Human-Centered Design Implementation

A CASE STUDY OF LOS ANGELES COUNTY+USC MEDICAL CENTER

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TABLE OF CONTENTS

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ABSTRACT

Human-centered design is an increasingly popular metric by which architects and planners arrange built landscapes. The potential of design to create direct and positive impacts on the lives of many people and populations encourages planners to design spaces and places with the best practices of sustainability and community consciousness. After the completion of the new Replacement Facility for the LAC+USC Medical Center, the architectural firm (Lee, Burkhart, Liu Inc. (LBL) Architects of Santa Monica, prior to their merge with Perkins Eastman, and HOK Architects of Los Angeles, formerly Hellmuth, Obata + Kassabaum), designed a joint master plan closely focused on the role hospitals play in modern hospital planning. Health care facilities must provide patient care necessary for physical and emotional recovery, as well as provide environments that support the maintenance of health. Encouraged through architecture and design, modern hospitals are shifting to models of holistic patient wellness to assist the healing process. Under Perkins Eastmans' 'Human by Design' model, designers seek to plan the next generation of projects to suit those who live, work, play, learn, age and heal within the environments we plan and design.

Since the development of the replacement facility now located beside the long-standing Boyle Heights landmark, LA County General Hospital, research over the last decade has attempted to better define and quantify community needs-based assessments to recognize the special role of one of the largest public hospitals and medical training centers in the United States, and the largest single provider of healthcare in Los Angeles County. The hospital is significant in both its architectural complexity as well as its role in the 1970s Chicano Movement legal case 'Madrigal v. Quilligan,' during which many non-consensual sterilizations were performed on Latina women. Having served as a site of community organizing in response to the HIV/AIDS crisis in the 1980s and '90 led by the Los Angeles Chapter of the AIDS Coalition to Unleash Power (ACT UP), the site has played a significant role in the history, treatment, and care of Los Angeles' communities of color, women, and LGBTQIA+ individuals. For such reasons, more research is necessary to determine informed approaches to implement the county hospital and whom the hospital serves with modern approaches to human-centered design.

KEY TERMS

Adaptive reuse: *The process of reusing an existing building for a purpose other than which it was originally built or designed for* (Caves 6).

Architectural feasibility study: *The analysis of a property to determine its best use, based on goals, local regulations and codes, and economic viability* (Irwin 2017).

Biophilic design: *An approach to architecture that seeks to connect building occupants more closely to nature. Biophilic designed buildings incorporate things like natural lighting and ventilation, natural landscape features and other elements for creating a more productive and healthier built environment* ("Seven Principles of Biophilic Design" 2016).

Community needs assessment: *Provides community leaders with a data snapshot of local policy, systems, and environmental change strategies currently in place and helps to identify areas for improvement* ("Community Needs Assessment" 2013).

Design for dignity: *An architectural movement catalyzed by the homelessness crisis in the Los Angeles region. Seeks to initiate and fulfill strategies that reduce homelessness and increase housing affordability* ("Design for Dignity").

Ergonomics: *The study of the interaction of the human body with the surrounding environment which enables balance between the workplace design and the human physical demands* (Thomas).

Human-centered/people-centered/people-first design: *A way to address urban design with a people-focused approach, utilizing empirical analysis to understand how the built environment connects to people's quality of life. By applying this analysis to strategic planning, planners can better understand the relationship between physical form and human behavior* ("The Jan Gehl Effect" 2016).

Obesogenic: *Tending to cause obesity, the recognition that obesogenic environments hugely impact consumption patterns and health outcomes* (Schuff et al. 2019).

Not in My Backyard (NIMBY) Movement: *The phenomenon in which residents of a neighborhood designate a new development (e.g. shelter, affordable housing, group home) or change in occupancy of an existing development as inappropriate or unwanted for their local area. Often stems from the opposition to affordable, supportive or transitional housing based on the assumed characteristics of the population that will be living in the development* (NIMBY).

INTRODUCTION

The establishment of California public hospitals and healthcare systems predate California's statehood. Though many of these hospitals have since closed or been converted into private hospitals, several official University of California Medical Centers remain open as public institutions. Twenty-one public health care systems (PHS) currently exist in California. While some PHS are county-affiliated, others fall under the jurisdiction of University of California academic medical centers ("History of California's Public Health Care Systems"). Together, these sites establish a public health care safety net for California residents that provides high-quality health care for patients regardless of insurance status or ability to pay ("History of California's Public Health Care Systems"). Public health care is most often provided by government institutions through national health care systems, while private health care is generally administered through 'for profit' hospitals, self-employed practitioners, or 'not-for-profit' non-government providers, including faith-based organizations (Basu et al. 2012). Many individuals hold the belief that the private health system is more efficient than the public health system.

California's public health care system is regarded as an essential safety net for its residents. Specializing in a wide range of care, services include primary care, outpatient specialty care, emergency and inpatient services, rehabilitative services, and in some cases, long-term care. Trauma centers, as well as disaster-response services, are provided by hospital staff. California's publicly funded health centers serve more than 2.85 million patients each year ("History of California's Public Health Care Systems."). Publicly funded health care facilities function as the primary care provider for more than 500,000 Californians who gained Medi-Cal coverage through its expansion under the federal Patient Protection and Affordable Care Act of

that became law in 2010, providing care to 10 million outpatients each year ("History of California's Public Health Care Systems"). Accounting for just 6 percent of the state's hospitals, the system operates in 15 counties where more than 80 percent of Californians live, providing 35 percent of hospital care for Medi-Cal beneficiaries and 40 percent of hospital care for the remaining uninsured individuals in the communities which they serve ("History of California's Public Health Care Systems").

Under the Los Angeles County Department of Health Services, LA County's publicly funded health centers include Harbor/UCLA Medical Center, LAC+USC Medical Center, Olive View/UCLA Medical Center and Rancho Los Amigos National Rehabilitation Center ("History of California's Public Health Care Systems"). LAC+USC is a unique site of health care as it is a designated flagship hospital within the county system providing almost all inpatient care for low-income and uninsured people. Utilizing a Medi-Cal Managed Care Model, LA County joins many other counties within California to focus its care management on the needs of seniors and persons of different abilities, often referred to as "aged, blind, and disabled" in the health systems of other states. LA County was selected as one of the four counties within the state to transition those covered by both Medi-Cal and Medicare, called 'dual eligibles', into managed care ("Los Angeles: Fragmented Health Care" 2013).

Ten million people reside in Los Angeles County, making it the most populous county in the United States and home to more than a quarter of California's residents. The greater LA region remains the most densely populated urban area in the country in which individuals to seek medical care close to home. The County boasts high racial and ethnic diversity, but those who reside in the county have a lower socioeconomic status than residents in other parts of the state.

Thus, a high percentage of LA residents live in situations of poverty and are likely to utilize the

county's public hospitals ("Los Angeles: Fragmented Health Care" 2013).

BACKGROUND

Figure 1: A circa-1937 photo of the Old County General Hospital

Figure 2: The old County General Hospital in the shadows of Boyle Heights

A BRIEF HISTORY OF THE COUNTY GENERAL HOSPITAL

The Los Angeles County Hospital and the University of Southern California Medical School were first affiliated in 1885, five years after the founding of USC. Originally established as a 100-bed hospital with 47 patients, the modern LAC+USC complex is situated adjacent to the USC Health Sciences campus. Operating as one of the largest public health care hospitals in the state, the site has trained thousands of physicians, nurses, and other health professionals ("LAC+USC Retrospective" 2007). Holding rich historical significance, the old County General hospital, located at 200 State Street, first opened in 1933 (see Los Angeles Public Library Photo Collection in Figure 1 & Figure 2 above). The site successfully operated for 82 years until the construction of the Replacement Facility in 2008. The 6.7-magnitude Northridge earthquake of January 1994 heightened public concern over hospital building safety, resulting in passage of a new California Hospital Seismic Safety Law in September 1994, requiring hospitals to replace or

retrofit the most at-risk buildings by 2013. The old County General hospital was no longer compliant with earthquake and fire safety requirements, necessitating construction of the new Replacement Facility. Today, LAC+USC Medical Center provides a full spectrum of care for half of all sickle-cell anemia patients and people living with AIDS in Southern California. The hospital's emergency, inpatient and outpatient services remain only available to Medi-Cal recipients.

