# Assessing Physical Environmental Barriers in Healthcare Facilities:
Designing for the Accessibility Needs of Patients

The University of Florida (UF) -Disability and Health Program (DHP) partnered with UF design students to help with on-site accessibility assessments for healthcare locations where people with disabilities (PWD) may receive care. The UF interior design students assessed four healthcare clinics in the Central Florida region, conducted Design-Thinking (DT) workshops with staff, and disseminated patient surveys. The comprehensive approach was used to identify gaps of accessibility from multiple perspectives allowing the DHP to enhance the existing environment by proposing scalable solutions to increase accessibility.
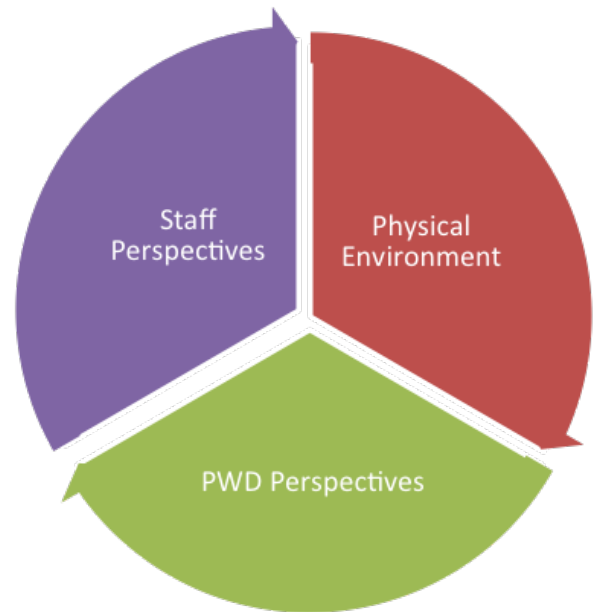
The Physical Environment

 The goal of this assessment focused on identifying areas of non-compliance specifically areas where implementing low-to-no cost design solutions create greater accessibility. Site accessibility was assessed using the ADA Checklist for Existing Facilities (2014) developed by the Institute for Human Centered Design in association with the ADA National Network and is categorized into four priority areas, 1) Accessible approach and entrance, 2) Access to goods and services, 3) Access to public toilet rooms, and 4) Other—a total of 208 criteria. A modification section was created for exam rooms, triage areas, and laboratory spaces that referenced from the 2010 ADA Standards. In addition to the ADA criteria, design cohesion, materials, and aesthetic were factored in to the overall assessment.

The study found approximately 90% of the assessed criteria were ADA-compliant and/or were not applicable to the space. Interestingly, the study indicates that properly designed low-to-no-cost solutions provide an optimal strategy for improving degrees of accessibility.

**10% of the assessed criteria are in need of improvement**

Frequently assessed areas needing improvement include:

- Inaccessible entrances

- Lack of or improperly placed signage

- Obstructions to clear floor space and reach

- Lack of van accessible parking

- Tripping hazards

- Opening, closing, and securing of doors

To estimate financial feasibility, non-compliant criteria were categorized into a 3-tier system based on impact to the existing structure:

Tier	Impact	Examples	Estimated Cost (per item)
1	Minor renovation needed	• Installing/moving signage • Replacing minor door hardware/adjusting minor hardware components	0-$200
2	Moderate renovation required	• Replacing door thresholds to meet ADA compliance • Replacing toilets • Installing/replacing major door hardware components	$200-1,000
3	Significant renovation required	• Moving walls to expanding door, corridor, and room clearances • Re-organizing toilet stalls	$1,000+

Low vs. High Cost Solutions

Tier 1 ($)
Tier 2 ($$)
Tier 3 ($$$)

78.9%
18.9%
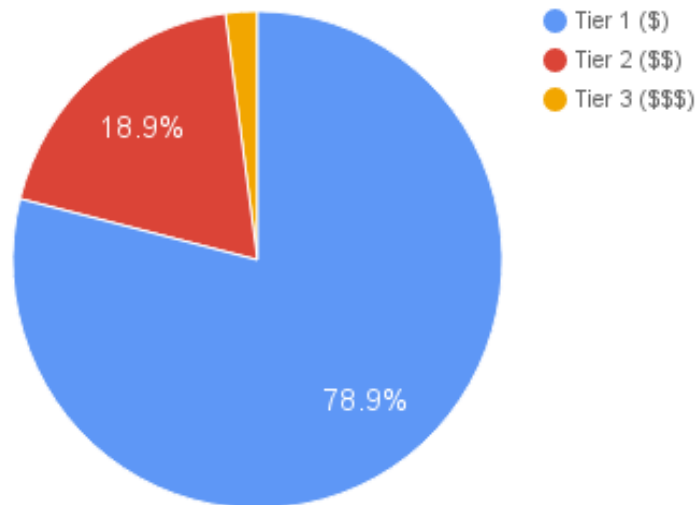
75% *of non-compliant issues require solutions that are little to no cost to implement.*

For example, in several exam rooms clearances for PWD using wheelchairs were not met. The most common cause of the impediment was additional chairs in the room. A no-cost option would be to re-allocate the spare chair leaving one for an attending relative or caregiver.

