E33. CAMPUS CONFIGURATION & BUILDING APPROACH DESIGN FOR PATIENT EXPERIENCE

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GBBN (Planning & Interiors)

Project Partners:

Kolar (Env. Graphics & Wayfinding)
Realm Collaborative (Landscape)
The Lighting Practice (Lighting)
Danis Construction (CM)
The Kleingers Group (Civil)
Heapy (MEP) | THP Limited (Structural)

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Chris Ralston, Director of Systems Communications

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Jackson Feinknopf, Architecture Designer | Zahra Daneshvar, Interior Designer

LEARNING OBJECTIVES

- Identify multifaceted factors that impact the patient arrival journey on a large hospital campus.
- Apply the behavior mapping toolkit to evaluate healthcare arrival and hospital building approach design.
- Understand hospital branding along with patient experience design.
- Integrate the project findings to improve the hospital circulation system and elevate evidence-based design.

SESSION AGENDA

- UC Health & the Medical Center's Trauma Crisis
- Elevating A.O.T Design Experiences
- Scientific Tools for Hospital Arrival POEs
- Discussion | Q&A

CHRIS RALSTON

UC Health Director of Systems Communications

UC HEALTH's TRAUMA CRISIS

UC Health

VISION

To be the premier academic referral health care system caring for the most advanced and complex health problems.

IN SCIENCE LIVES HOPE.

We are determined to push to the edge of what is possible for you and those who may never walk through our doors.

UC Health

HEALTHCARE PROFESSIONALS

Partner with the Authors of Breakthroughs

Back to Home

Say yes to the power of hundreds of expert hands and curious minds on your side. The UC Health community is relentlessly dedicated to collaboration, excellence, and shaping the future of medicine. Let's work together to make more hope possible.

UC Health

Our Locations

Keeping your support network close is key for many patients and their caregivers. As Cincinnati's only adult academic medical center, UC Health spans the Tristate region, with main campuses located in Clifton, Galbraith and West Chester, as well as various community settings throughout the region.

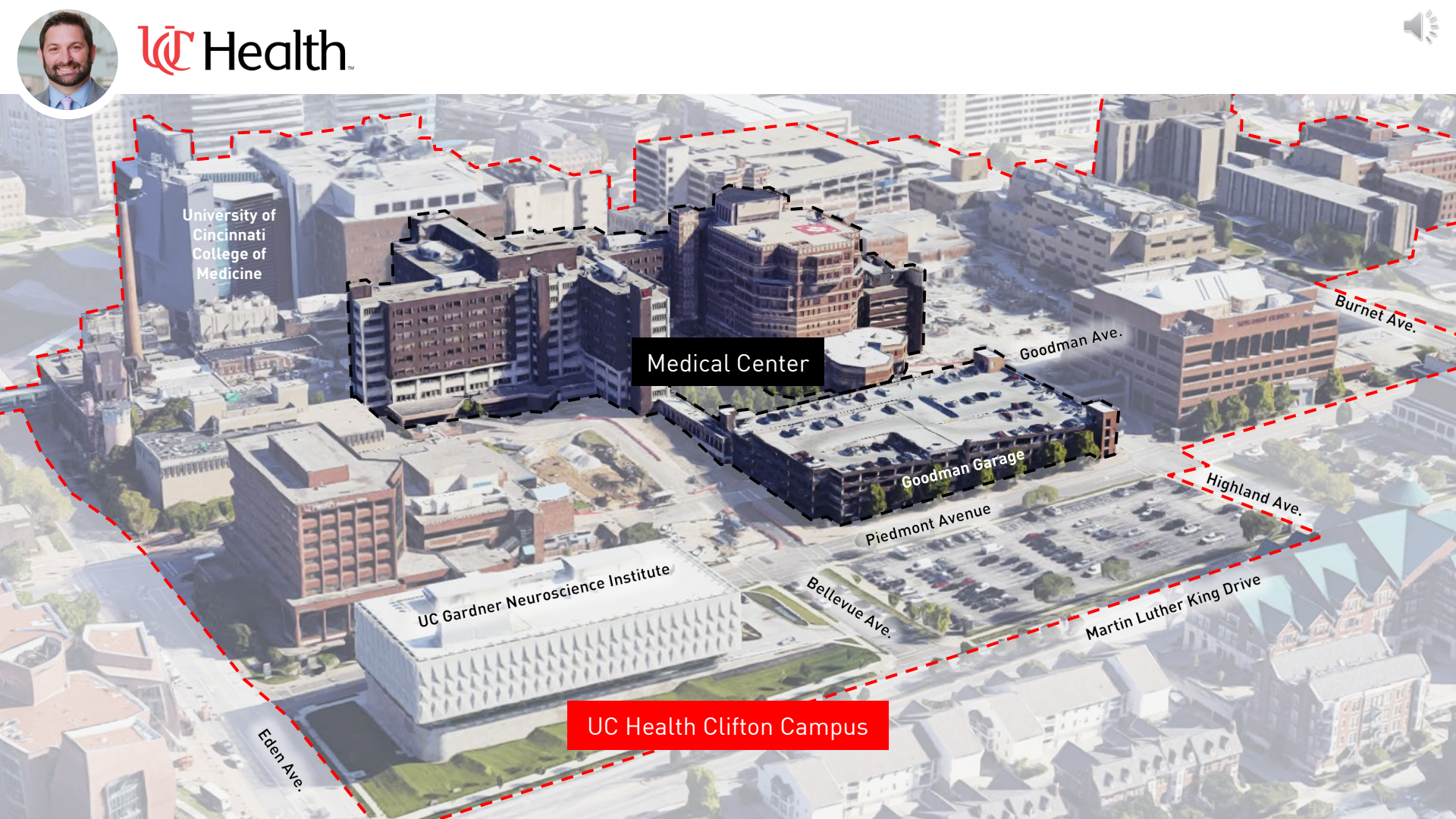
Clifton Campus

Galbraith Campus

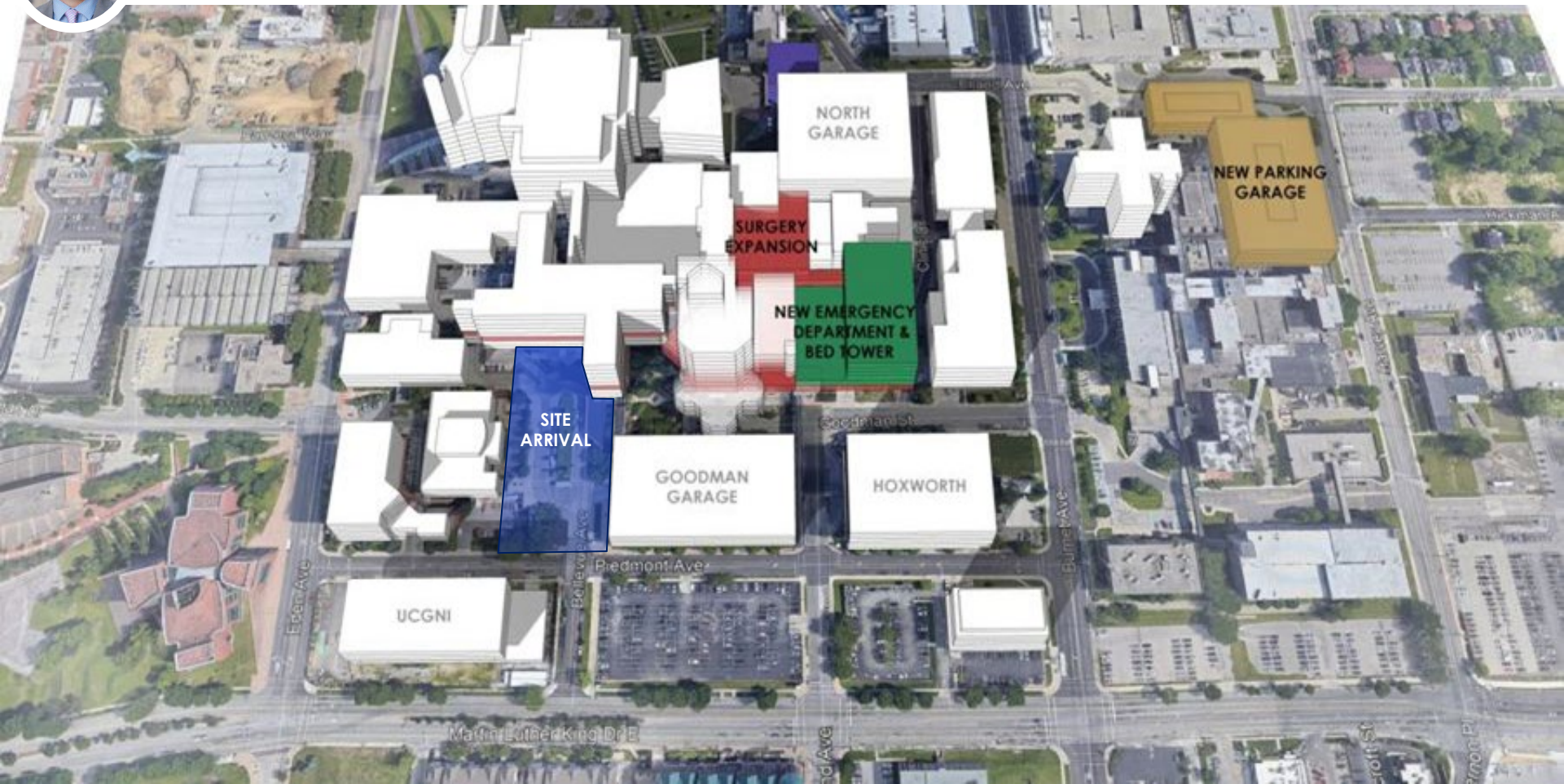
West Chester Campus

Lindner Center of Hope

UC Health
Clifton Campus
Cincinnati
Ohio
Covington
Kentucky

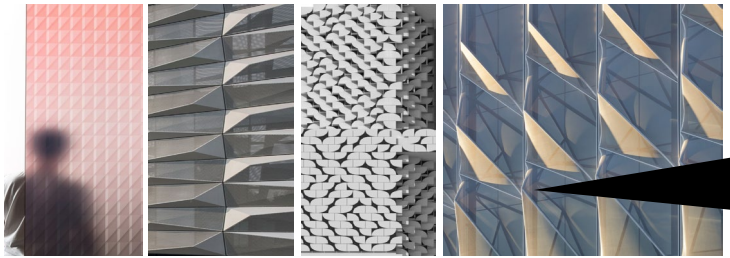

University of Cincinnati College of Medicine
Medical Center
Goodman Ave.
Burnet Ave.
Goodman Garage
Highland Ave.
Piedmont Avenue
UC Gardner Neuroscience Institute
Bellevue Ave.
Martin Luther King Drive
Eden Ave.
UC Health Clifton Campus

INVESTING IN THE FUTURE



“THIS IS WHO WE ARE”

A MISSING CRITICAL DOCUMENT



IN SCIENCE
LIVES HOPE
=
SCIENCE AS TEXTURE

1 PURPOSE
GUIDELINES CHARTER 1.1
EXPERIENTIAL GOALS 1.2
DECISION MAKING FRAMEWORK 1.3
KEY CONTACTS 1.4

2 BRAND
BRAND OVERVIEW 2.1

3 ENVIRONMENTS KIT OF PARTS
SCIENCE AS TEXTURE 3.1
NATURE 3.2
COLOR STRATEGY 3.3
MATERIALITY 3.4
LIGHTING 3.5
ARTWORK 3.6
STORYTELLING 3.7

4 APPLICATION STRATEGY
HIERARCHY 4.1
SPATIAL CONCEPTS 4.2

5 SPECIFICATIONS & COMPONENTS
FINISHES PALETTE 5.1
CASEWORK 5.2
FURNITURE 5.3

6 SIGNAGE & WAYFINDING
EXTERIOR SIGNAGE 6.1
INTERIOR SIGNAGE 6.2
DONOR RECOGNITION 6.3

7 NOMENCLATURE
STRATEGY & PRINCIPLES 7.1
CRITERIA & STRUCTURE 7.2
APPROVED NAMES 7.3
NEW NAME PROCESS 7.4
LEGAL COMPLIANCE 7.5
ADDENDUM 7.6

ARRIVAL PROJECT SCOPE

16,000 SF Interior Lobby Renovation (Ground & First Floor)

Blending in of Existing Visitor Garage with improved access

2,200 SF Addition, 4,500 SF New Canopy, 30,000 SF Main Drive & Landscaping

Burnet Ave.