DESIGNING AND PLANNING THE REPLACEMENT FACILITY

Figure 3: LAC+USC Replacement Facility Project Team

Owner: Los Angeles County

General Contractor: McCarthy Building Cos., Clark Construction, Hunt Construction Group

Construction Manager: Jacobs, Los Angeles

Architect: HOK, Lee Burkhart Liu, Inc.

MEP Engineer: M-E Engineers, Culver City

Structural Engineer: KPFF Consulting Engineers, San Francisco

The construction of the LAC+USC Replacement Facility was designed in a joint venture between HOK Architects of Los Angeles and LBL Architects of Santa Monica. Project participants are identified in Figure 3, shown above ("LAC+USC Medical Center: Replacement Facility" 2009). Additional project partners included KPFF of Los Angeles, structural engineer, and M-E Engineers of Los Angeles, mechanical engineer. The McCarthy-Clark-Hunt joint venture is composed of three of the country's leading general contractors: McCarthy Building Companies, Inc. of Newport Beach, Clark Construction Group, and Hunt Construction Group ("McCarthy-Clark-Hunt Completes LAC+USC"). The LAC+USC replacement facility hired

general contractor McCarthy/Clark/Hunt to construct the new facility with a contract value of

$106 million. Completed in 2008 after five years of construction, the 600-bed, 1.5 million

square-foot facility includes four major components: a seven-story outpatient building; an eight-

story inpatient tower; a five-story diagnostic and treatment building, and a central energy plant.

Figure 4: Outpatient Garden at Night, LAC+USC

Figure 5: Marengo Street Entrance

> "Linking the two aforementioned towers, the 430,000 square foot Diagnostic and
> Treatment Building houses all key ancillary and diagnostic services. It is designed to
> serve both inpatients and outpatients, with separate traffic flows to minimize cross-patient
> traffic. A structurally base-isolating building, the mechanical infrastructure is located at
> the building's edges to allow greater flexibility and enhanced horizontal relationships for
> the useable floor" ("LAC+USC Medical Center: Replacement Hospital").

All four buildings are built to withstand natural disasters and other emergency situations

while accommodating 22 to 24 inches of movement during a seismic event. ("LAC+USC

Medical Center"). Consolidating functions that previously required an 80-acre campus and five

separate facilities in the Los Angeles General Hospital, the Replacement Facility shifted from a

Depression-era facility into a site of urban design that includes a lobby atrium which serves as a

visible landmark for private vehicles and public transit, a broad glass façade which has a view

overlooking Downtown LA, and large windows that allow natural light to be visible to patients ("LAC+USC Medical Center: Replacement Hospital").

APPROACHES AND INFLUENCES IN ARCHITECTURAL FRAMEWORK POLICY

This paper focuses on the prevalence of human-centered planning framework at LAC+USC. The paper evaluates whether the hospital incorporates human-centered design into its planning, and if so, assesses, the potential of design initiatives to advance humanistic design in public spaces meant to serve as a safety net for individuals limited in their access to high quality health care. If the hospital lacks human-centered planning, this paper assesses how human-centered design can be better incorporated into future humanistic hospital design projects.

To compare the ways in which LAC+USC Medical Center has adopted architectural features that advance the principles of human-centered design, my research evaluates design elements of both the Old County General Hospital and the Replacement Facility. By comparing these designs to other successful implementations of humanistic hospital design, I will provide design suggestions to improve health care outcomes for patients impacted by such issues as poverty, injury, immigration status, homelessness and trauma. Within this analysis, my research strives to answer how LAC+USC can implement future design framework to improve health care for patients largely dependent on Medi-Cal support.

Denmark is among the countries regarded as a global leader in urban design that places high importance on *people-first* approaches to planning. Danish Architectural Policy implements a 'people first' approach to urban design. In Danish hospitals, architecture is intentional in its efforts to improve the patient experience. In public institutions, architecture can play an active role providing needed services to citizens. Quality architectural projects often include

measurements of aesthetic quality, sustainability, social inclusion, accessibility, and flexible

construction (Danish Ministry of Culture). Many aging health care facilities built in the United

States in the 1950s and 1960s no longer support efficient and safe care. Health care models are

shifting to recognize the importance of patient and family-centered care, as well as the impact

that spatial environment plays in addressing the health outcomes of patients, staff, and families

(Reiling 2008). Further, the role of psychological support in the healing process necessitates a

critical shift to rethink the ways in which architects and planners design LA County hospitals, an

effort that will improve patient recovery rates while promoting preventative approaches to health

care ("Planning, Design, and Construction of Health Care Facilities").

In 2019, Gehl Architects conducted a study, *Linking Cities and Obesogenic Behavior*, to

better assess the role of the built environment and how structures and design largely influence

interdependent systems of food and personal health. By designing for maximum impact and

changing the built environment, Gehl recognizes the power of redesigning cities to support

improved quality of life. Although Gehl's study took place in London and assessed walkability

scores for children living in the dense city, the study is influential because it imagines the

redesign of an entire city's 'foodscape' to help children and families more easily access

healthy eating options (Schuff et al. 2019). Understanding that high levels of 'neighborhood

cohesion' exist in more walkable neighborhoods, it becomes necessary to design public hospital

spaces with high walkability scores to improve health-promoting activity (de Leon et al. 2009).

Neighborhoods that are designed to promote walking for leisure relate to lower rates of obesity

(de Leon et al. 2009). Like the approach identified in Danish National Architecture Policy,

people-first approaches to design recognize that individuals see their intrinsic worth through the

design of the spaces which they inhabit. By making similar design approaches a national policy

goal, both city inhabitants and hospital patients will more willingly participate in preventative approaches to maintain their own good health.

THE WELLNESS CENTER: WHERE DESIGN MEETS SOCIAL IMPACT

The Wellness Center is situated on what was formerly the first floor of the old County General Hospital. At the site, a collaborative partnership between the Wellness Center and other organizations helps to provide patients with medical, financial, and legal support services. The Wellness Center, a previously deserted Los Angeles landmark, now functions as one of the leading operations in innovative, preventive health care in the nation.

In an interview, Gloria Molina, a former Los Angeles County Board of Supervisor who was closely involved in planning the Replacement Facility, discussed her dedication to serve the Boyle Heights community, prioritizing the maintenance of the county's public health care system. Molina, whose First District included the hospital, was largely focused on her role as an advocate for women's health. Particularly interested in developing a site that incorporated preventative health care programming that could be accessed by both patients and families within the immediate community surrounding the hospital, Molina's office secured millions of dollars of funding for renovation of the first floor of the old County Hospital. This funding enabled national-level, state-level and local nonprofits to reside in the building and offer their support services to both patients of the hospital and residents of the greater LA County area.

The two leading design principles in the redesign of the first-floor prioritized functionality and strong programming. The designers believed functionality to be a necessary design principle as developing a welcoming space included paying attention to both physical space and architectural decisions. Programming principles consisted of a process of choosing

which nonprofits would be "residents" of the Wellness Center. As initial conversations about the development of the Wellness Center began in 2009 through 2010, Molina distributed a request for proposals with the hope to apply for a grant to allow nonprofits to inhabit the space. By allowing nonprofits to reside in the space for up to 5 years rent free, fifteen nonprofit organizations opened their doors to serve the community after the distribution of Molina's request for proposals. When the Center opened, Molina selected several leading national agencies residency such as the Arthritis Foundation, the National Multiple Sclerosis Society, and the American Heart Association because she believed these organizations could play an important role in helping address the medical needs of the Boyle Heights community. The motto "Treat the whole person" was written into the Wellness Center Foundation's bylaws, an action of hope that envisioned the long-term potential impacts of the Center.

The Wellness Center opened its doors in March 2014 and was initiated by The California Endowment, a nonprofit organization in Los Angeles. Design principles that are often easily overlooked distinguished the attention to detail in the design of the Center. Specifically, the combination of signage and the design of hospital corridors necessitated that patients and other visitors walk past the offices which provided support services, making it difficult to ignore the wide range of available resources. Windows, sight lines, modular tables and chairs, along with warm, bright colors such as terra cotta orange served a purpose of adding an emotional quality to the atmosphere. By making the space personable, patients and visitors could easily see into office spaces, an intentional design element allowed for transparency and collaboration in a setting that, for decades, had been viewed by many in the community as a place associated with illness, trauma, loss and mistrust.