The Patient Experience

The *Patient Accessibility Experience Survey* was a 10-item questionnaire provided to patients during their clinic visit. The survey consists of 5-point Likert-type questions which asks patients to rate the satisfaction with the ease and accessibility of the following:

- Parking and entering the building
- Opening doors
- Waiting rooms
- Moving throughout and navigating the building
- Check-in/check-out spaces
- Toilet rooms
- Exam rooms

Survey results (n=23) were positively rated with general accessibility and experience being of a *Satisfactory* or *Excellent* quality. Other areas that rated as *Adequate* were toilet rooms (13%) and exam rooms (4%). Additionally, two open response questions asked patients to describe experiences with barriers to accessibility. Ratings and response comments indicate patients perceive these clinics sites as accessible and generally report a positive healthcare clinic experience. To note, at one site specializing in treating patients with dementia, caregivers were asked to complete the survey on the patient's behalf (n=10).

*However, one patient survey provided a completely different perspective.*

To this individual, the environment was not accessible. Specifically, the responses indicate difficulty maneuvering his or her *"power chair or wheeled walker into the lab"* further rating areas of approach and opening doors were rated with the lowest satisfaction rating. This response reflects the gap between everyday day experiences of people without disabilities and those with limited permanent or temporary disabilities.

Satisfaction Rating

- Excellent
- Satisfied
- Adequate
- Dissatisfied
- Needs Improvement
- Not Answered

42.4%

47.8%
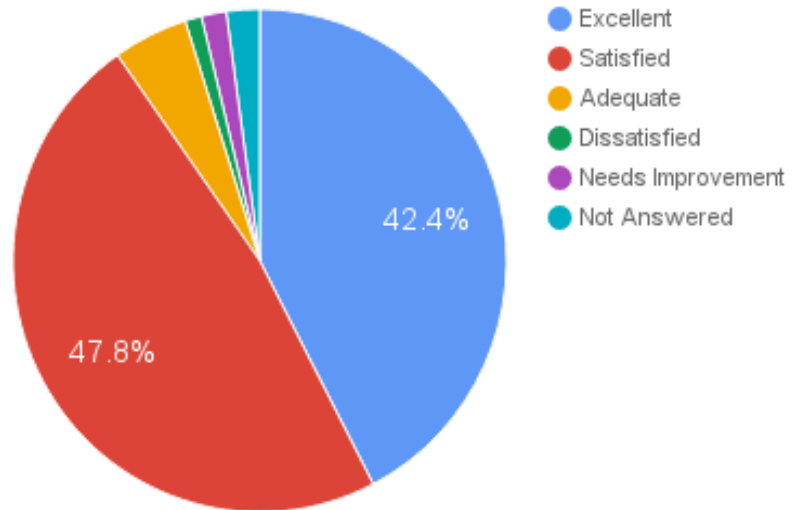
Design Thinking (DT) Workshop: Understanding Barriers to Healthcare Accessibility

Design Thinking (DT) is a term that describes a creative brainstorming process that is human-centered, empathetic and focused on the people at the center of a problem to be solved. It originates from innovative companies like IDEO and the LUMA Institute who pioneered the craft of creative brainstorming as a way to understand the needs and desires of their clients and effectively grasp the core of an issue. By gaining a clear understanding of the core needs and desires of a client, design professionals are better able to create a solution that meets the requirements of the end user and therefore increase satisfaction with both the process and the end result. For this project, the DT process allowed staff, clinicians, and site administrators to brainstorm barriers to accessibility and quality of care (QoC) in their facility and facilitate a dialogue toward solutions to improve accessibility for PWD. Two exercises were conducted during the onsite workshops, Stakeholder Mapping and Affinity Mapping. Each exercise took approximately 30 minutes to complete.