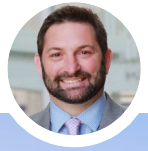
Highland Ave.

Piedmont Av

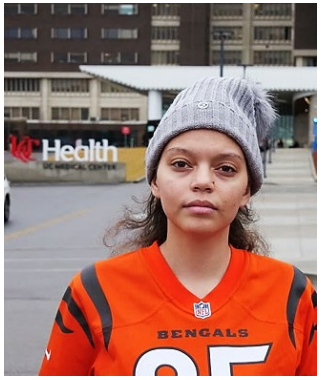
Bellevue Ave.

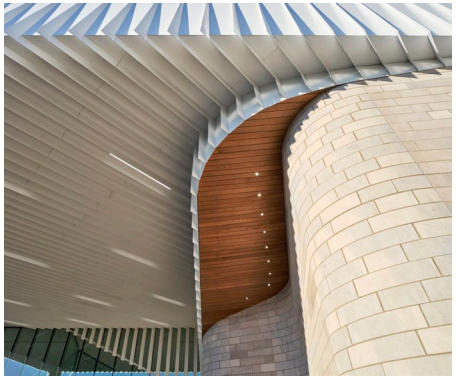
Martin Luther King Drive

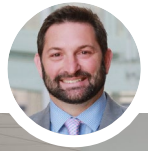
Eden Ave.



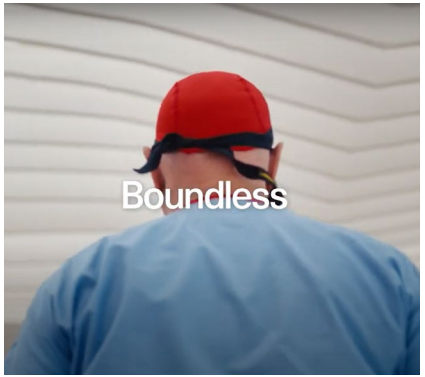
“SCIENCE AS TEXTURE” ARRIVAL



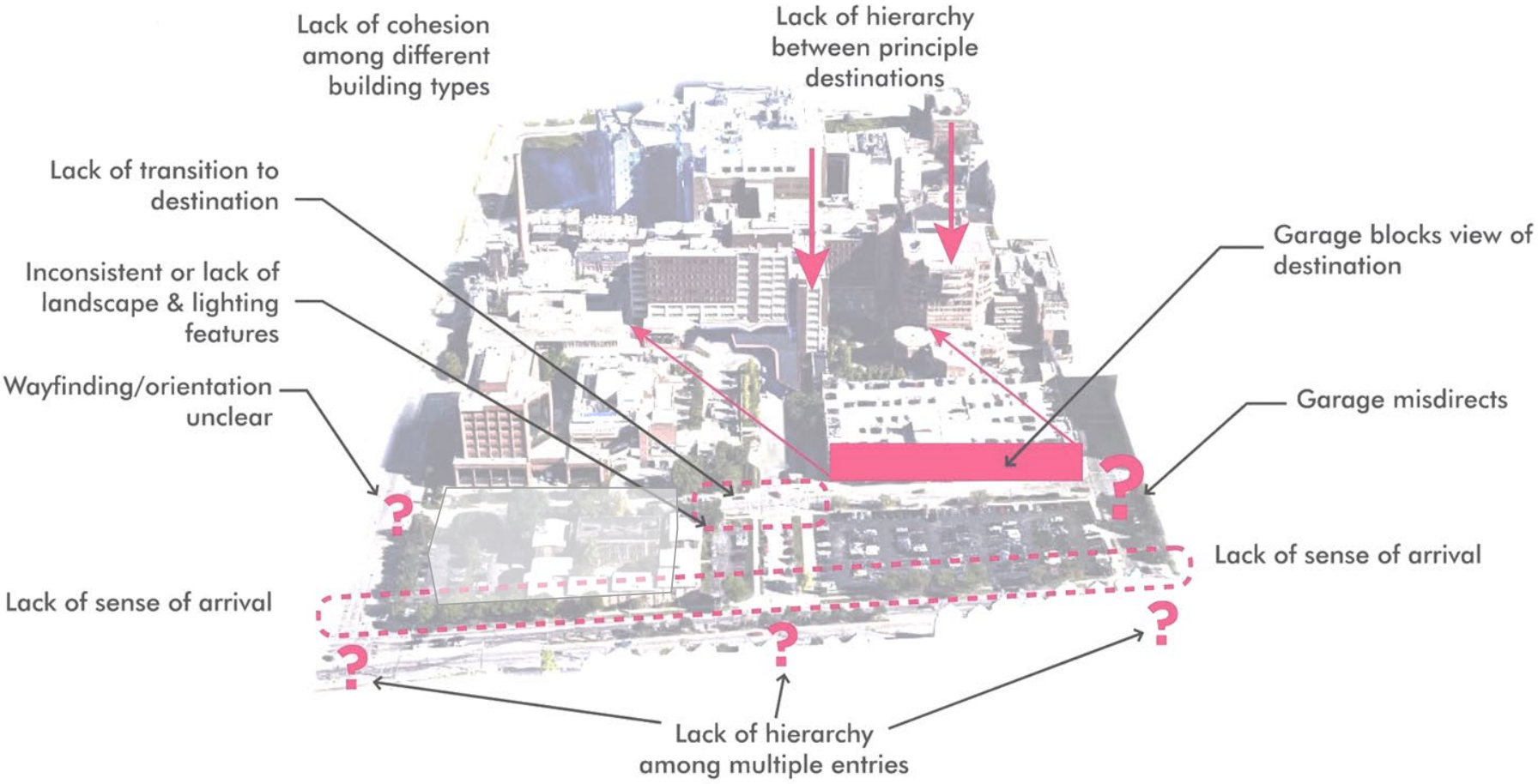




“SCIENCE AS TEXTURE” ARRIVAL



THE MEDICAL CENTER's "ARRIVAL" TRAUMA CRISIS



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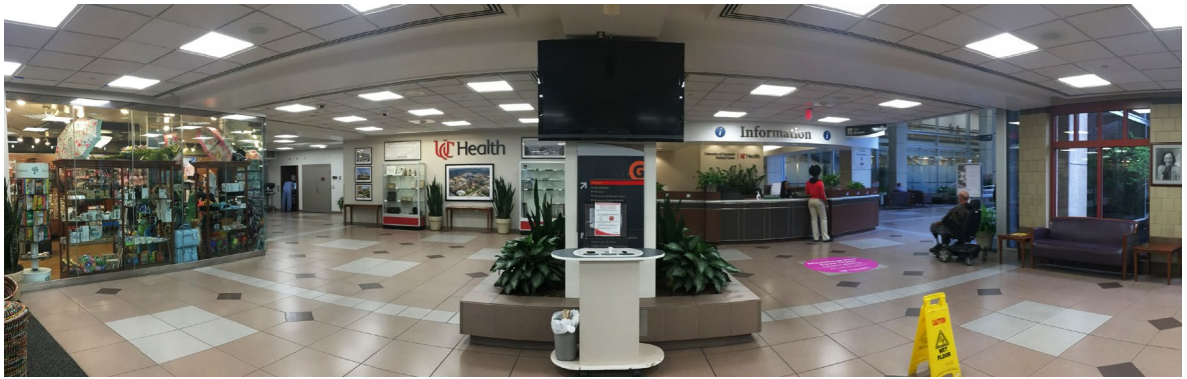

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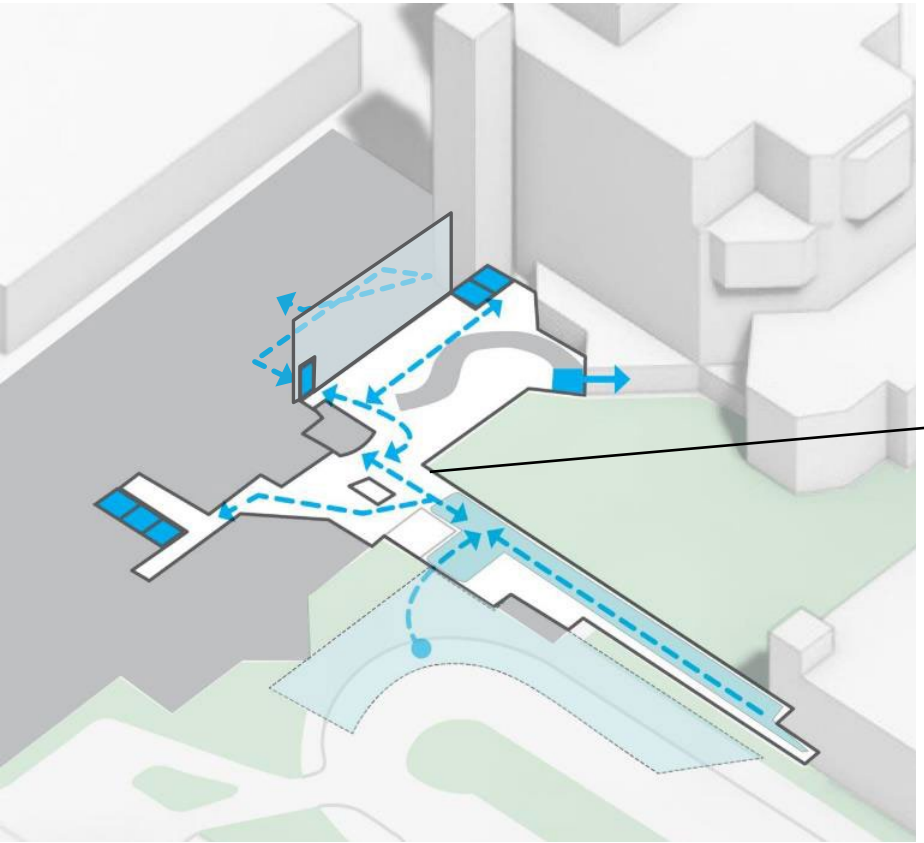
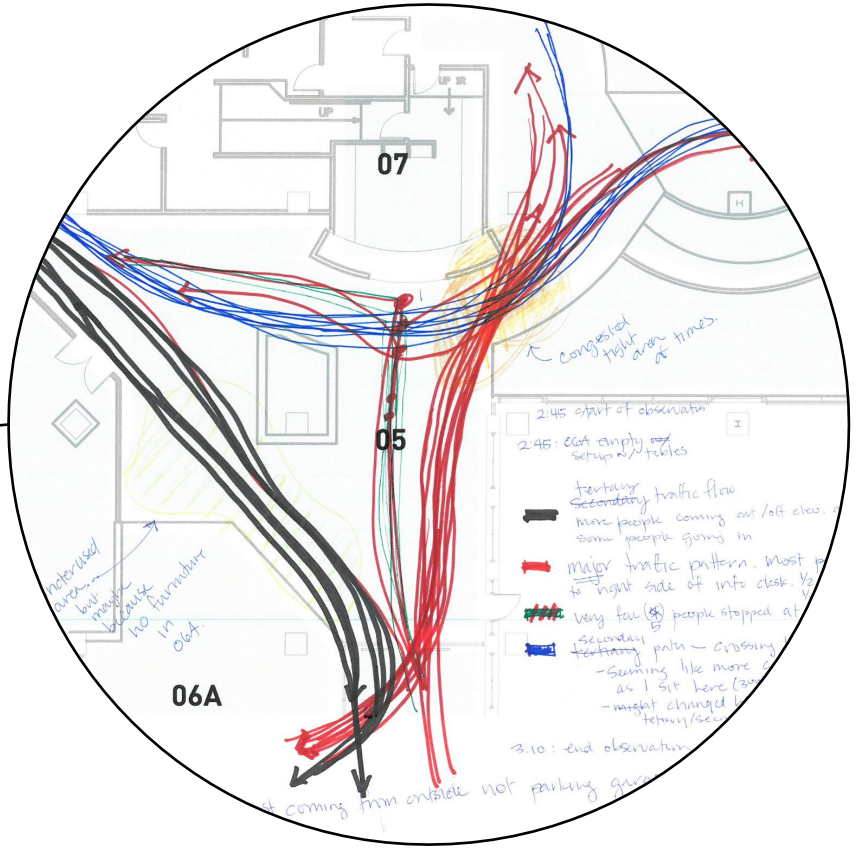


Original Lobby Configurations



Pre-occupancy Observations

ELEVATING A.O.T. DESIGN EXPERIENCE

What's At Stake?