The Wellness Center serves as a one-stop venue for patient empowerment, allowing visitors to make the connection between healthy life choices and educational, financial, and legal stability. Neighborhood Legal Services Los Angeles (NLSLA) was one of the original Wellness Center residents. NLSLA is the only legal service agency participating in this type of multifaceted community development project in the country, following Molina's initial vision of the site; a vision to eliminate structural barriers to benefits and community health. During my time spent at the Wellness Center, I noticed a variety of tenant partners and services situated within the site. Through observation, I noticed everything from a recreation room, childcare center, and cafe, to a stocked Wellness Kitchen to provide cooking demonstrations, a new mothers' area, and a dance studio.

Figure 6: Tenant Partners & Services at The Wellness Center

Tenant Partners	Services Provided at The Wellness Center
	Alma Family Services screens and assesses clients for barriers to self-sufficiency including domestic violence, alcohol, drug abuse, inadequate parenting and anger management issues.
	Building Healthy Communities Boyle Heights provides support through the following four campaigns: Health Happens in Schools, Health Happens with Prevention, Invest in Youth, and Eastside LEADS
	East LA Women's Center provides sexual assault and domestic violence services and offers support groups for HIV+ women in addition to HIV/AIDS services and Teen Violence Prevention programs.
	LA Care provides counseling, therapy, and peer support groups in addition to healthcare enrollment and legal assistance. Offers fitness group classes, CPR training and diet consultations.

JOVENES	**Jovenes** welcomes homeless, at-risk youth and gives them a chance to create a path to personal growth and success. Programs include individual leadership, job readiness, and housing advocacy.
COUNTY OF LOS ANGELES Public Health	**The Los Angeles County Department of Public Health** offers informational classes on topics including Emergency Preparedness, CPR, and Vector-borne Diseases.
MAOF MEXICAN AMERICAN OPPORTUNITY FOUNDATION	**The Mexican American Opportunity Fund** offers a food pantry, nutrition education, and fitness classes. MAOF supports the LA Metro Access Program and promotes wellness through culturally sensitive supportive services and educational workshops.
MATERNAL AND CHILD HEALTH ACCESS	**Healthcare Enrollment & Legal Assistance** works with uninsured and underinsured individuals and families providing outreach and enrollment assistance for free and low-cost health coverage programs, including the Medi-Cal, My Health LA, and Covered California exchange products. MCHA also provides onsite CalFresh screening, enrollment and case management for individuals.
NLSLA	**Neighborhood Legal Services Los Angeles** collaborates with all partners at The Wellness Center to offer community education on legal rights, tenant rights, wage claim recovery, immigrant rights, foreclosure, as well as health and welfare benefits.
the Y YMCA	**YMCA** offers youth development programs that enhance the academic engagement of low-income students. YMCA also offers an Early Learning Readiness Class for children aged 0 to 5 years.

Conversations with Neighborhood Legal Services Los Angeles (NLSLA) associate supervising attorney, Gerson Sorto, and Wellness and Health coordinator, Edenn Vidrio, reveal the wide range of ways in which NLSLA ensures oversight among medical and community partnerships at the Wellness Center. At the start of the partnership in 2014, NLSLA prioritized working with patients through participatory design, embracing the goal of engaging patients and health care providers to identify underlying causes of negative social determinants of health. Among other goals, the NLSLA works to help patients overcome legal barriers to accessing healthcare services. Sorto and Vidrio described the Wellness Center as a crucial tool to achieve NLASLA's goals of helping improve access for patients. Sorto and Vidrio point to passage of the Affordable Care Act and its expansion of medical coverage throughout California as partially

responsible for the Center's success. Before the Center's establishment, individuals feared cancellation of their health care benefits, a fear related to immigration status and public charge, often the result of the confusing Medicare authorization process.

The creation of the Wellness Center has helped to dismantle generational trauma, memories which largely associate the old County General Hospital as the site where family members and friends passed away. By paving a new organizational identity through the passage of time and through community-focused programming, the Wellness Center employs Wellness Navigators to ensure humanistic approaches to design and interaction at the site. Wellness Navigators are situated in all Replacement Facility clinics, as well as in hospital lobbies and emergency rooms. Navigators guide patients to enriching programmatic services, as well as provide patients with services offered at the Center. The Wellness Center Foundation is led by both an Executive Director and a Medical Director, individuals who also serve as a part-time doctor at LAC+USC. In addition to Wellness Navigators, the Center employs administrative persons, all of hold college degrees and are bilingual in second language other than English.

The Wellness Center works hard to provide a welcoming transition for people who have gone through medical treatment related to high stress issues. Encouraging community interaction, the site is designed to bring legal, financial and social services directly to patients, providing evidence that medical, legal, and design efforts succeed in bringing together strong and impactful partnerships in holistic approaches to patient care.

When the LAC+USC conducted initial efforts to strategize a design plan, the hospital carried out several community needs-based-assessments to determine which organizational partners would best fit the project vision. Study outcomes were measured through various projects to link patient utilization data (detailing which services were used by patients and when

they used them) with the number of patient visits at the Wellness Center. Assessment data

concluded that the Center was highly impactful in its influence of patients to stick with their

doctor-prescribed medications and preventative care regimens, an influence largely attributed to

supportive services that helped patients eliminate external sources of stress that adversely

impacted their overall health. NLSLA recognizes its role as being one of the first elected

organizations to operate at the Wellness Center. As the only legal services agency participating

in the multifaceted community development project, NLSLA operates under the shared vision of

the Wellness Center, helping patients prioritize preventative measures to health that address

lifestyle-related diseases.

PLANNING A RESTORATIVE CARE VILLAGE

NAC Architecture has addressed the need for increased humanistic design at the

Replacement Facility through the development of a Restorative Care Village at the LAC+USC

Campus (Nonko 2020). Renderings of the project can be seen below in Figure 7 & Figure 8

(Nonko 2020). With completion anticipated by Summer 2021, the County's Board of

Supervisors has approved the project. The Village will include a 96-bed recuperative care center

along with a 64-bed residential treatment center at the site formerly known as the Medical

Center's Women's and Children's Hospital. The first phase of the design plans center on the

need to develop on-site housing, psychiatric medical support, job training programs, and other

supportive services. The renderings, shown below, depict the campus as featuring multiple free-

standing structures, rising up to four stories in height with buildings centered on a landscaped

courtyard and passageways intertwined throughout the facility.

Figure 7: Proposed Design of LAC+USC Restorative Care Village

Figure 8: Proposed Design of LAC+USC Restorative Care Village

International firm CannonDesign unveiled renderings for the two main components of the Village in December 2019. The site is outfitted with beds to provide immediate placement for people being discharged from an inpatient hospital setting who lack a supportive place to live. Further, the Residential Treatment Program will provide short-term alternatives to hospitalization to address mental health needs (Nonko 2020). The focus on human-centered design is visible in the way housing will be designed around landscaped courtyards, how physical exteriors play on the historic architecture of the old General Hospital, and the

involvement of muralists from the community. Artwork will be displayed both inside and outside

the site. Dave Hunt, CannonDesign's Southern California health practice leader, has commented

on the project in the following manner:

> 'It's a very rich courtyard environment…There was an interest from the surrounding communities that this would be a community asset. So courtyard areas will welcome the community in, and it helps the residents feel a sense of connectedness. It's not a stigmatized place, it's a place to get back into their normal life and integrate with the community" (Nonko 2020).