DESIRABILITY: **FEASABILTIY:** **VIABILITY:**
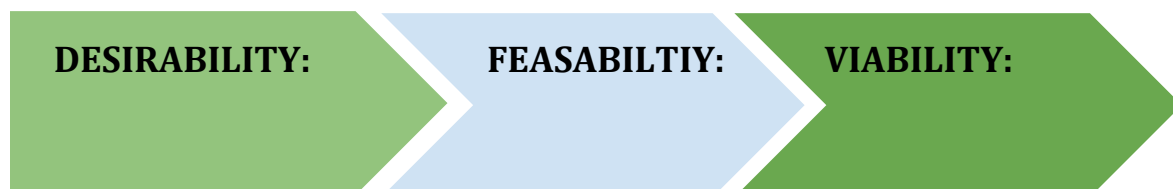
Responses during the DT workshops focused on two main themes, (1) the complexity of the overall healthcare system and its impact on patient care and (2) ADA related gaps pertaining to the physical space. The perceptions of ADA needs within the physical space observed by the staff aligned with and expanded upon those identified during the site visit. This indicates that the clinical staff is well aware of the needs of their patients and how the building impacts PWD.

Key outcomes from the DT exercise were:

- An overwhelmingly complex healthcare system
- The importance of individualized care and the need for an environment that adapts to various needs
- There is a critical need for the interior spaces to project a feeling of calm for both staff and patients
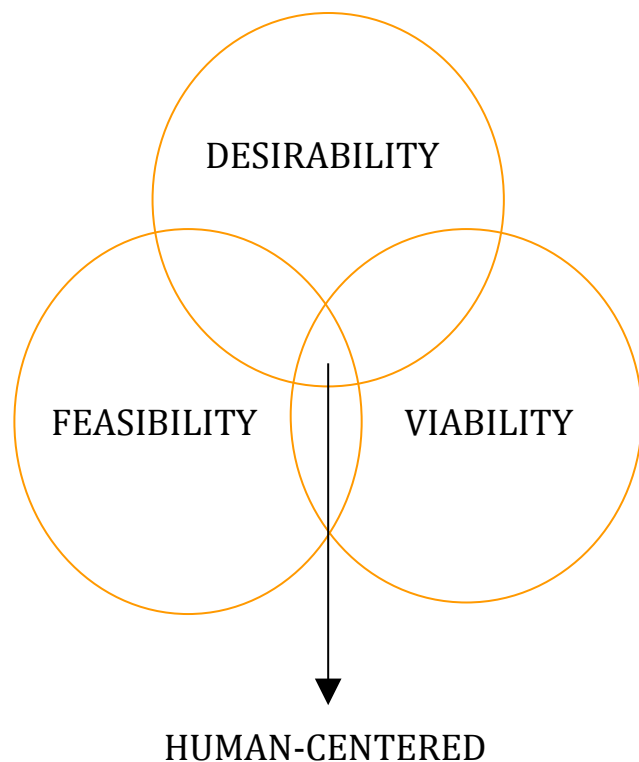
Activity 1: Stakeholder Mapping

The purpose of this exercise allows participants to diagram networks of people who have a stake in the system being evaluated. The goal was to build a shared understanding of the over arching range of stakeholders and apparent complexity of the system. The participants took an active role in visualizing the relationships, interactions and thought process of each identified stakeholder. During the exercise participants were given a tabletop easel and markers and asked to draw a persona for each stakeholder, arrows illustrating direct and indirect relationships and thought bubbles to communicate the frame of mind of each stakeholder. It provided the workshop facilitators with an in-depth understanding of the system and helped participants identify key stakeholders and major issues.

DESIRABILITY

FEASIBILITY   VIABILITY

HUMAN-CENTERED
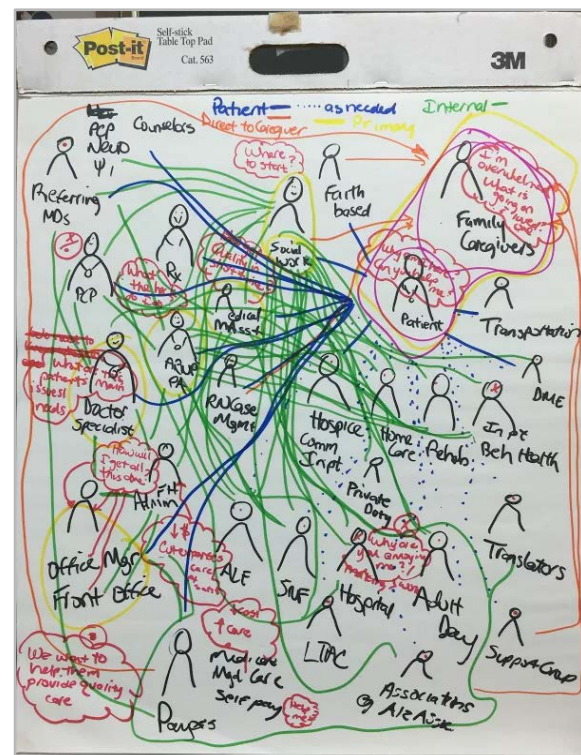
Discovered Outcomes:

- Overwhelmingly complex healthcare system
- Connections and interactions between stakeholders has a great deal of variation making it difficult to streamline the process and maximize available time
- The most complex relationships are internal within the system between staff and associated support organizations
- The role of the social worker is one of the most intense and over utilized within this system as nearly every stakeholder reports to the social worker in some way
- Much of the caretaking staff feels overwhelmed and unable to accomplish all their tasks
- The process appears stressful for the family caregiver as well because of the complexity of the system.

Activity 2: Stakeholder Mapping

The purpose of this exercise was to (1) identify specific needs and desires of workshop participants pertaining to patient accessibility to healthcare, and (2) identify common themes. It provided an opportunity for each participant to openly share concepts and ideas that were then grouped into common themes for discussion.

Each person wrote current issues and needs with the current system and the physical space, keeping one issue per post-it note. They were then asked to contemplate the current obstacles within the current space that are barriers to accessibility and the group collectively brainstormed possible solutions.

Below is an example of the *Physical Space* Affinity Map created by a group of medical and administrative personnel from a geriatric clinic in central Florida.

Comfort and access for patients; supportive tools and environment for staff.

Discovered Outcomes:

- Small exam rooms, step up scale
- Need more cozy/ homey feel
- Poor internet connection, phone lines
- Exam rooms not relaxing
- Need area for equipment and device samples for patients
- Better table needed in conference room
- Small parking lot, doors hard to open
- Need TV or iPad for educational training
- Temperature regulation needed
- Small walkways, hallways
- Small office space for providers
- Need better music in lobby
- Need testing stations

Designing Solutions

The very nature of healthcare clinics is to support patients, which is reflected in the high rate of ADA-compliance and satisfaction. However PWD continue to face obstacles in these places of care. Therefore, proposed solutions pair recommendations provided by the checklist with site-specific designs developed by the students creating a more robust set of recommendations. The students developed *Site Improvement Portfolios* for each clinic involved in the study. Portfolios detailed specific areas needing improvement along with scalable design recommendations.

Examples of Site-Specific Design Recommendations:

At one site the paper towel dispenser was mounted at a height acceptable to the recommended standards, however, the location of the dispenser's handle extended the necessary reach for operation by 6 inches (see photo below). A low-cost (Tier 1) solution would be to place a bin or tray filled with loose paper towels or a roll on the counter to increase reach. If a counter is not present, mounting a single pamphlet holder next to the sink accomplishes the same task.

In most of the exam and toilet rooms door hooks were placed between 58-64" above the floor. Providing additional hooks mounted at 48" above the floor to the back of a door and/or adjacent walls can help patients with limited mobility to more easily hang a coat, purse, or bag.

Seating in lobbies were often arranged in such a way that the only available "space" for a person in a wheelchair to wait impeded upon direct paths of travel. While this situation creates a temporary obstruction on clear floor space it may also create a sense of burden or isolation to the person in the wheelchair.

Conclusions

In this study, 1 out of 23 patients indicated a greater need for accessibility within an existing facility that currently meets 90% of required ADA standards. With an emphasis on creating environments that employ principles of universal design it will be increasingly crucial for hospital managers to understand the needs of their patients. In the meantime, with little-to-no financial investment, implementing easily achievable design solutions may provide PWD greater independence; an invaluable return on investment.

In addition to quantitative investigational methods, further research into the impact of accessibility on health care for PWD should include feedback from the medical staff and caregiver perceptions. Obtaining this qualitative information will combine with this data to create a more well-rounded study. It allows the researchers to first investigate using validated assessment tools and then check the reliability of results through the direct input of the medical staff with an intimate understanding of the system and space. This mixed methods approach is incredibly valuable in producing thorough results because it aligns with the human-centered philosophy that permeates ethos of universal design.

Resources

New England ADA Center (2014). ADA Checklist for Existing Facilities [Assessment Instrument]. Boston, MA:

Institute for Human Centered Design

LUMA Institute (2012) *Innovating for People Handbook of Human-Centered Design Methods.* Pittsburgh, PA:

LUMA Institute.

Design Kit: The Field Guide to Human-Centered Design. (n.d.). Retrieved June 23, 2016, from

https://www.ideo.com/work/human-centered-design-toolkit/