35000

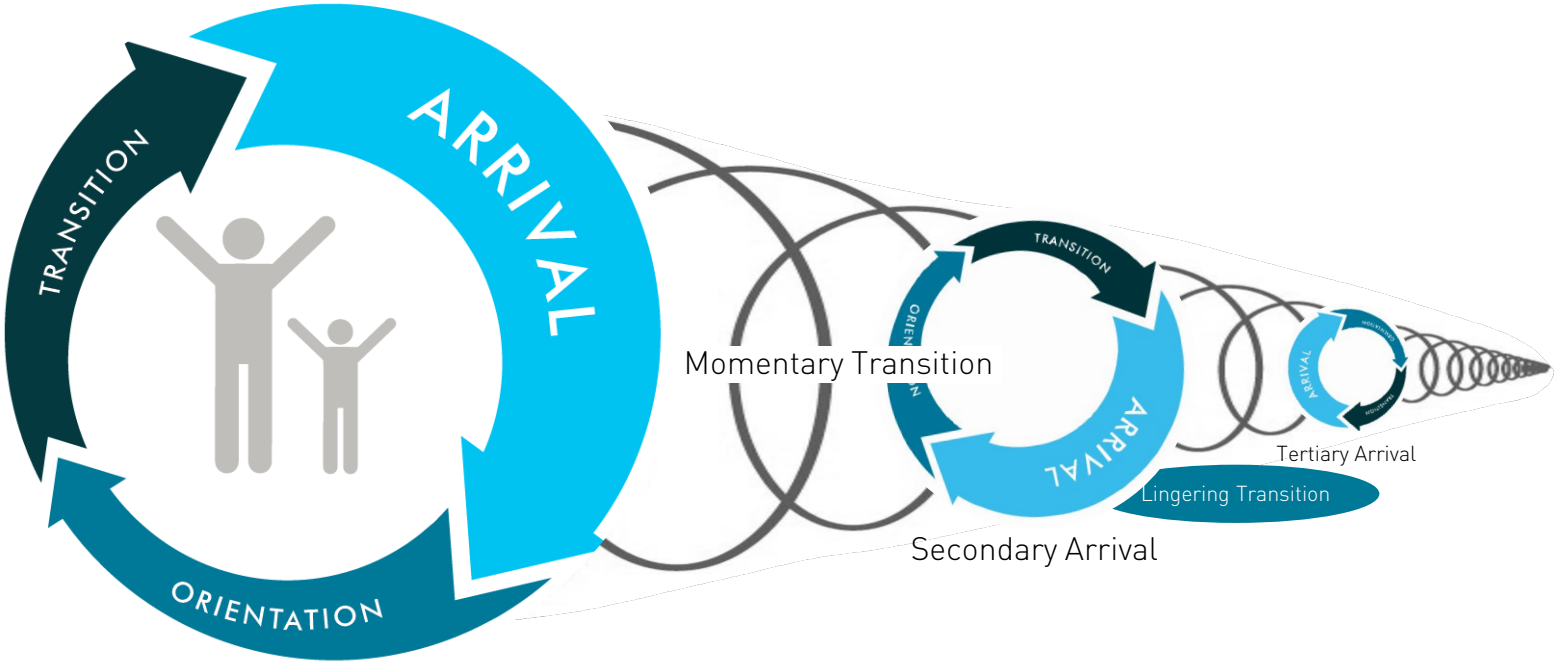
Of **remotely conscious decisions** are performed each day by the average person. **Nearly 1 every 1.8 seconds.**

ELEVATING A.O.T. DESIGN EXPERIENCE

PROJECT GOALS:	*DESIGN PRINCIPLES:*
• **Clarify sequence of Arrival, Orientation, & Transition for visitors at multiple scales.**	• Establish Hierarchy • Simplify & Declutter • Intentional Placemaking
• **Create a mantle for the UC Health brand that expresses the pride, aspirations, and quality of care of the institution.**	• Translate and Express "Science as Texture" within occupied space.
• **Create a cohesive, understandable, and useful central space that enhances the patient and visitor experience**	• Program Performance • Program Experience

ELEVATING A.O.T. DESIGN EXPERIENCE

Foundational Principles



ELEVATING A.O.T. DESIGN EXPERIENCE

"I CAN" – Self Efficacy & Empowerment

A Dopamine Boost By Creating Small Wins

Choice and control

- Variety of seating is supported

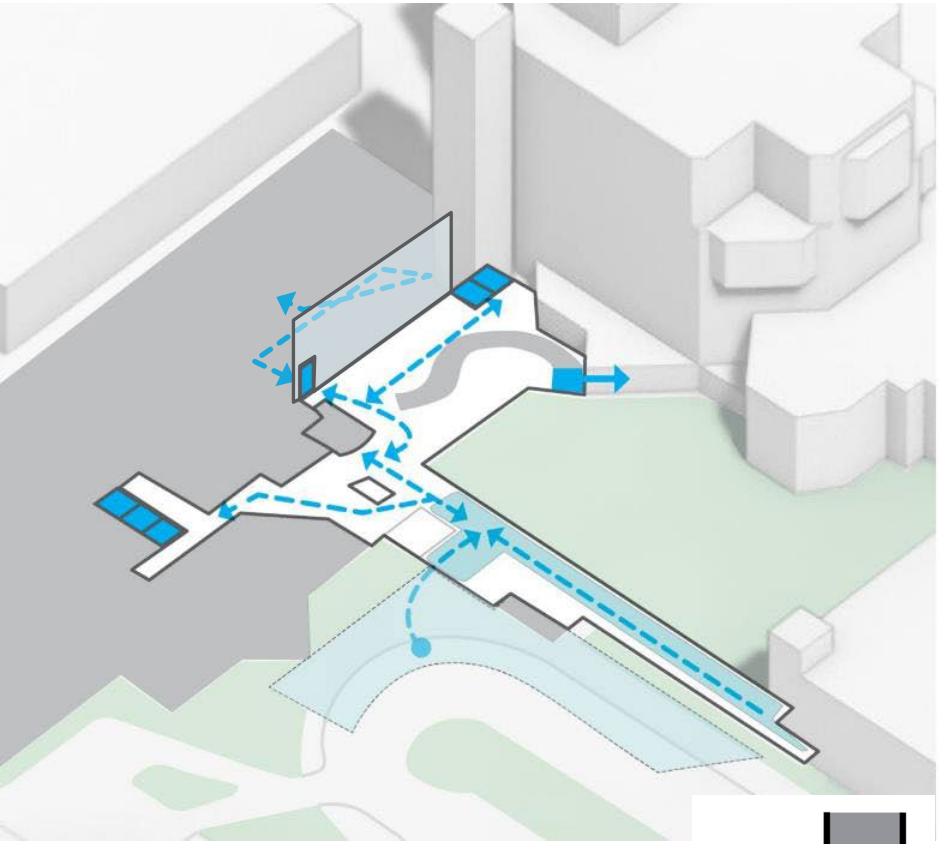
Wayfinding

- Ability to see destination or next step in proceeding there
- Landmark elements help mark the path
- Cognitive chunking for multisensory memory moments
- Entry points are clear
- Opportunities to take independent action

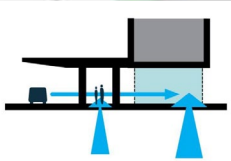
Hierarchical barriers

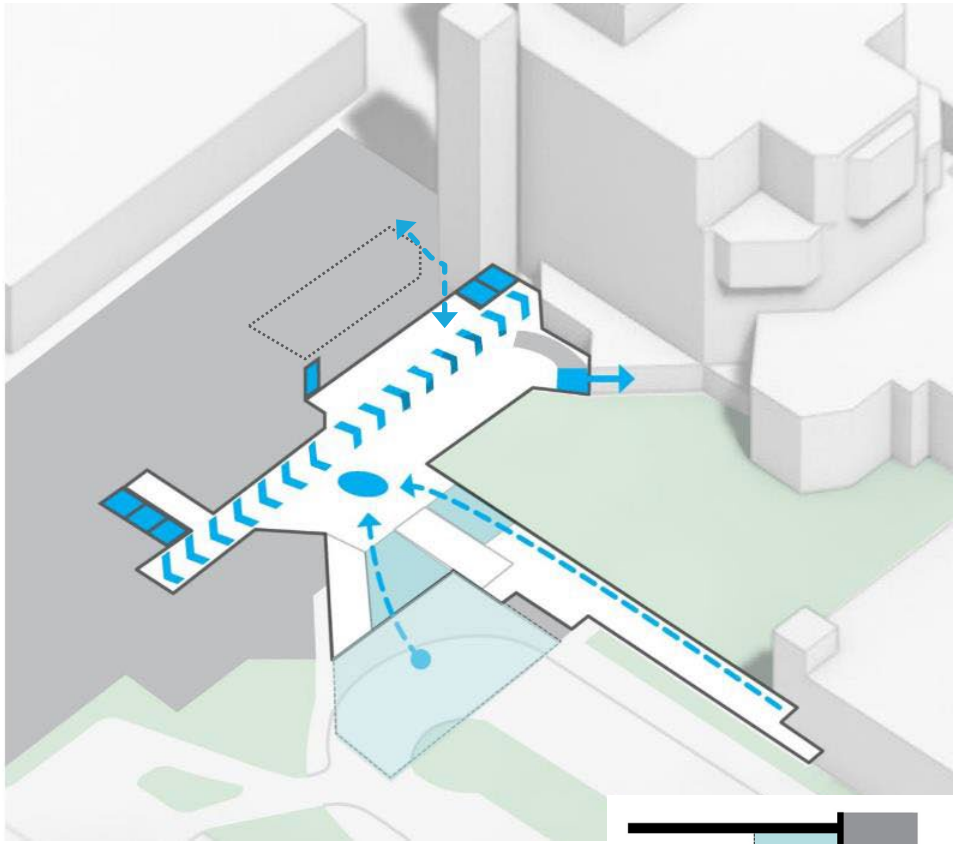
- High barrier such as transaction counter
- Staff is behind glass or otherwise physically separated from user