As part of the Los Angeles County Board of Supervisors approval of $170 million in

funding for the Keck School of Medicine of USC as of August 1st 2019, funds will be directed to

more intentional design and planning in an effort to provide patient care services and physician

medical education at the hospital site ("County Approves Funding" 2019). In late 2019, the

board approved an initial $68.4 million for construction of the first phase of the Village. While

current design plans appear to regard the project through a comprehensive understanding of

participatory, community-based design, it is imperative to include considerations of the

architect's role in addressing homelessness in Los Angeles (Joyner 2020). As progressive design

positioning often prioritizes plans to address homelessness, roadblocks such as NIMBYism, (the

Not in My Backyard movement), dismantle such efforts, creating opposition to projects such as

the permanent supportive housing plan of the Restorative Care Village. Future feasibility studies

need to include community members that are least often included in the Board-of-Supervisors-

sponsored "community" meetings.

LITERATURE REVIEW

Hospital planners agree that the foundation of good hospital design develops from patient-centered, needs-based analysis; criteria often marked by the evolution of hospital facility design. Designers recognize the effectiveness of the physical environment in assisting patient recovery. As hospitals become more intentional, directing quality care towards patients in need of such services, focus shifts towards models of society-wide preventative care situated in mixed-use hospital complexes. Under this model, hospitals become the site of intermixed health care, educational, research, and social service systems, reshaping hospital design to allow for new opportunities and organized activity.

EQUITY IN HOSPITAL DESIGN

In the 1920's, U.S. county hospitals began shifting toward a model of *medicalized hospitals for all classes*. Facilities became sites not only for patient care but also for exploring new forms of care like facilities and equipment design (Kisacky 2017). Traditionally used as sites of x-rays and surgery, designers implemented lecture rooms, collaborative meeting spaces, physicians' lounges, medical libraries, and private physicians' offices into hospital planning. Holistic approaches to care promoted healthy lifestyle research, allowing "the opportunity...for organized and supervised teamwork, for critical analysis of the performance, and for the advancement of standards of medical education and practice in the community" ("Health Care Organizations and Community Development").

In recent years, research contributions from Gehl and the U.S. Centers for Disease Control and Prevention acknowledge powerful environmental and situational factors responsible for predetermining individual health outcomes, "Genes are relatively irrelevant when it comes to

the health status of populations...Eighty percent of what influences your life expectancy happens outside of the medical system...We look at the cause of death – but what is the cause of the cause of death?" (Ahmad and Kaur 2017). Urban hospitals continue to represent the correspondence between the city and the citizen. To design smart, healthy, holistic, and innovative hospitals, designers concerned with providing equal access to *hospitals for all classes* agree that design approaches must address both the physical and psychological needs of patients, while balancing county hospital budgets and reducing consumption through alternative energy that lessens maintenance costs of hospitals (Ahmad and Kaur 2017).

BEST PRACTICES IN THE RENEWAL OF GOOD HOSPITAL DESIGN

The earliest use of design theory in U.S. hospitals can be traced to the how medical wards were laid out at New York City's Mt. Sinai Hospital. The plan called for 26-bed wards that were connected vertically on multiple floors to conserve land and help reduce travel distances to separate pavilions. Included in the plan were quiet rooms, some of which were private. Wards continued as the dominant approach to design until the 1950's, when design trends shifted to limit the number of hospital beds. Today, hotel-style patient rooms, even if not required by local codes, are increasingly common. Though private rooms are seen as benefiting only those who can afford to pay for private space, the privatization of patient rooms may result in the suffering of patients from a lack of social interaction. If a patient were to experience an accident, it is more likely that someone will notice if you fall, notice if you need immediate care, or notice if your condition worsens if others are in the room (Luoma 2010). As hospital design becomes less oriented around the need to control infection, more resources can provide a wider delivery of services to society. Since the 1950's, hospitals have shifted from limited-use facilities to mixed-use complexes, generating health determinants from intermixed approaches to care, educational,

research, and social service systems. This reshaping of the hospital design problem has provided new opportunities for organizing activities to meet collective needs, all while generating design strategies.

HUMAN & PATIENT-CENTERED APPROACHES TO DESIGN

The recent popularity of human-centered, people-first design has given platform to perceptions of space considerate of difficulties patients, visitors, and staff face navigating the layouts of facilities. The Gehl Institute approaches perceptions of space through The Twelve Quality Criteria, a tool used to research how public spaces are experienced by users. The tool is most often used to evaluate the features of public spaces that provide protection, comfort, and enjoyment. In the case of county hospital design, the Twelve Quality Criteria can be used to conduct needs-based assessments to prioritize areas in which design can benefit from further investment and civic engagement of community members, patients, caregivers, and of those utilizing the site ("Twelve Quality Criteria"). Feeling safe includes a general sense of protection. Patients must feel secure if staying overnight, or if left in the care of healthcare providers. Jane Jacobs' theory, presented in *The Death and Life of Great American Cities*, highlights the urban observation theory, "eyes on the street." Though Jacobs was referring to general public life that took place through "the sidewalk ballet" on New York City streets, hospital design, too, must be a safe place.

Increasing implementation of social interaction in hospital corridor design results in 'more eyes on the lookout,' instilling a heightened sense of personal safety and trust among patients. Creating opportunities to sit and stay allows patients, caregivers, and relatives places to rest as they weave their way through hospital corridors. In busy, bustling hospitals, a lack of resting places can slow patient recovery and drain the energy of caregivers. For those worried

about the health of loved ones, dealing with the stress of overcrowded waiting rooms, dreary hallways and dismal lobbies can be mitigated with furniture design and placement that is flexible and serves multiple functions. Stairs can be used as seats and the placement of walls can ensure family privacy and encourage people watching. People experience greater levels of security when their backs are protected. Further, people feel secure when they can relate to the actions and experiences of others, often through people watching. Providing opportunities to see doctors and nurses consult one another feeds the human desire to see other humans. Benches and seats must allow individuals to face one another, providing opportunities for folks to talk and listen. Human scale design must be implemented to imitate size relating to that of the human body. Furniture should be movable, not bulky, and feel nice to the touch.

In the case of LAC+USC, the hospital should represent Angelino identity, making the situation of the hospital recognizable, an emblem of the unique traits of the city in which it is situated. Conquering a feeling of placelessness, while heightening the senses, plays an important role in the biophilia theory. Healthcare expenses can be lowered by implementing urban spaces which encourage exercise through an economic benefit perspective. Thus, unhealthy lifestyles, along with predetermined factors of health like ethnicity, income, level of education, can be addressed through more ethical perspectives on design.

Human-centered design can suit a variety of multi-purpose needs: learning, meeting, exploring, thinking, healing or relaxing. The spaces to which we have access largely influence our attitudes and memories, both positive and negative. If a space is well designed and strives to convey its significance and purpose, patients will likely experience the space as a factor that influences recovery; a tool supportive of care. Though human-centered guidelines are most often used as a tool for architects and designers to assess the functionality and practicality of a space,

care providers are as equally influenced as patients in their desire for *good design* to support—

not hinder—their work. "Architects and designers play an important role in helping clients

formulate and realize their visions for changing the status quo and realizing the potential of

place; they, too, can use human-centered guidelines" (Gee 2007).

The following chart guidelines indicate the most common informants of the human-

centered approach to design to date. Herman Miller, Inc., a furniture company that conducts

extensive research on the power of objects in their power to influence spatial experience,

assesses the quality and functionality based on the following principles. Though their research

focuses primarily on human-centered approaches to design in educational spaces, the chart below

has been adapted and influenced by their principals of design in equitable hospital settings (Gee

2007).

Figure 9: Adaptation of the Herman Miller Foundations and Guidelines

The six fundamental needs that all people share:
Security, autonomy, belonging, achievement, status, and purpose
Basic Human Needs
Humans seek both physical and psychological comfort. A person's sense of well-being influences productivity, creativity, and engagement. Four elements must coexist to create positive and productive places: *cognitive effectiveness, social support, emotional functioning, and physical function.* If people aren't comfortable and don't have a sense of well-being, they become distracted so we must first consider what will make people feel comfortable.
Guiding Principles
Good space design is visually stimulating...space should not distract from the ability to focus as it can provide sensory stimulation that influences the experience (Taylor 2005). • The brain and the mind are social • We change in response to engagement with others

- Space plays a role in determining the quality of engagement and its potential for an effective experience

Characteristics of Human-Centered Guidelines

Guidelines should exist to primarily focus on the places where patient-provider exchange happens.

Treatment and waiting rooms should be seen as a core element of the hospital, as a space with much potential.

