking space due to the management of this parking supply segment.

Table 2: Current Effective Parking Supply

Total			
Space Type	Number of Spaces	ESF	Effective Supply
ADA	45	90%	41
Visitor	218	90%	196
Employee	148	95%	141
Police	2	95%	2
<b>Total</b>	<b>413</b>	<b>92%</b>	<b>380</b>

Note: All figures are rounded to the nearest whole number.

Source: Walker Consultants

## PARKING OCCUPANCY

Walker counted the number of parked cars at 11:00 a.m. and 2:00 p.m. on both Wednesday, January 20, 2021 and Thursday, January 21, 2021. The results of the occupancy counts are summarized and expressed in Table 3 below. These results display that the peak observed occupancy occurred on Wednesday at 11:00 a.m. and represents only 44% of the current supply. It is important to note that each user group varied from 0% to 67% within this hour.

Table 3: Surveyed Parking Occupancy by User




	Wednesday				Thursday			
	11am		2pm		11am		2pm	
	Demand	Occ %	Demand	Occ %	Demand	Occ %	Demand	Occ %
ADA	30	67%	20	44%	26	58%	20	44%
Visitor	107	49%	101	46%	109	50%	111	51%
Employee	46	31%	45	30%	40	27%	41	28%
Police	0	0%	0	0%	0	0%	0	0%
<b>Total</b>	<b>183</b>	<b>44%</b>	<b>166</b>	<b>40%</b>	<b>175</b>	<b>42%</b>	<b>172</b>	<b>42%</b>

Source: Walker Consultants

In order to understand which user groups are having inadequacies (or nearing inadequacies), Walker has displayed the data by user group in a “heat map” format in the table below, where green is less than 50% occupied, yellow is 51% to 80% occupied, and red displays occupancies over 80%. This helps to illustrate which user groups are suffering from a lack of parking. When parking occupancy reaches 85% or greater, it becomes more difficult to locate available parking in the lot and many parkers will perceive them as full. There is no user group with such issues and the overall capacity is more than adequate.

Table 4: Surveyed Parking Occupancy by Facility

Space Type	Wednesday, January 20, 2021 @ 11:00 am		Wednesday, January 20, 2021 @ 2:00 pm		Thursday, January 21, 2021 @ 11:00 am		Thursday, January 21, 2021 @ 2:00 pm	
	West Lot	East Lot	West Lot	East Lot	West Lot	East Lot	West Lot	East Lot
ADA (regular)	64%	78%	36%	56%	43%	72%	57%	44%
ADA (van)	33%	60%	67%	30%	33%	60%	33%	30%
Visitor	39%	71%	32%	77%	36%	80%	42%	71%
Employee	0%	31%	0%	30%	0%	27%	0%	28%
Police	0%	0%	0%	0%	0%	0%	0%	0%
<b>Total</b>	<b>41%</b>	<b>47%</b>	<b>33%</b>	<b>45%</b>	<b>37%</b>	<b>46%</b>	<b>43%</b>	<b>41%</b>

Key:	
>80%	
51% - 80%	
<50%	

Source: Walker Consultants

### PARKING DEMAND RATIOS

To model the number of spaces required to meet the parking needs of all patrons, parking occupancy is compared to various hospital user-group population statistics. User group parking demand ratios are the product of the peak parking occupancy data and various user group statistics provided by MetroHealth Cleveland Heights Medical Center. The breakdown of occupancy by user group is structured to be as representative of the subject property as possible. From this comparison, a demand ratio is determined for each group. The parking demand ratios developed for each user group is used to estimate the number of parking spaces needed for each type of patron on the design day.

The observed occupancy was compared to the hospital data including outpatient, emergency department, and inpatient activity levels on the survey day in addition to the recorded number of full-time employee equivalents during the survey day. This division of the hospital data into the observed occupancy creates a parking demand ratio for each user group. The resulting parking demand ratios are summarized in the following table:

Table 5: Current Demand Estimates

User Type	User Statistic	Parking Demand Ratio	Demand	Effective Supply	Adequacy
Patient/ Visitor <sup>1</sup>					
Inpatient	5	0.27 /Average Daily Bed Census	1	2	1
Outpatient	5,304	0.02 /Outpatient Visits	101	175	74
ED Patient	1,730	0.02 /ED Registrations	34	59	25
Staff <sup>2</sup>	81	0.57 /FTE Employee	46	143	97
<b>Total</b>			<b>183</b>	<b>379</b>	<b>196</b>

## Notes:

1. Patient/visitor assumes a 1%, 74%, 25% split between the inpatient, outpatient, and ED patient, respectively for both the parking demand and effective supply.
2. The user statistic is based upon the client-provided background information of daytime FTEs. The demand assumes all hospital staff, volunteers, residents/ interns, and students park in the designated staff spaces.
3. The client-provided background information of the 2020 monthly average patient/visitor volumes was utilized for this analysis.

Source: Walker Consultants

It is important to note that the ADA spaces are included in the patient/visitor demand category and the police spaces are included in the staff category.