ELEVATING A.O.T. DESIGN EXPERIENCE

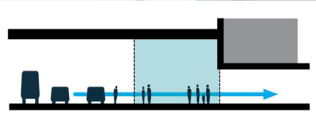


Original Wayfinding Situation



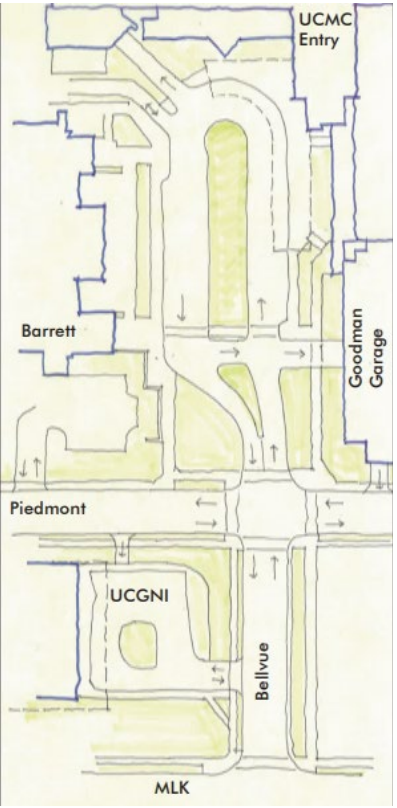


Improved Wayfinding Solution

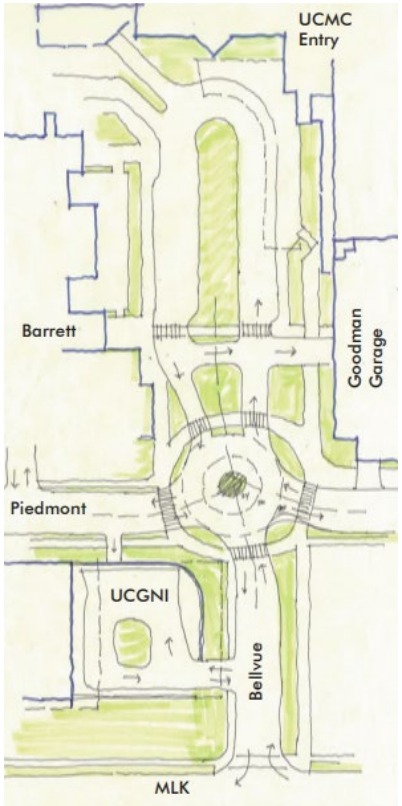


ELEVATING A.O.T. DESIGN EXPERIENCE

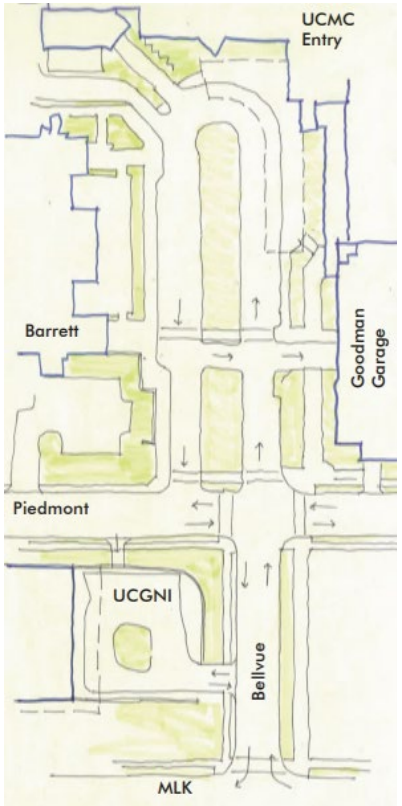
Arrival Zone Campus Studies



Island



Roundabout



Boulevard

Final Concept

ELEVATING A.O.T. DESIGN EXPERIENCE

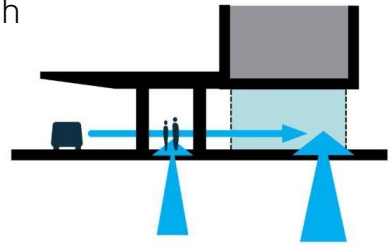
Arrival Zone Outdoor Spaces

ELEVATED A.O.T. DESIGN EXPERIENCE

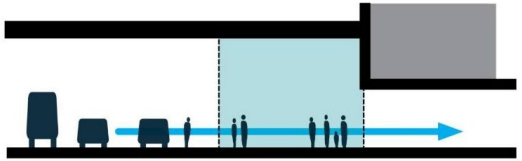
Arrival Zone Outdoor Spaces

ELEVATING A.O.T. DESIGN EXPERIENCE

Entrance Approach
(Before)

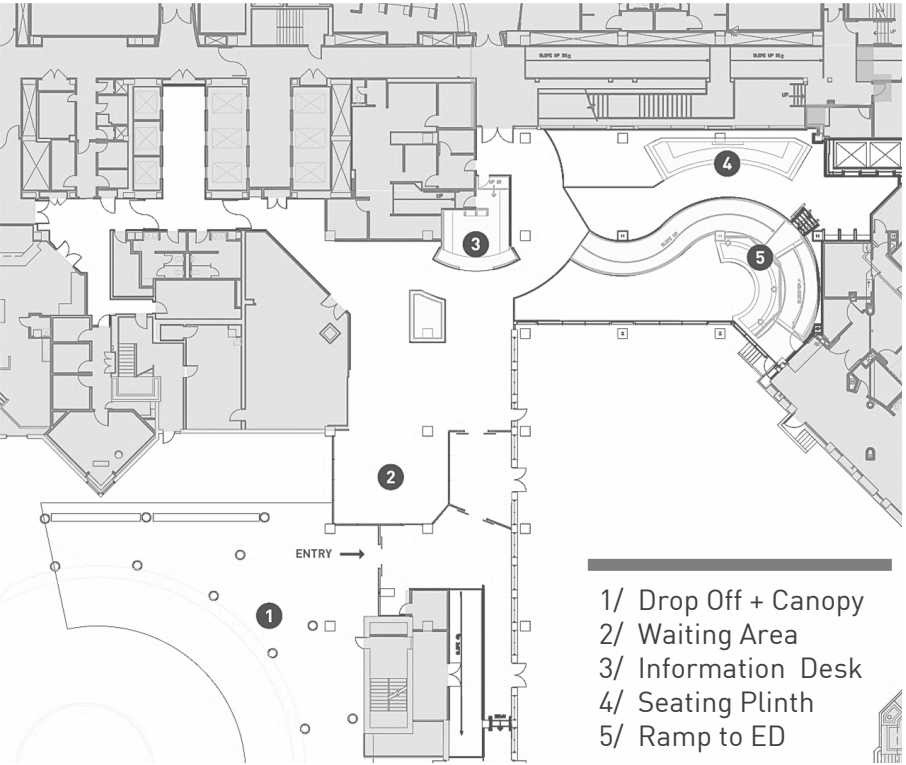


The New Approach
(After)



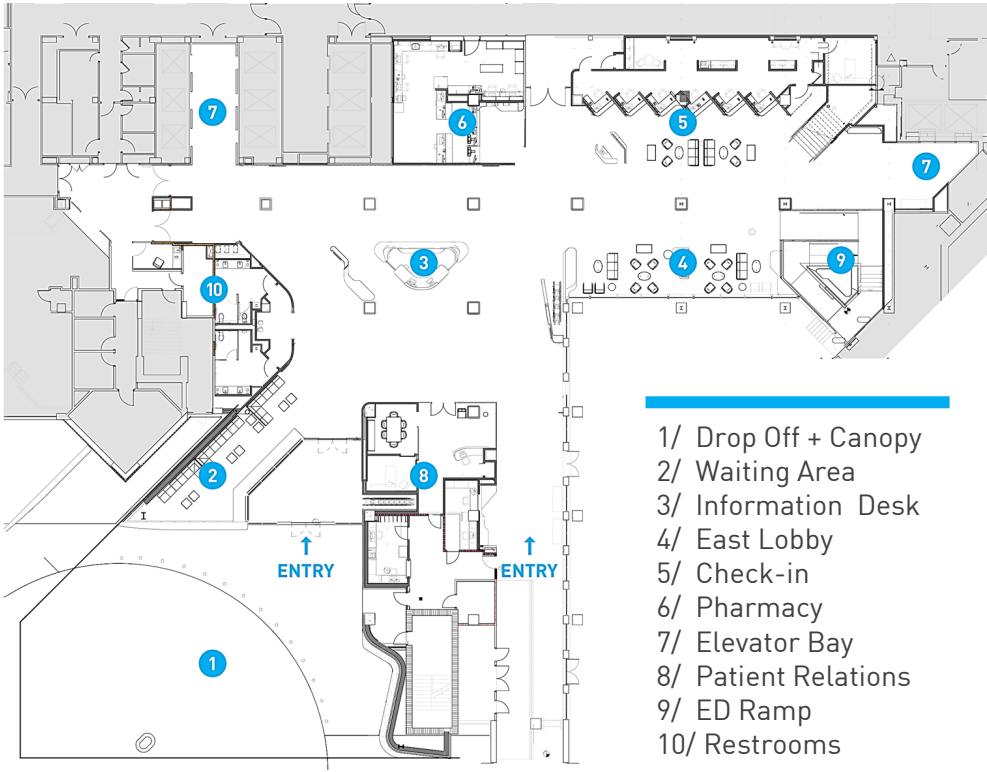
ELEVATING A.O.T. DESIGN EXPERIENCE

Arrival Zone Interior Spaces



1/ Drop Off + Canopy
2/ Waiting Area
3/ Information Desk
4/ Seating Plinth
5/ Ramp to ED

Floor Plan (Before)



1/ Drop Off + Canopy
2/ Waiting Area
3/ Information Desk
4/ East Lobby
5/ Check-in
6/ Pharmacy
7/ Elevator Bay
8/ Patient Relations
9/ ED Ramp
10/ Restrooms

Floor Plan (After)

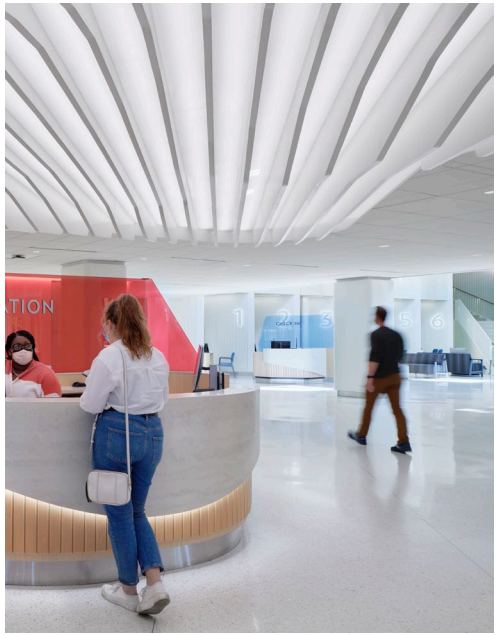
ELEVATED A.O.T. DESIGN EXPERIENCE

Transitional Space – Garage Connector

ELEVATING A.O.T. DESIGN EXPERIENCE

Arrival Zone In Action

Arrive - Confluence
Main Info Desk



Orient
East Lobby Beyond

Transition
Central Registration

ELEVATING A.O.T. DESIGN EXPERIENCE

Momentary and Lingering Transitional Zones

Drop-off / Pick-up Lingering

East Lobby Lingering and Outdoor Respite

ELEVATING A.O.T. DESIGN EXPERIENCE

Transitional Zones – Self Efficacy and Empowerment

Digital Wayfinding Landmark

Integrated Moments of Pause

ELEVATING A.O.T. DESIGN EXPERIENCE

Before and After

ELEVATING A.O.T. DESIGN EXPERIENCE

SCIENTIFIC TOOLS FOR HOSPITAL ARRIVAL POEs

Key Findings

- POE findings indicated that UCMC Arrival Zone is a well-connected space with high efficiency and easy-to-navigate circulation design for both vehicle and pedestrian traffic.

- A wide range of activities take place in the hospital lobby among different groups of users. The hospital lobby is not simply an entryway or a transportation hub; it's a social space, waiting space, and care space.

- The Central Info Desk serves as a landmark and wayfinding hub for pedestrian patients and visitors.

SCIENTIFIC TOOLS FOR HOSPITAL ARRIVAL POEs

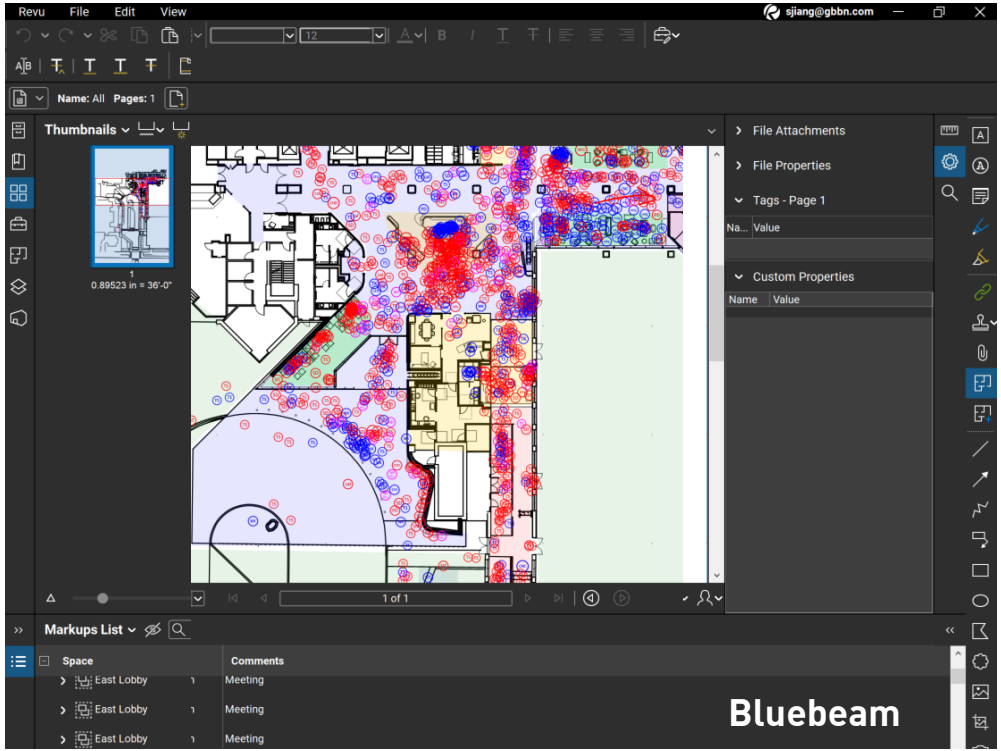
Behavior Mapping Protocol

Two strategies:

- Snapshot/scan pedestrians on the ground level – headcounts, behaviors and distribution in space.
- Shadow vehicles from a vantage point – destination, route selection, behavior/activities.