Healthful Spaces

Healthful spaces incorporate ergonomic and environmental principles and sustain physical well-being.

Lighting

- Tuning the mood and stimulation levels of patients can be achieved through a mixture of lighting types, including natural light, augmented with controls

Ergonomic considerations

- Ergonomics is about more than a comfortable, adjustable chair.
- Ergonomic thinking considers the entire environment and how it supports and interacts with the human body.
- Well-planned pathways, open access to equipment and supplies, and ease of moving furniture are all ergonomic considerations.
- Because of the diversity of human sizes, tables, chairs and equipment should be adjustable.
- Healthcare providers and patients should feel encouraged to get up and move around.

Stimulating Spaces

- Stimulating spaces attract people and spark creative thinking; these spaces have the ability to motivate and engage patients and practitioners.
- Diverse stimulation raises mental awareness, allowing the environment to facilitate new ideas.
- Experiences can be tied to a particular *place, sound, or smell*.
- Textures, colors, and shapes can reinforce association and retention (Benyus 2002).
- Create spaces that offer visual choices of shape and form. Consider the visual interest possible with architectural shapes and patterns.

Balancing Community and Solitude

- Healing spaces need to balance the dual and opposite human needs for community and solitude. In both private and shared moments, social settings and environment need to offer a spectrum of private and interactive places.
- Guidelines should exist to primarily focus on the places where patient-provider exchange happens.
- Treatment and waiting rooms should be seen as a core element of the hospital, as a space with much potential.

Adaptable

- Adaptable spaces support people, activities, and healing.
- Areas within a space should be flexible for various types of use (movement of people and furniture to different settings requires adequate space)
- Humans have a tendency to seek out familiar places or create places with familiar attributes
- Consider the ways a space can "give" permission for ownership

Patients must know that they have a say in defining the design of the hospital. Educating patients and families of patients about how to use the space to its fullest potential and how the various hospital tools and resources can support a patient's needs. Providing furniture that people can rearrange and tools they can manipulate gives them the feeling that they have permission to claim ownership.

Similarly, the urban planning principles of 'ideal design' utilized by Jane Jacobs, an urban writer and activist who championed new, community-based approaches to planning, can be adapted to the healthcare setting. Recognizing that patients are the primary focus of healthcare design, it is to them, not to buildings, that we must fit our plans. In the chart below, healthcare-related words are displayed in parentheses to show how the following design principles can be translated in a hospital setting.

Figure 10: Adaptation of Jane Jacobs' Design Principles

Principle	Adaptation of Jane Jacobs' Design Principles
Functionality	"The (health care site)...must serve more than one primary function; preferably more than two...we have to embed our functions into the neighborhoods we serve rather than making the neighborhoods come to us" (Jacobs 1961).
Hospitals	*"Most blocks (health care buildings and departments) must be short; that is, streets (corridors) and opportunities to turn corners must be frequent."* Jacobs' point is that long streets breed neighborhoods that cut people off from each other and from the services they need. It creates sterile areas prone to crime and blight. Short streets and blocks provide natural gatherings and crossing spots that bring people and services together and provide vitality. Traditional hospital buildings, and now some of these huge ambulatory buildings, are plagued

	by the same things. By pulling services out into smaller neighborhoods we can create a wholly different, and wonderful, feeling in our facilities. And I bet patient satisfaction will increase.
Buildings	"The district must mingle buildings (departments/design) that vary in age and condition, including a good proportion of old ones so that they vary in the economic yield they must produce. This mingling must be fairly close-grained" (Jacobs 1961).
Density	"There must be a sufficiently dense concentration of people (patients) for whatever purposes they may be there for" (Jacobs 1961).

ENVIRONMENTAL & HEALTHCARE DESIGN PSYCHOLOGY

Major strains of research delve into the intersectionality of healthcare and environmental psychology. Various findings describe the interconnectedness between the two fields; knowledge that supports improvement in the lives of patients, families of patients, and practitioners by repaving the possibility of design collaborations between planners and healthcare professionals (Devlin 2014). Research integrating environmental psychology and healthcare facility design relates directly to factors of the physical environment. According to studies on the humanization of health care spaces, contact with nature can empower patient positivity, reducing stress and pain while improving emotional wellbeing (Kellert 2012).

Neuroscientists and psychologists evidence the effects of building design on the human experience, "Buildings and cities can affect our mood and well-being, and that specialized cells in the hippocampal region of our brains are attuned to the geometry and arrangement of the spaces we inhabit (Bond 2017). During the 2017 Conscious Cities Conference in London, cognitive scientists considered how to address issues of accessibility, brainstorming the best approaches to make cognitive research more interactive between architects, designers, engineers, neuroscientists, and psychologists. Concluding that psychology-based insights will shape the future of design research and development, one architect noted the importance of supporting

communication between academic fields that do not often work together in practice, "If science could help the design profession justify the value of good design and craftsmanship, it would be a very powerful tool and quite possibly transform the quality of the built environment (Bond 2017). While architecture critics of high density, featureless buildings acknowledge the sense of social isolation experienced by neighborhood residents, critics note a similar feeling of lacking community among residents who live in neighborhoods with much open space and high rise buildings (Bond 2017). Incorporating behavioral insight in design practice provides information about the types of environments that stimulate human interaction and positive experiences.

Research shows that living in isolated environments can increase one's sense of social stress, the result of limited opportunities for social bonding through neighborhood cohesion. Further, studies of the brain biology of individuals with an urban upbringing show reduced gray matter in the right dorsolateral prefrontal cortex and the perigenual anterior cingulate cortex, areas that have been linked to early-life stressful experiences. Such research suggests that the association of urban upbringing may represent the presence of neurodevelopmental outcomes in adults, a change caused by early urban exposure and potentially due to increased social stress (Haddad et al. 2015).

As social isolation becomes a risk factor for illness, planners incorporate psychological findings in their own designs to enrich public spaces, increasing community cohesion, interaction, and engagement. At the Conscious Cities conference, Kate Jeffery, behavioral neuroscientist at University College London, suggested that individuals must feel a sense of connection to public spaces, understanding how things specially relate to one another. Jefferey, commenting on the issue with rotational symmetry design, notes that when things look the same no matter the direction from which you observe, people feel spatially disoriented. In the present

era of neuro-architecture, it becomes necessary for the collaborative work between scientists of the brain and designers to give people a sense of control over the environments they inhabit.

Theories of biophilic design were developed to address the human body's relationship to living in a "sensorially rich world" (Kellert 2012). Exploring the idea that humanity evolves through adaptive responses to natural conditions and natural stimuli, such as sunlight, plants, animals, water and landscapes, the implementation of biophilic design in urban spaces has become increasingly difficult to access, a result of transformations within the natural world. In some cases, biophilic design is seen as a common illusion, encouraging environmental degradation and the separation of humankind from natural systems and processes. As humans grow increasingly separate from nature, they may experience a feeling of loss behind the meaning of places and sites that they visit often (Kellert 2012). This interpretation of biophilic design describes the condition of modern-day building design as lacking in understanding of the ecological process.

> "Most tell its users that knowing where they are is unimportant. Most tell its users that energy is cheap and abundant and can be squandered. Most are provisioned with materials and water and dispose of their waste in ways that tell its occupants that we are not part of the larger web of life. Most resonate with no part of our biology, evolutionary experience, or aesthetic sensibilities" (Kellert 2012).

Further studies are needed to deepen our understanding of the human-nature relationship and its impact on health. In order to change our approach to patients' health, new visions of the interconnectedness between medicine, health care and the healing environment must emerge (Totaforti 2018). The benefits of biophilic design in hospital settings recognize hospitals as sites of stress, impacting patients, their families, and healthcare professionals. Implementation of humanized approaches to design continue to lag in modern hospitals, as the primary function of hospitals focuses on medical care and less so on *supplemental* approaches to health. "The design

of modern hospitals is still geared towards defining spaces in which the only design goal is the precise definition of environments that ensure the proper operation of clinical and surgical procedures...efficient organizational and administrative functions" (Totaforti 2018). As hospital architecture often still reflects medical and healthcare practices from the past, increasing humanized and biophilic approaches to design can improve efforts to reconnect the human-nature relationship.