**FUTURE CONDITIONS**

Future parking conditions for MetroHealth Cleveland Heights Medical Center will be most significantly influenced by the anticipated increase of patient/visitor demand with the addition of the Behavioral Health services building. This has potential to increase the average daily bed census, outpatient visits, and ED registrations while only slightly increasing the number of daily employees. In addition to the projected growth in demand, the parking supply is anticipated to decrease by 18 spaces. These spaces will be removed from the inventory in the east lot due to expansion of the hospital. Walker has assumed they will be eliminated from the patient/visitor category in this analysis. The following tables display the anticipated changes, provided by Anchor Health.

**Table 6: Anticipated Hospital Growth**

Metric	2019 Monthly Average	2020 Monthly Average	Projected After New Hospital
	Visits/Census		
In Person Visits	6,291	5,304	6,124
ED Visits	2,050	1,730	2,113
IP Avg Daily Census	5	5	103
Total Daily Patients Treated on Site	8,347	7,039	8,340
	FTEs		
24/7 FTEs	93	91	225
Daytime FTEs	85	81	86
Total Site FTEs	178	172	312

Source: Walker Consultants

**Table 7: Anticipated Future Parking Supply**

Space Type	Total		
	Number of Spaces	ESF	Effective Supply
ADA	45	90%	41
Visitor	200	90%	180
Employee	148	95%	141
Police	2	95%	2
<b>Total</b>	<b>395</b>	<b>92%</b>	<b>364</b>

Note: All figures are rounded to the nearest whole number.

Source: Walker Consultants

These assumptions are used to calculate the future parking shortage and the number of parking spaces to be constructed to supply the needed number of effective parking spaces.

### FUTURE PROJECTED ADEQUACY

Walker analyzed the planned population changes shown above in Table 6 and incorporated them into the parking demand model. These are displayed in the tables below.

Table 8: Future Demand Estimates

User Type	User Statistic	Parking Demand Ratio	Demand	Effective Supply	Adequacy
Patient/ Visitor <sup>1</sup>					
Inpatient	103	0.27 /Average Daily Bed Census	28	2	(26)
Outpatient	6,124	0.02 /Outpatient Visits	117	163	46
ED Patient	2,113	0.02 /ED Registrations	42	55	13
Staff <sup>2</sup>	86	0.57 /FTE Employee	49	143	93
<b>Total</b>			<b>236</b>	<b>363</b>	<b>127</b>

Notes:

1. Patient/visitor assumes a 1%, 74%, 25% split between the inpatient, outpatient, and ED patient, respectively for both the parking demand and effective supply.
2. The user statistic is based upon the client-provided background information of daytime FTEs. The demand assumes all hospital staff, volunteers, residents/ interns, and students park in the designated staff spaces.
3. The client-provided background information of what is anticipated after construction was utilized for this analysis.

Source: Walker Consultants

Based on the analysis displayed in Table 8, the future demand is anticipated to increase to a total of 236± spaces. With the anticipated decrease of parking supply accounted for, this amounts to a surplus of 127 spaces. With the growth of the inpatients, the adequacy is in a deficit of approximately 26 spaces. However, outpatient, ED, and staff all have a surplus of over 180 spaces. No reallocation of spaces would be necessary for the system to remain adequate as all patient/visitor spaces are shared.

### CONCLUSIONS AND RECOMMENDATIONS

The MetroHealth Cleveland Heights Medical Center is anticipated to remain adequate for operation with the anticipated growth on campus. While no changes are necessary for the number of spaces, Walker observed several maintenance and managerial aspects that could improve the user experience (for both patient/visitors and staff):

- The striping in the east lot is poor and almost not visible in many areas. This is typical of wear and tear on well-utilized surface lots. However, without restriping it can lead to a reduction in parking space inventory through increases in mis-parked vehicles, and other efficiency issues.
- Walker also recommends restriping the West lot due to the addition and placement of the helipad. Walker could improve the efficiency and parking count with more analysis and review.



Figure 2: Helipad Placement Inefficiencies



Source: Walker Consultants

- Many spaces were covered with snow and unusable during the Wednesday, January 20, 2021 and Thursday, January 21, 2021 counts. When demand increases as anticipated, plowing the parking facilities will be more important.
- Pavement distress was observed in many areas, especially in the West lot. Walker recommends repairing and is able to help with the design and functionality in doing so.

Figure 3: Pavement Distress



Source: Walker Consultants

- Signage could be improved in both parking lots:
  - The West lot has a ground mounted ADA sign in area of non-ADA spaces.
  - West lot has one “employee parking” sign, but it’s not clear what spaces are applicable.

In addition to resurfacing, restriping, and creating better signage, employees could be encouraged to park further from the entrances and walk, in order to free up nearer spaces. Adorning the most remote spaces with a statement similar to “park here to walk farther and be healthier” reminds parkers of the various health benefits associated with parking in a far-away space. This positive reinforcement is effective in improving utilization rates in remote or less desirable spaces and freeing up more convenient spaces for parkers most in need, such as hospital patients. This allows the system to become more efficiently utilized.

Figure 4: Intermountain Healthcare Park Further Program



Source: KSL-TV