Tools:

- Pedestrians: Digital via Bluebeam
- Vehicles: GIS Cloud



SCIENTIFIC TOOLS FOR HOSPITAL ARRIVAL POEs

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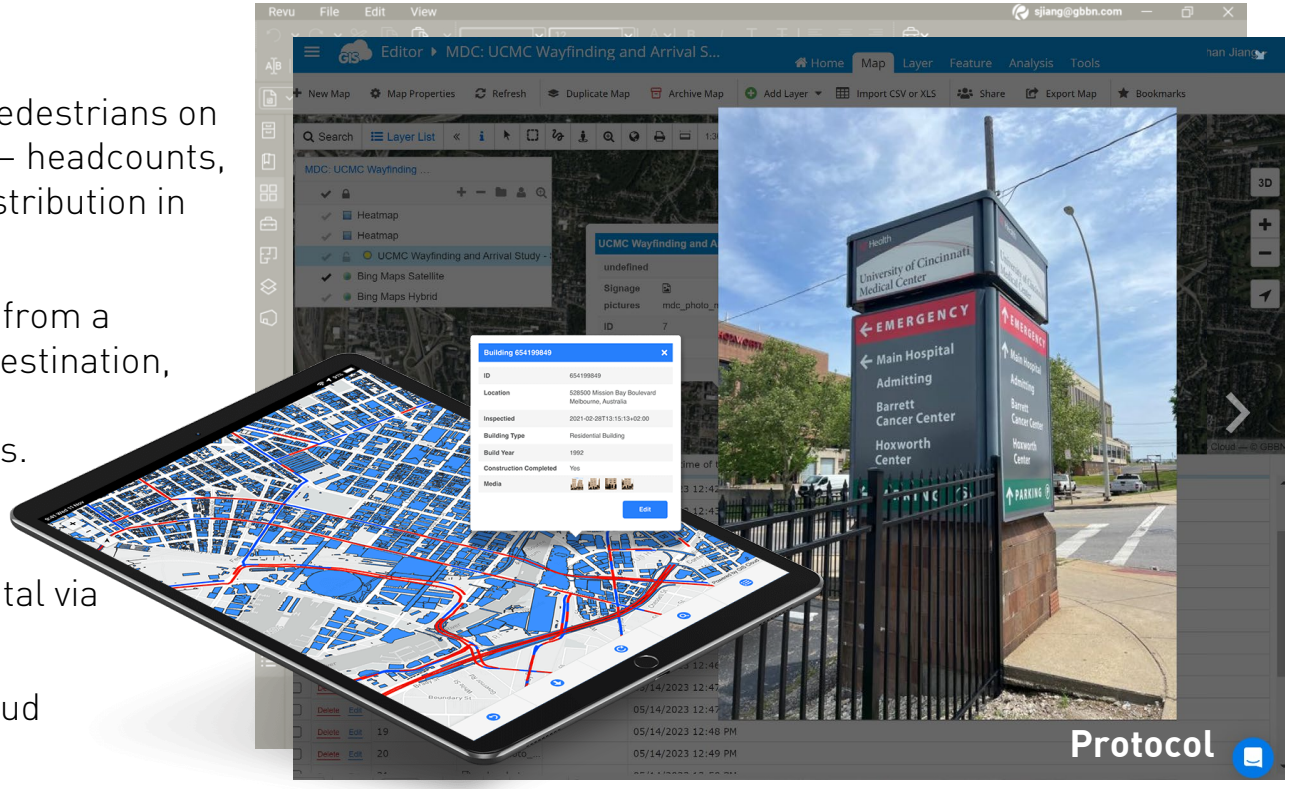


SCIENTIFIC TOOLS FOR HOSPITAL ARRIVAL POEs

Vehicle Shadowing

Variables:

- Route segment
- Node
- Stop (major stop & pkg. dest.)
- Vehicle Behavior / Activity
- Time factors

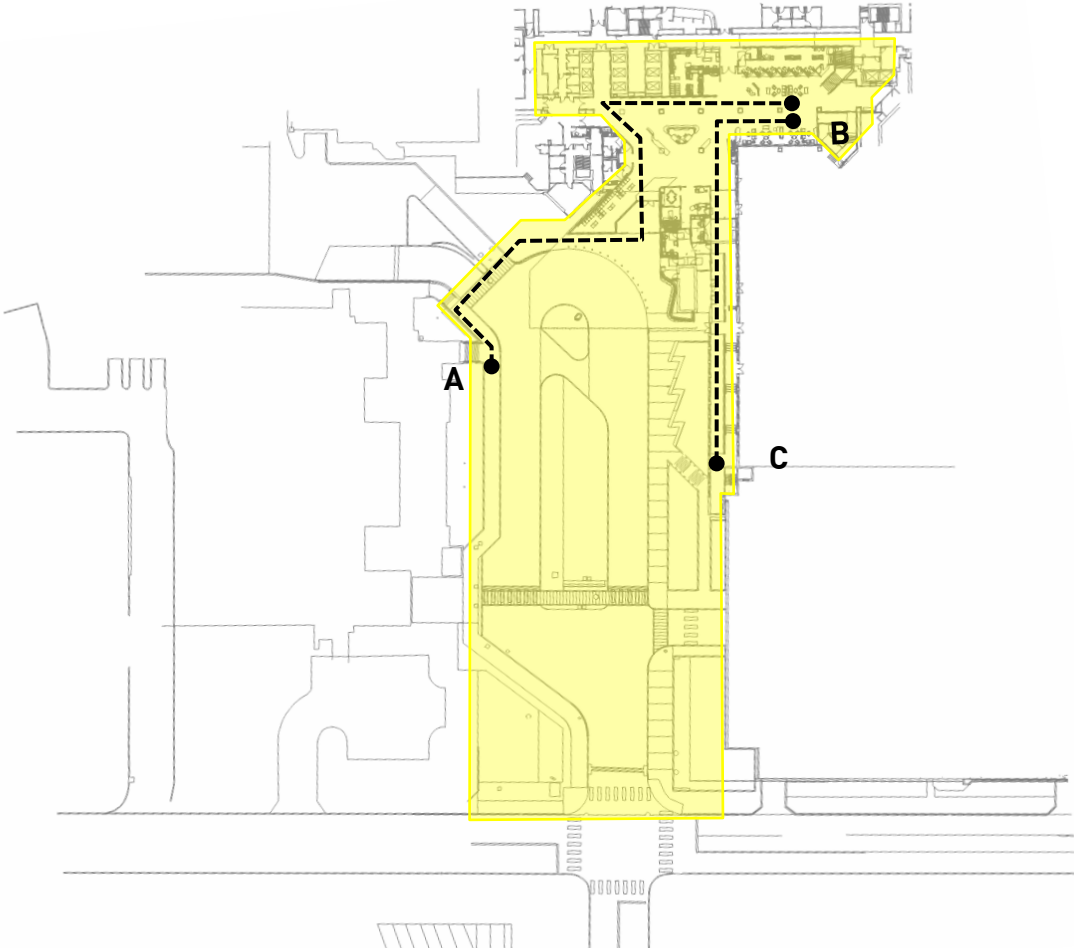
SCIENTIFIC TOOLS FOR HOSPITAL ARRIVAL POEs

Pedestrian Scanning

- System scanning of occupancy situation during observation time

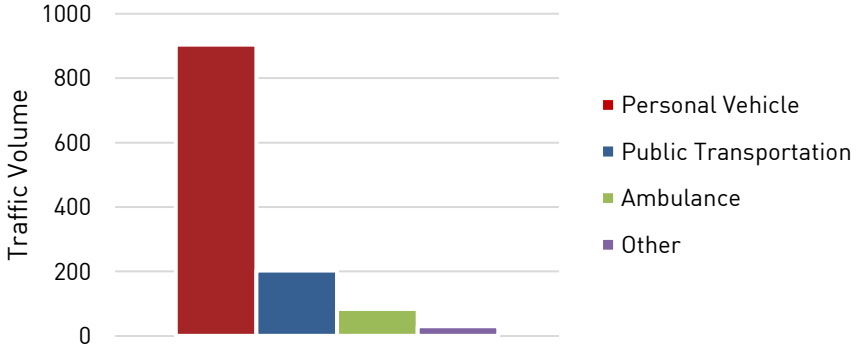
- Predetermined route for the building arrival and transitional spaces, following the A-B-C and C-B-A sequence alternatively

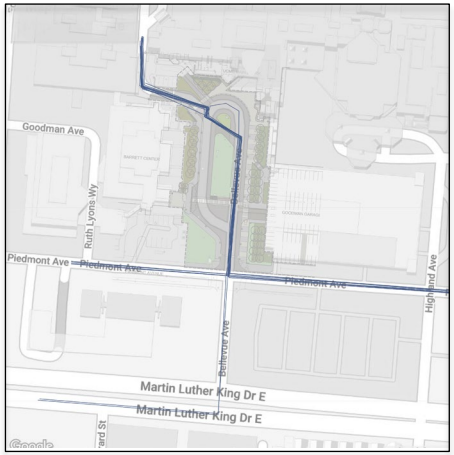
- Variables:
  - Occupancy profile
  - Occupancy count
  - Space and location
  - Behavior/activity



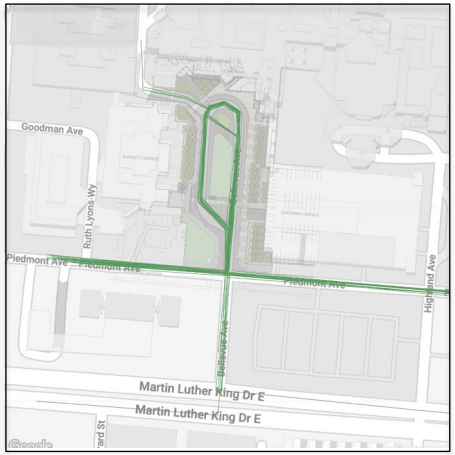
POE OBSERVATIONS

Vehicle Traffic Volume



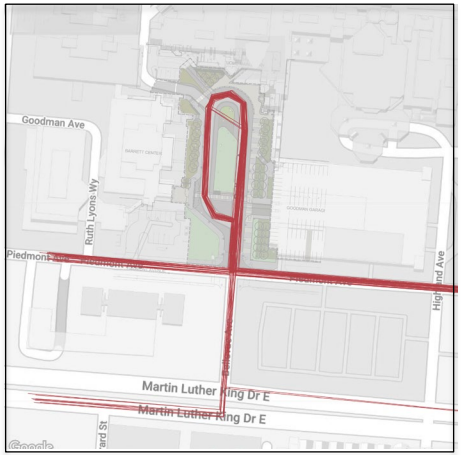


Ambulance (6.9%)

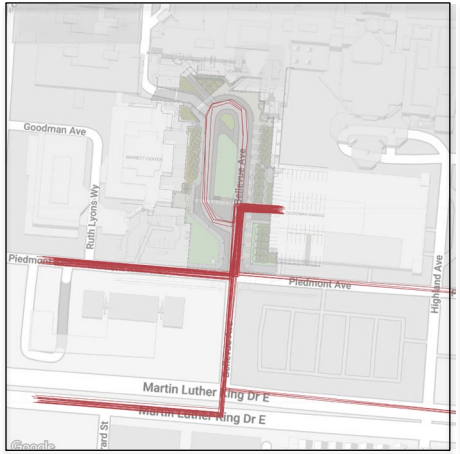


Public Transportation (15.8%)

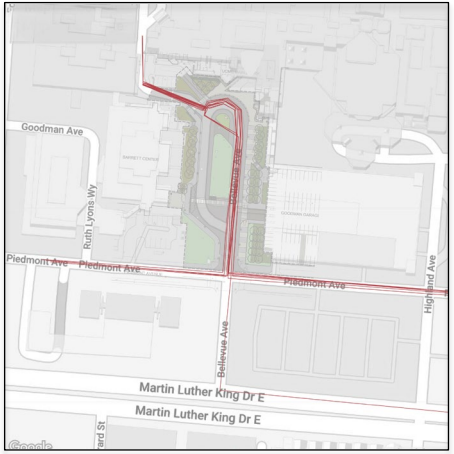
All Personal Vehicles (74.3%)



Passthrough (34.6%)



Garage (17.7%)



Inpatient Discharge (6.3%)

POE OBSERVATIONS

Vehicle Route Selection

Route 17 (14.2%)

Route 26 (4.1%)