METHODOLOGY

STUDY DESIGN

To assess the impact of human-centered design to improve patient health outcomes at LAC+USC, my research utilizes a variety of methods to gather and assess necessary data. My project aims to help inform patients and hospital administrators of the benefits of an enhanced understanding of the physical and psychological impacts of health facility design. Urban designers and architecture firms designing for 'social good' can also benefit from understanding the values of people-first design and its impact on the recovery and healing processes.

My research will employ four public space analysis tools developed by the Gehl Institute; the Twelve Quality Criteria tool, the Social Space Survey, the Place Inventory Worksheet, and the Stationary Activity Mapping Worksheet, attached to the appendix at the conclusion of this report. These tools utilize a mixed-methods approach in which quantitative data is used to assess public spaces and a qualitative approach provides an associated narrative through semi-structured interviews to assess study findings. My research will focus on four publicly accessibly hospital sites: The Wellness Center, Wellness Center Outpatient Garden, the Outpatient Lobby Level 2, the Patient Financial Services & Pharmacy Waiting Lobby. RCH Studios images and personal photos of these sites are shown below in Figure 11 through Figure 15.

Figure 11: Close-up view of the Outpatient Garden, a resting site
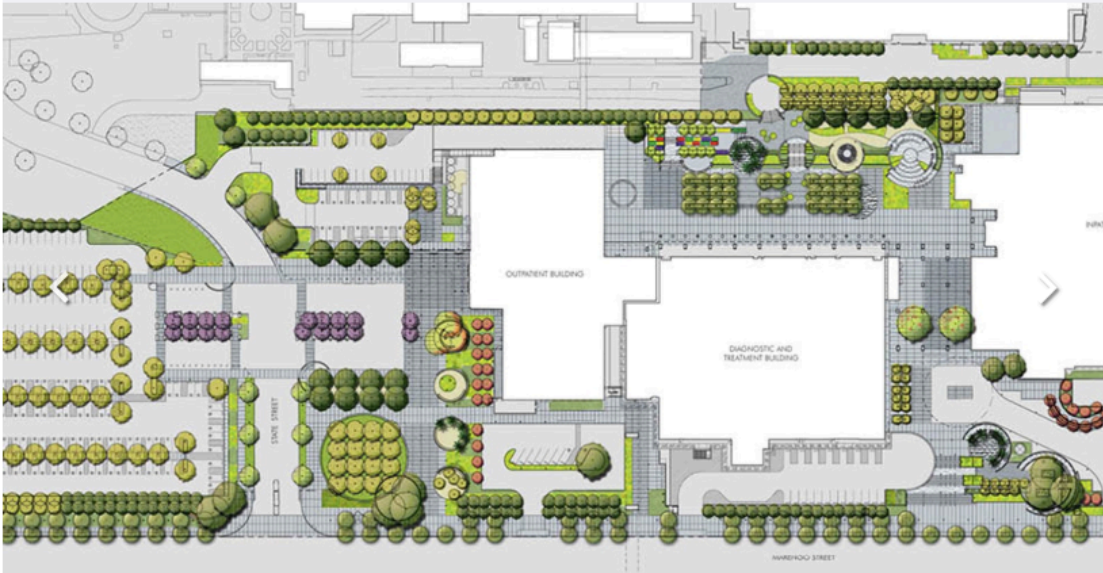

Figure 12: Bird's-eye view of the Outpatient Garde

Figure 13: RCH Studios Map Rendering of the Outpatient Garden

Figure 14: The Wellness Center Entrance

Figure 15: First floor of the Old County General Hospital Building

QUANTITATIVE DATA SELECTION

The Twelve Quality Urban Criteria tool is used to research how users experience public spaces. The tool evaluates different features of a public space and whether those features are protective, comfortable, and enjoyable for visitors to those spaces. The Twelve Quality Urban Criteria tool challenges data collectors to think about the risk of limited protection from cars, noise, rain, and wind. Without protection from such elements, people will likely avoid spending time in specific sites. Prioritized are designs that encourage elements to increase accessibility and comfort, incorporating spaces for walking, wheelchair use, standing, sitting, seeing, and conversing. Lastly, the tool takes into account the idea that well-designed public spaces offer positive aesthetic and sensory experiences while taking advantage of local climate and providing human-scale elements to prevent visitors from feeling lost in their surroundings ("Twelve Quality Criteria").

The Social Space Survey addresses questions of how public space can best serve the greatest number of people occupying specific spaces. To use the tool, I observed four publicly accessible locations at LAC+USC's old County General Hospital and the Replacement Facility to analyze how people occupied these spaces.

The Place Inventory Worksheet is a tool used to study how physical features of public space shape the visitor experience. The tool includes two features: a mapping exercise for recording the physical features of a space that support public life (such as seating, lighting, and plant life), and a qualitative survey that assesses the visitors' interpretation of the overall look and feel of the space (see Appendix B).

The Stationary Activity Mapping tool provides a snapshot of the activities in which people choose to partake in public spaces. The tool is used to understand the following: How

many people are in a space? What are they doing? Where? When? ("Using Public Life Tools")

As recommended by the "Using Public Life Tools: The Complete Guide," I situated myself in

different locations in the space to have multiple vantage points for assessing human behavior to

ensure an accurate "snapshot" of human activity.

> "The Stationary Activity Mapping tool is a key part of any public life survey. It helps you
> map what people are doing in a space at a given time...The result is a "snapshot" of
> activity in your survey area. By evaluating what is already happening in a place, we can
> begin to identify potential enhancements to public life" ("Stationary Activity Mapping").

Using predefined categories and symbols to visually represent each activity, I recorded

activities as I walked through spaces outlined on my map, using symbols to mark what people

were doing, where they were doing it, and how many people engaged in the same activity within

a specified same area. During my time spent mapping inside the designated area, I took extensive

notes to track observations made during the mapping process, noting if any behavior out of the

ordinary or unusual occurred. I recorded data and observations on printed copies of Gehl's

Stationary Activity Mapping Tool, utilizing the CounterPoint app to track numerical counts of

postures (standing, public sitting, private sitting, commercial sitting, informal sitting, lying

down, multiple movements) along with human activities (waiting for transportation, consuming

food and beverage, commercial activity, conversing, cultural activity, recreation and

play/exercise).

My research utilizes the scientific method, employing a tracking method to assess

changes in the use of physical design features. Utilizing Gehl's Public Life Data Protocol to

assess an observational and emotional analysis of the Twelve Urban Criteria, my research scores

levels of *enjoyment*, *comfort*, and *protection*. When tracking human *enjoyment*, I take into

account the size and scale at which public spaces and buildings are designed. These criteria also

assess opportunities to enjoy positive aspects of climate, such as sun and wind. Further, human

enjoyment is assessed through the experience of aesthetic qualities and positive sensory experiences, such as the durability of objects within a space. The *comfort* criteria assess whether the design of a space includes options for mobility, options for standing, lingering, sitting, seeing, talking, listening, and whether or not the space allows people to engage through exercise, planned activities, or through play. The final quality, *protection*, assesses protection against traffic and accidents, asking whether or not a space is safe for individuals of various ages and abilities participating in activities such as biking, walking, or lingering without fear of being injured by a driver. These criteria question the sense of protection individuals feel from protection against harm by others, taking into account lighting and atmosphere, particularly at night. Lastly, protection criterion takes into account protection against unpleasant sensory experiences: noise, bad smells or pollution that limit the sensory experience of individuals in the space.

Through Qualtrics, I developed three social space surveys to ask questions identical to the questions presented in the Twelve Urban Quality Criteria, as well as the Social Space Survey and the Place Inventory Worksheet. I spent one hour at each site over the course of one month. In total, I made four assessments at each site, amounting to 16 total site assessments. I varied the times of day during which I visited the sites. Further, I varied the day of the week during which I conducted site visits to more accurately account for changes in behavior based on changes in schedule based on the day and time in the week.

Overall, looking to spatial criteria to determine the groups of people for which spaces are designed, the impact of space on urban lifestyle, and the interaction of design and policy, my research will is heavily informed by the Rural Urban Framework design collaborative of Joshua Bolchover and John Lin, used to identify which groups of people are left out of the planning

process (Bolchover and Lin 2014). In my research I utilize the Public Life Data Protocol tool to standardize the uniform collection of data of people in public spaces. Similarly, the Public Life Data Protocol tool is widely used in the research of the Gehl Institute, the City of Copenhagen, the City of San Francisco, and the Seattle Department of Transportation to understand how individuals relate to their environments. Identifying various perspectives that help understand the populations for which cities are designed, I assess publicly accessible spaces through a lens acutely aware of disproportionate levels of income and race disparities. These criteria will evaluate the ways in which county hospitals and health promoting spaces can be best designed to mutually benefit an individual's quality of life within built environments.

QUALITATIVE DATA SELECTION

My intended audience consists of architects, hospitals, healthcare professionals and patients seeking more knowledge and insight about the ways in which personal experience influences hospital design, Further, this research is intended to reach urban design firms interested in public health. Recognizing the power of both community members and design groups to influence and shape public opinion on public health, this research is intended to encourage holistic patient wellness during all stages of the health care process.

To assess the role of personal values in my research, I will look at how my intent in choosing particular data analysis tools asserts an inherent social impact bias. I acknowledge a social impact bias in my research, as much of my data collection is observational. To minimize the impact of such bias, my research follows a correlation design approach to identify factors influential in health outcomes. Further, my research uses grounded theory design as I generate a methodological that seeks to produce an explanatory theory to explain the social impact of architectural changes to the built environment.

To answer the research questions, *how has human-centered design been implemented at LAC+USC and how can approaches be best implemented at the site*, I interviewed five professionals, asking questions listed in Appendix A to better understand their perspectives on the intersecting fields of artistic design, legal practice, architecture, and Los Angeles County government. On average, interviews lasted 30 minutes to one hour. Interviewees were selected based on their expertise and experience in urban design, architecture, LA County history, health care law, community mobilization, and health equity. The participants' expertise was determined based on their contribution to fields relating to their personal role in hospital design and planning at LAC+USC. Interviews took place by phone from November 2019 to February 2020. Participants were first contacted by email to gauge their interest. When formal interviews were scheduled, detailed consent forms outlined the nature of the study and informed participants of their rights as human subjects. Informed consent forms were signed, scanned, and returned through email. This process ensured that participants were aware of their rights in the study and that they had time to ask questions prior to the interview process. Additionally, my interview questions were sent ahead of scheduled interview times to allow participants the opportunity to review planned topics of conversation.

FINDINGS & ANALYSIS

Through a series of semi-structured interviews and observations of publicly accessible open space, I researched the potential for future improvement efforts in approaches to humanistic design and hospital planning at LAC+USC Medical Center. The mixed-method approach provided expert information about people-centered hospital design and how it relates to the physical features of space. The findings of each method are presented below.

To understand how the design and implementation process can potentially advance human-centered planning at LAC+USC, I interviewed with designers and architects, USC archivists, healthcare legal advocates, LA County policymakers, and various stakeholder perspectives to better understand current and projected goals at the LAC+USC hospital. Throughout my research, two key findings emerge through the use of quantitative Public Life Data Protocol assessment tools.

1. Prioritizing human dignity through design is a highly effective method to increase human connectedness, and levels of social and physical activity.

2. LAC+USC has successfully implemented physical elements to support accessibility, mobility, and diversity of design in publicly accessible hospital spaces. The Replacement Facility's Outpatient Garden and the Wellness Center are the strongest implementations of human-centered approaches to design according to the Public Life Data Protocol.

HUMAN DIGNITY: THE MOST EFFECTIVE APPROACH TO HUMAN-CENTERED DESIGN

Design principles that prioritize a sense of human dignity through human-centered approaches encourage improved quality of life. This approach proves to be the most effective tool to increase sense of human connectedness and increase levels of social and physical activity. Sandy Bleifer, a Venice-based mixed-media artist and art donor, notes the connection between

art and charitable donations, specifically in hospital spaces. Using art installations in hospital corridors adapts Jane Jacob's design principle of *functionality,* transforming the health care site into a multifunctional space. Art installations enable communities to "embed…functions into the neighborhoods served rather than making the neighborhoods come to us" (Jacobs 1961). By incorporating visually stimulating, good space design, physical space plays a role in determining potential for an engaging human experience, indicative of one's sense of human dignity through the ways in which patients experience a space and their own value (Jacobs 1961). As the preservation of dignity has become a central concern in health policy, particularly among older patients, the presence of visually intriguing items of value in a space make individuals feel personally valued (Gallagher et al. 2008).

Throughout Bleifer's career as an artist, she has donated much of her work to local Los Angeles hospitals, including Good Samaritan Hospital in Los Angeles. In the later years of her career, Bleifer donated one of her major collections of photos and 1970's prints to Good Samaritan. Compelled by an awareness of the psychological intersectionality that connects the fields of health, culture, and physical recovery, Bleifer remained an adamant art donor to Los Angeles hospitals.

During the interview, Bleifer mentioned similar actions taken by a photographer acquaintance who, like her, donated several pieces of their work and later told Bleifer that the collection was damaged while in the hospital's possession. Bleifer notes the use of artwork at private hospitals such as Cedars-Sinai Medical Center, which sponsors large art programs with committees responsible for overseeing rotating collections. Cedars-Sinai's efforts are strongly influenced by the perspective that art heals human bodies. At public county hospitals, few protections are in place to ensure the safekeeping of artworks. Bleifer noted an additional

colleague who experienced loss of original artwork at LAC+USC. Despite the mention of disregard for her art donations, Bleifer's narrative supports the consistent findings that suggest efforts to promote human dignity are most often implemented through built environments and landscapes that increase both human connectedness and levels of social and physical activity.

The demographics of public hospital patients, who typically are relying on public assistance programs such as MediCal and are often in need of both mental health and physical health services, place even more importance on the healing powers of art and the need for intentional, participatory design. The economic demographics of hospital patients, largely dependent on MediCal assistance, necessitate targeted human-centered approaches of design that focus on the intersectionality of issues of art implementation, legal services, trauma recovery, and mental health intervention, all of which are obtainable through intentional, participatory design. Artwork, including furniture design and creative use of physical spaces, can help dismantle stereotypical hospital images in film and pharmaceutical advertisements that portray the patient experience as sterile and impersonal, instead celebrating human interaction. Social and physical activities open up patient-to-patient dialogue. Understanding that others around you may be experiencing similar feelings, undergoing similar procedures, or are embarking on similar health care challenges can bring out feelings of empathy and connectedness.

ACCESSIBILITY, MOBILITY, AND *DIVERSITY OF DESIGN*: LEADING ELEMENTS IN SUCCESSFUL DESIGN IMPLEMENTATION

The LAC+USC site has successfully implemented elements of human-centered approaches to people-first planning as described in the definition of the term as a way to address urban design with a people-focused approach, utilizing empirical analysis to understand how the built environment connects to people's quality of life. By applying this analysis to strategic

planning, planners can better understand the relationship between physical form and human behavior ("The Jan Gehl Effect").

These efforts are visible in the design of Replacement Facility's Outpatient Garden and the Wellness Center. Through my observations, the best use of human-centered design is seen in spaces that do not directly provide patient care but serve as sites that support hospital programming. Situated adjacent to the Replacement Facility, the Wellness Center supports hospital initiatives to enhance the individual's experience of holistic approaches to healthcare. Such approaches to patient care exemplify the multifunctionality of human-centered design, serving as a tool in patient perceptions of space as well as the patient's experience receiving health care treatment or other forms of support.

Although sites like the Wellness Center focus on humanistic design principles such as signage, accessibility, presence of windows and sight lines, the Center also utilizes approaches such as Wellness Navigators to incorporate the real-life human interaction into the physical design plans of the site, enhancing the personable experience patients feel in their health care experience and increasing their sense of personal dignity as Wellness Navigators make them feel the value of their physical and mental health. As patients enter the doors of the Wellness Center, Wellness Navigators greet individuals, ready to provide aid, sign them up for wellness services, and direct them to appointments. Wellness Navigators enhance a sense of community cohesion by recognizing the innate human need to connect and feel present with other individuals, as supported by Herman Miller's basic human needs and guiding principles. As humans seek both physical and psychological comfort, a person's sense of well-being shifts, becoming more comfortable and social within a space (Gee 2020). Understanding that the brain and mind are highly social, Wellness Navigators serve as a positive influence on patients, helping them to

understand the role space plays in determining potential for positive and effective health care experiences (Gee 2020). Demonstrating that concepts of design and experience and not mutually exclusive, but rather when simultaneously implemented, can have a strong positive impact on patient health outcomes.