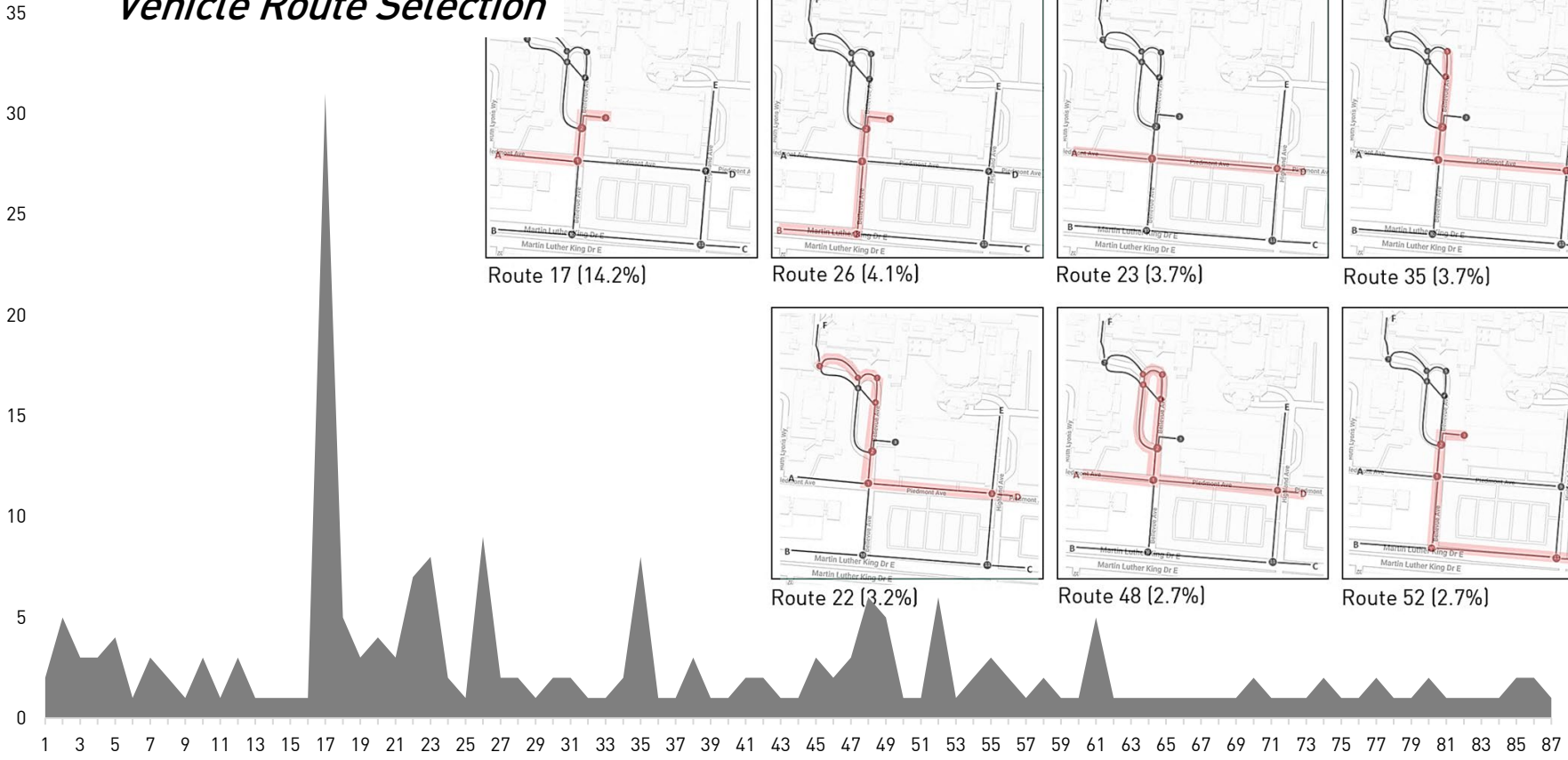
Route 23 (3.7%)

Route 35 (3.7%)

Route 22 (3.2%)

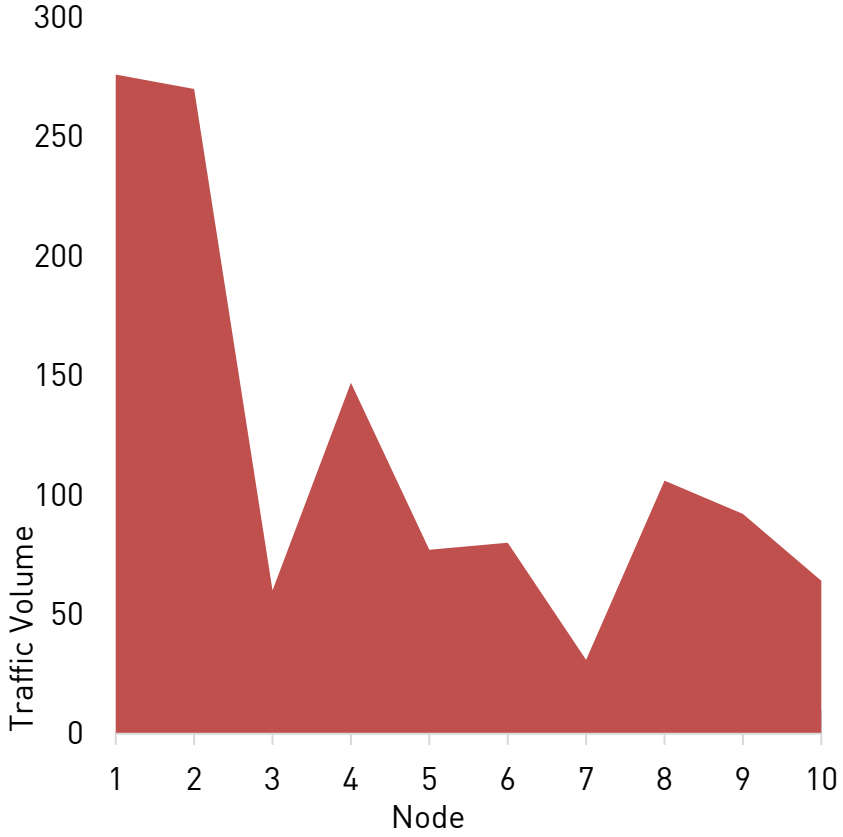
Route 48 (2.7%)

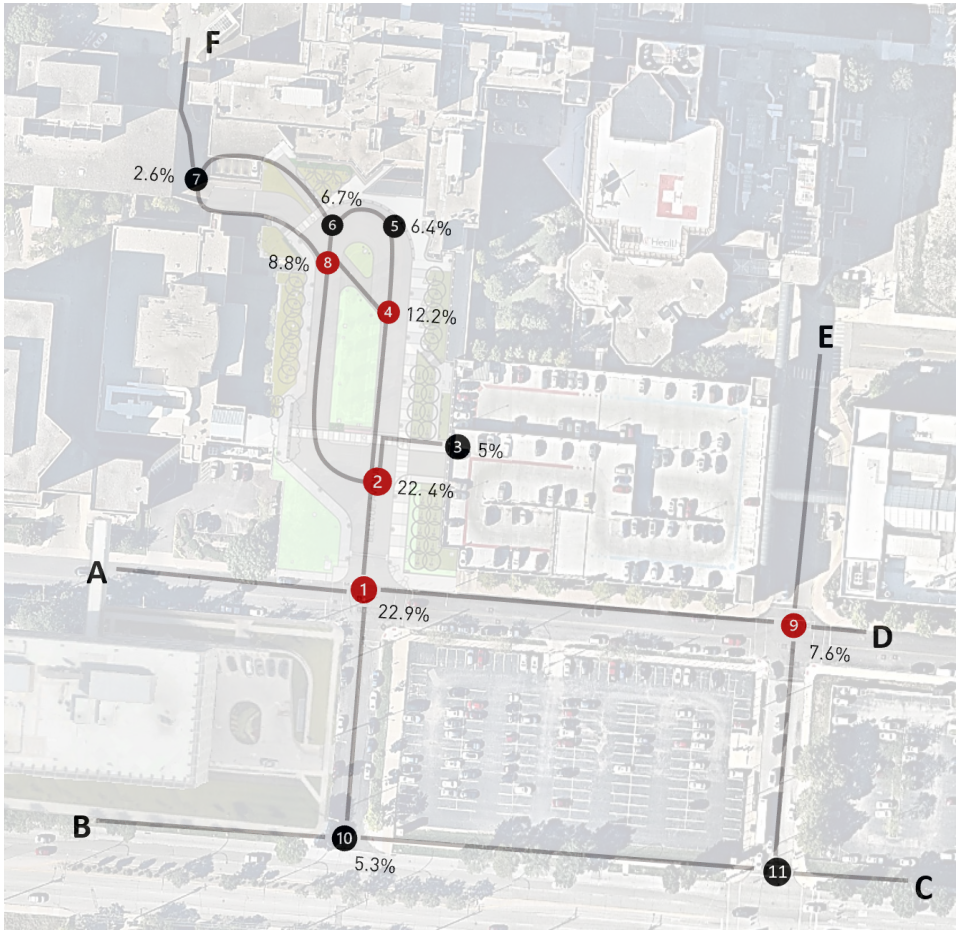
Route 52 (2.7%)



POE OBSERVATIONS

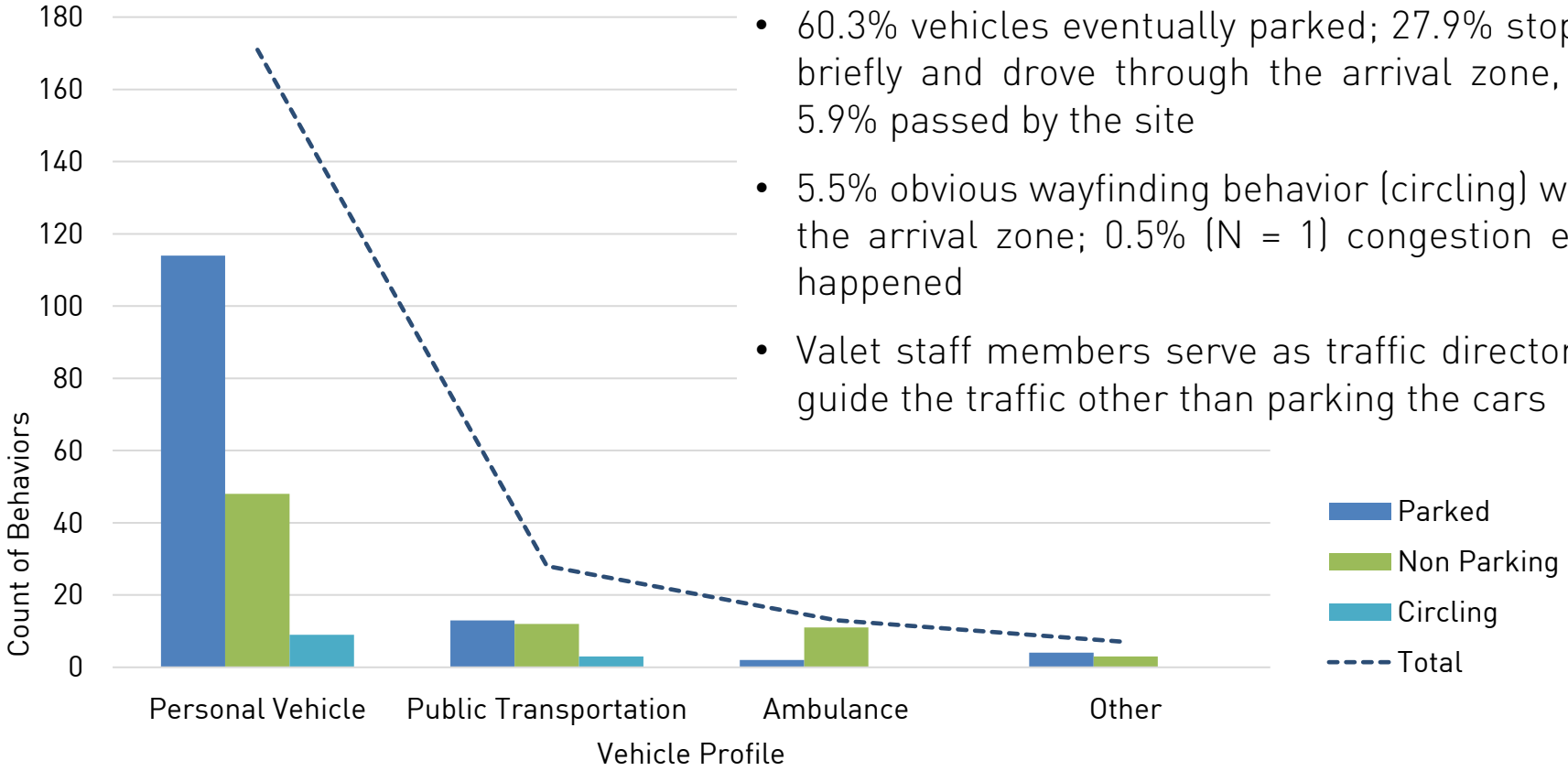
Vehicle Traffic by Node





POE OBSERVATIONS

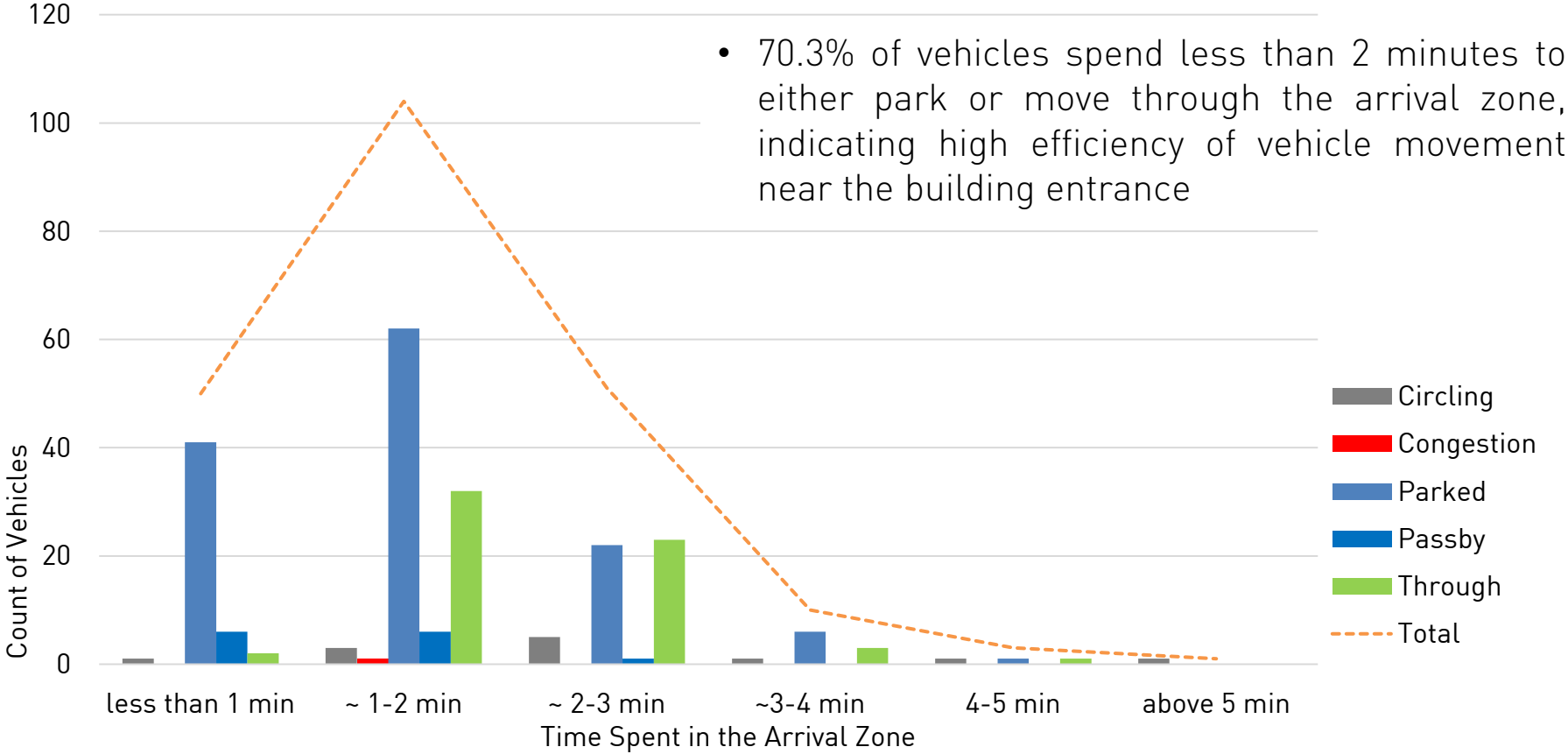
Vehicle Behavior in the Arrival Zone



- 60.3% vehicles eventually parked; 27.9% stopped briefly and drove through the arrival zone, and 5.9% passed by the site
- 5.5% obvious wayfinding behavior (circling) within the arrival zone; 0.5% (N = 1) congestion event happened
- Valet staff members serve as traffic directors to guide the traffic other than parking the cars

POE OBSERVATIONS

Time Factors

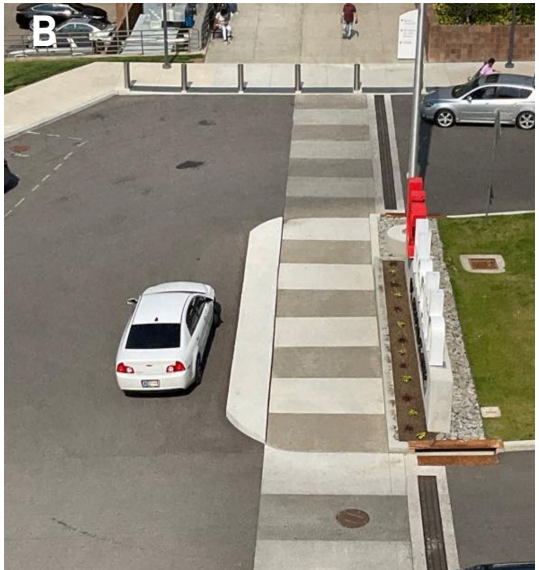


- 70.3% of vehicles spend less than 2 minutes to either park or move through the arrival zone, indicating high efficiency of vehicle movement near the building entrance

POE OBSERVATIONS

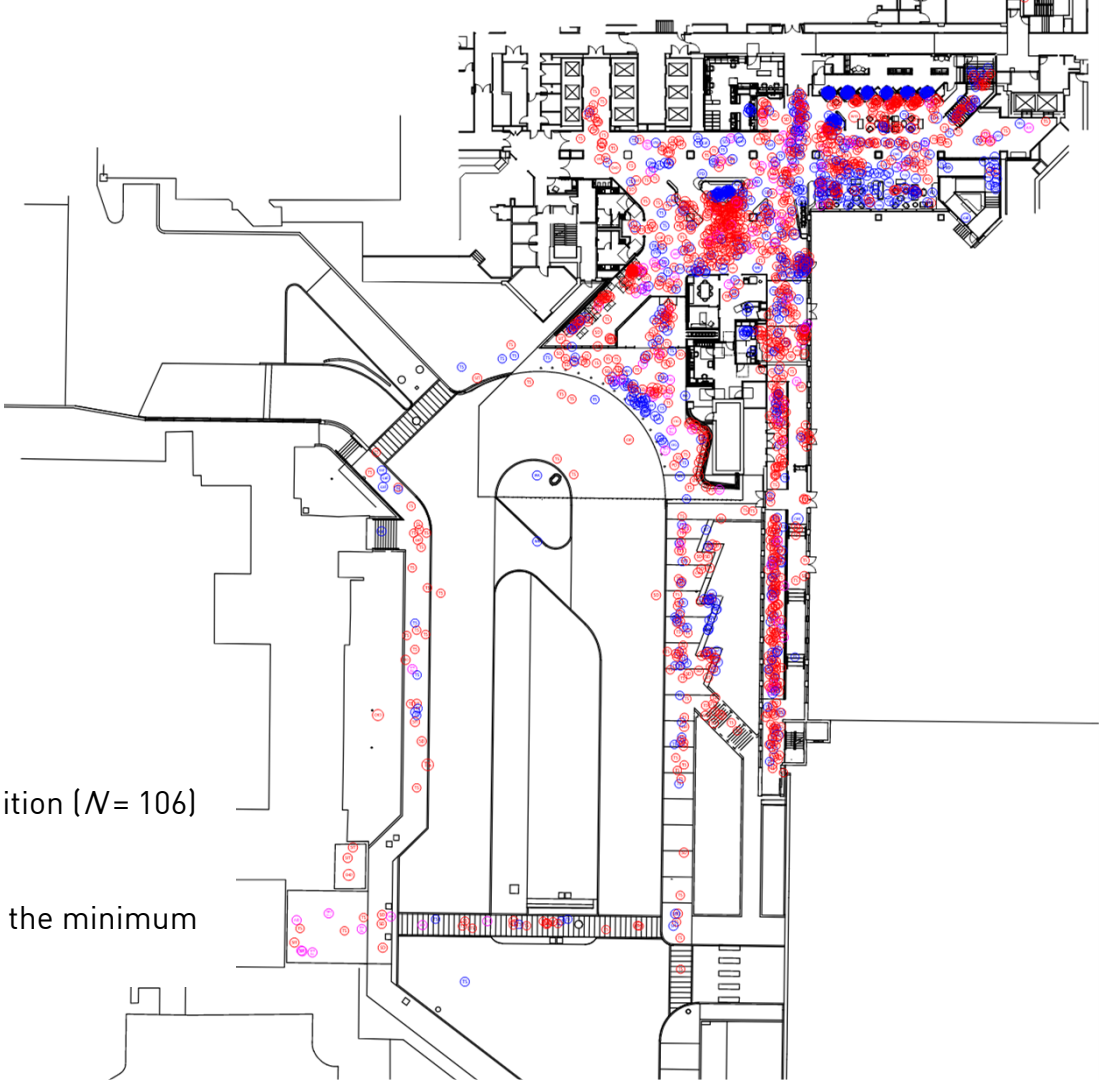
Major Stops

- Separate routes for ambulances.
- More vehicle stops occur along the “inward” side of the paths near the building main entrance.



POE OBSERVATIONS

Pedestrian Traffic Volume



All Occupants (*N* = 2096)
Red – Ambulatory patient/visitor (*N* = 1257)
Pink – The disabled or patient in critical condition (*N* = 106)
Blue – Hospital staff (*N* = 733)

*Each bubble is 3ft in diameter, representing the minimum social distance in public spaces

POE OBSERVATIONS

Ambulatory Patients / Visitors

Ambulatory Patient/Visitor (*N* = 1257)

Occupancy High — Low

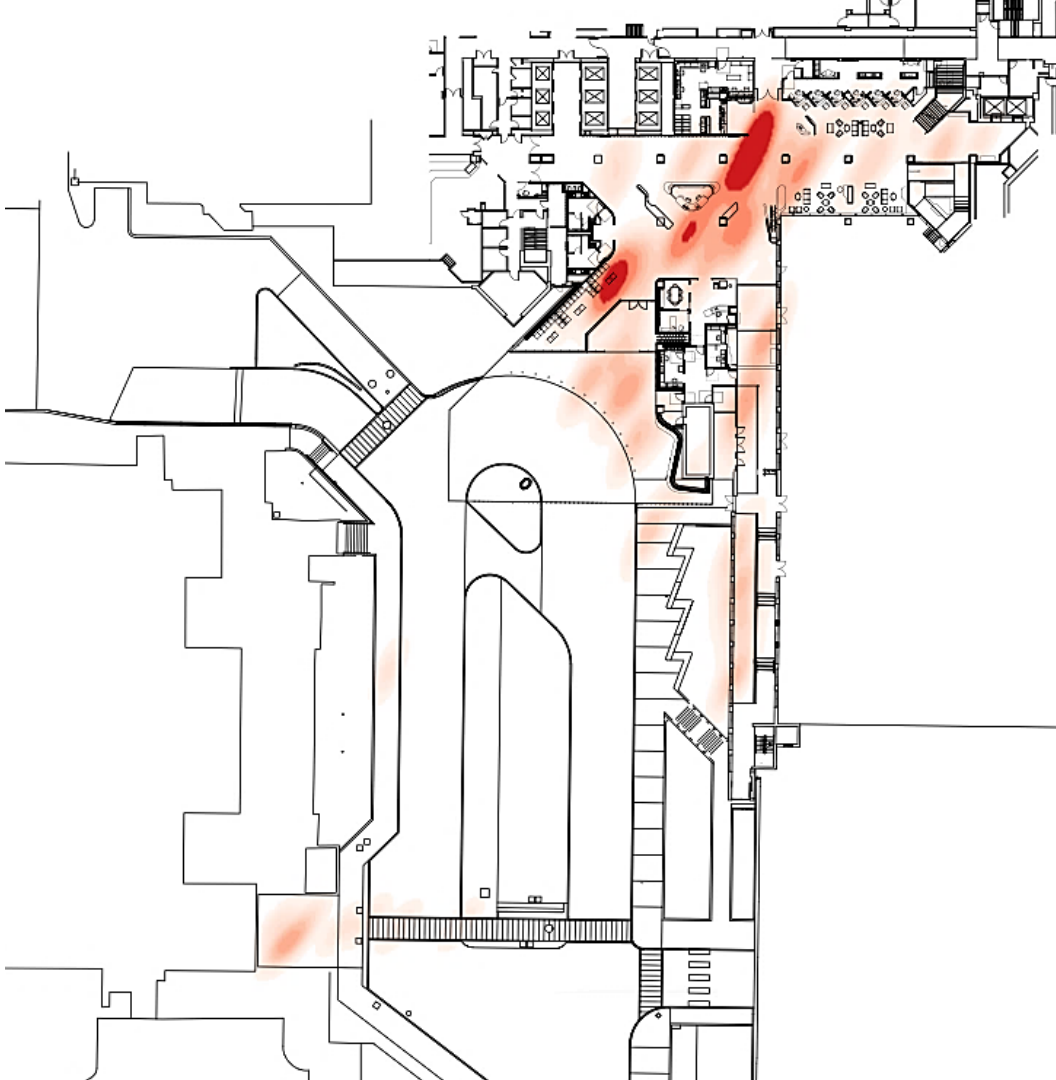
POE OBSERVATIONS

Ambulatory Patients / Visitors

- Observed a total of 214 people at the Central Info Desk within 11 observational intervals (10 min. each, random sampling); 30.4% were given verbal wayfinding guide by staff. The average resolution time is ~ 0.5 min.

POE OBSERVATIONS

Disabled / Critical Condition

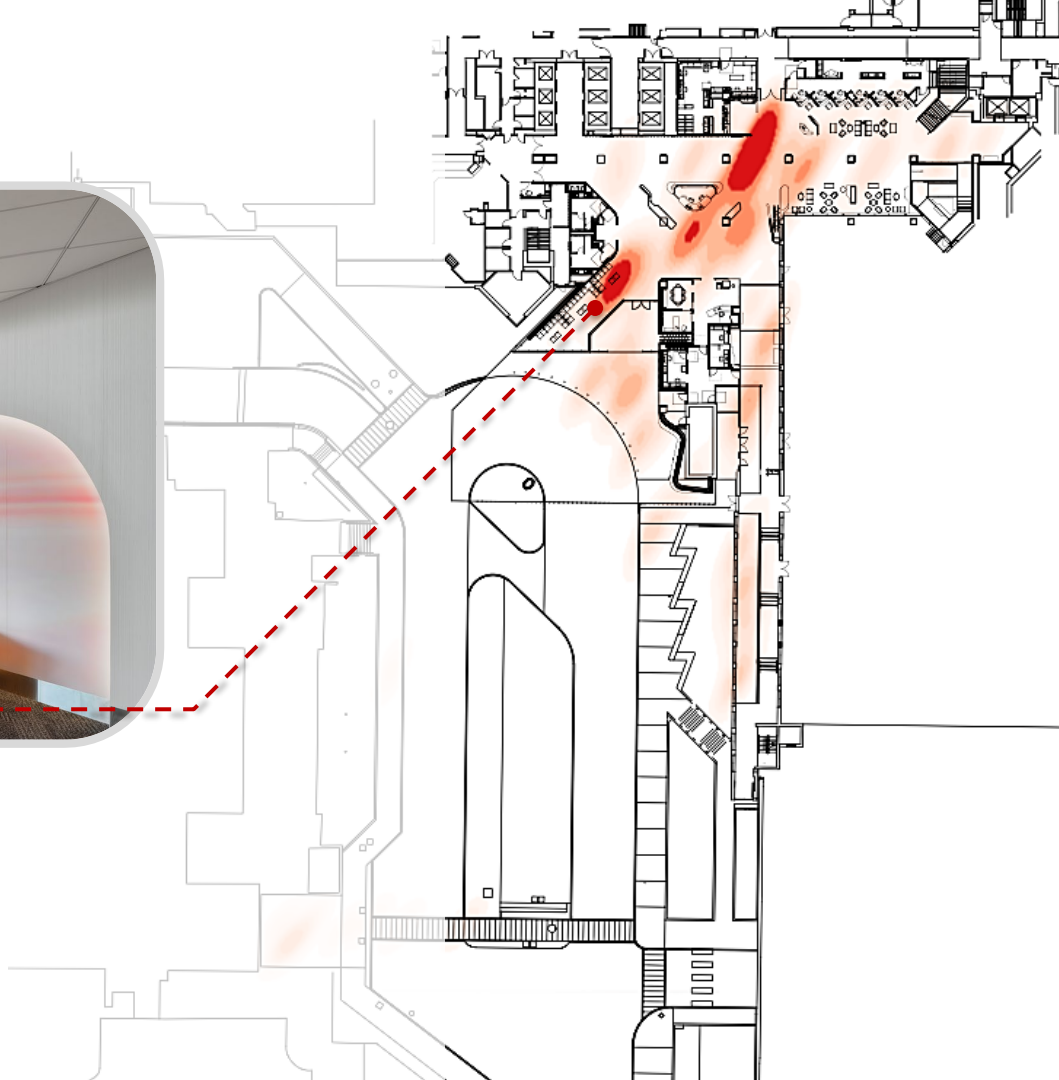


Disabled/Critical Condition (*N* = 106)

Occupancy High — Low

POE OBSERVATIONS

Disabled / Critical Condition



- Elevated waiting experience for disabled patients or people using a wheelchair / walking aid to be picked up near the main entrance.

POE OBSERVATIONS

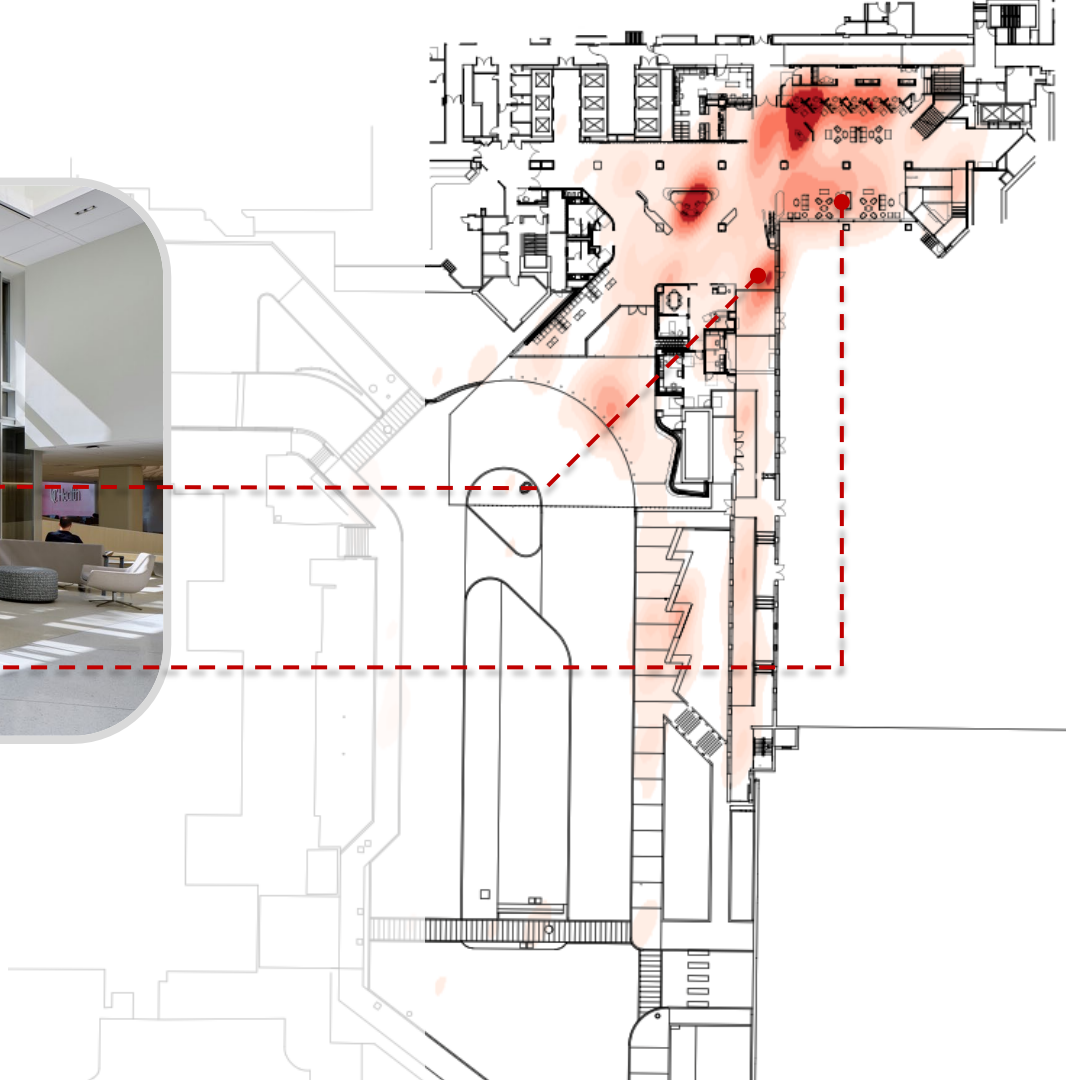
Staff Members

Hospital Staff (*N* = 733)

Occupancy High — Low

POE OBSERVATIONS

Staff Members



- Staff members use the main waiting area for meeting and gathering.
- Side-door for internal circulation by staff members.

ADDITIONAL TAKEAWAYS

- Pedestrian traffic volume from the garage connector is **2.4** times of the traffic from the main entrance.
- Pre-registration help divert **21.7%** of the traffic flow and provide extra point of care before the check-in task.
- A wide range of activities take place in the hospital lobby among different groups of pedestrians. The hospital lobby is not simply an entryway or a transportation hub; it's a **social** space, **waiting** space, and **care** space.

A RESEARCH CONTINUUM

- On-going research collaboration with the University of Kansas
- Campus-wide configuration and intelligibility research via **Space Syntax** and observational study
- A validated protocol
- Signage system regarding traffic analyses

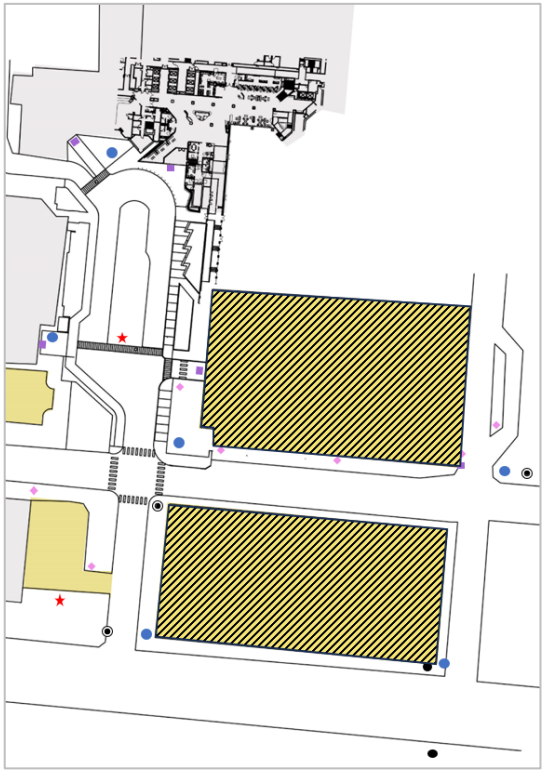


Figure Source: Cai & Jiang, et al., (in progress)

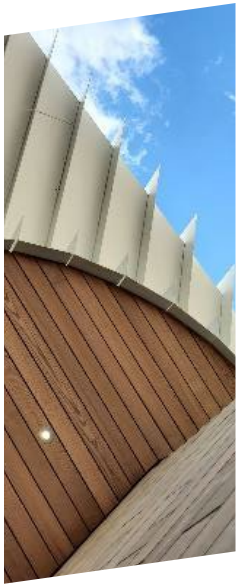
OVERALL TAKEAWAYS

- Branding and identity design is an integral part of hospital architecture design, which play essential roles in the overall wayfinding design of large hospitals.

- The layout of the hospital campus significantly influences patients' arrival, orientation, and transit experiences.

- Effective hospital wayfinding design must consider both vehicle and pedestrian behaviors. Factors such as parking facilities and transitional spaces from exteriors to interiors are crucial considerations.

- Collaborative efforts between architectural design and healthcare system operations make an impact on patients’ overall wayfinding experience.



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