Utilizing Gehl's Public Life Protocol methodology to gather data on the ways in which people occupy public space, the Stationary Activity Mapping tool was selected to help map the physical activities of individuals at a given time, such as sitting on a bench, playing games, or conversating with other patients. The resulting data informs a "snapshot" of typical activity in the surveyed areas. By evaluating what is already happening in a place, this research can begin to identify potential special enhancements to public life at LAC+USC.

The Stationary Activity Mapping tool (see Appendix B) is used to map activities taking place in the four predetermined, observable sites. All observed sites were easily accessible to the public. It was important to choose sites that the public could easily access because it would ensure that both patients, family members of patients, health care providers, and the general public congregate at these sites. Activities and postures are indicated by specific symbols (see Appendix B). Each of the four observed sites were observed for one-hour durations. Each of the four sites was observed at a variation of times during the workday (9am-5pm) on different days of the week (three observation days during the week and one observation day during the weekend). After hand-mapping each activity and behavior, a separate experience survey was completed (a total of four surveys per site were completed in total, amounting to sixteen total survey assessments). Hand-drawn examples of both the Stationary Activity Mapping tool and the Social Space Surveys are attached in Appendix B.

After coding data collection from the Stationary Activity Mapping tool into a Qualtrics survey, analysis of the most frequent responses to LAC+USC Public Life descriptive data indicate the most common response categories for the four assessed hospital sites. The map below details the data collection sites at the hospital.

Figure 16: LAC+USC Medical Center: A Map of Data Collection Sites
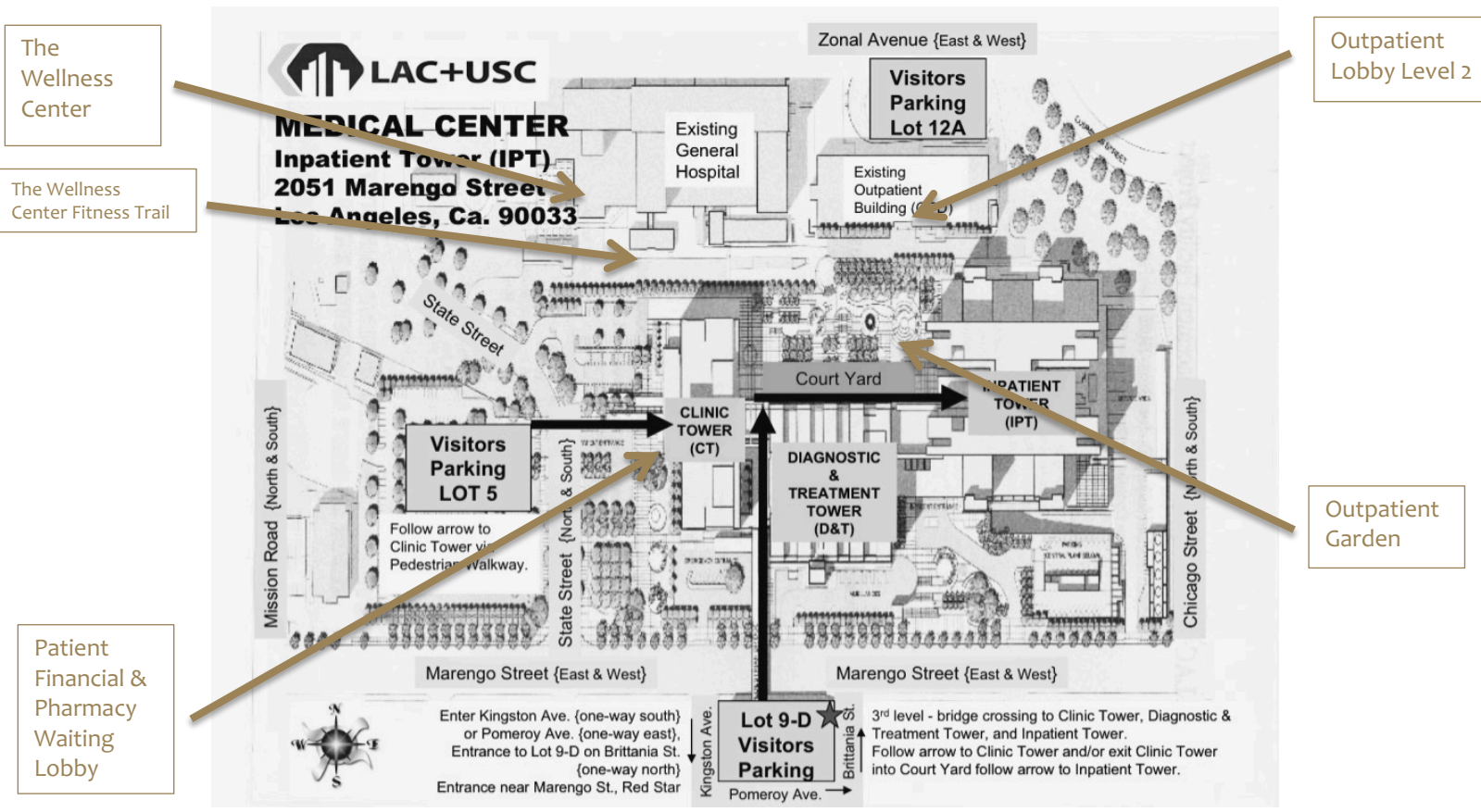
The presence of benches, moveable chairs, and diversity in seating options are present in all four observed sites: Wellness Center, Wellness Center Outpatient Garden, Outpatient Lobby Level 2, and Patient Financial Services & Pharmacy Waiting Lobby. Natural lighting was visibly present in Outpatient Lobby Level 2 and Patient Financial Services & Pharmacy Waiting Lobby. The images below, accessed from the Wellness Center's photo gallery, were taken along the

Wellness Center Fitness Trail, a long walkway that connects the Outpatient Garden to the

Wellness Center entrance (see Figures 17-19).

Figure 17: Walkway Connecting the Outpatient Garden to the Wellness Center Entrance

Figure 18: Empty Tables along the Walkway, old County General Hospital in the Background (Left)

Figure 19: Community Mural Located Outside the Entrance to the Wellness Center (Right)

At the Wellness Center Outpatient Garden, individuals walked briskly through the long

corridor that connects the Wellness Center Outpatient Garden to the Wellness Center. This

behavior indicates the limited use of stimulating and adaptable physical features within the space

(Benyus 2002). Although the corridor includes children's play areas and workout machines to

incentivize preventative care, without the presence of many people, the site seems uncomfortable

for a single person to use without the company of others. Unlike the Wellness Center Outpatient

Garden, the Fitness Trail serves as a connecting pathway between the old County General

Hospital and the Replacement Facility. Out of the four site visits conducted, only during one visit was a child seen utilizing the playground features found along the corridor. Although physical features were intentionally designed to invite play, the walkway that connects LAC+USC's Replacement Facility and the Wellness Center entrance is limited in its design. While the space utilizes elements of Herman Miller's Design Guidelines (see Figure 9) such as flexibility, adaptability, and stimulation through color and texture, the space provides an uncomfortable level of solitude as the space is isolated from much human foot traffic. Jane Jacob's design principles suggest the best use of public spaces prioritize the human's perception of safety, connection, and enjoyment. While the both the Wellness Center Outpatient Garden and the Wellness Center Fitness Trail are designed to encourage play and physical activity, the elements within these spaces, such as concrete benches and bolted down picnic tables discourage flexible use, restricting the free movement of people to adapt to changing social situations. While other physical elements on the trail seem supportive of accessibility, mobility, and diversity, particularly exercise machines and large edible garden plantings, perceptions of patient and visitor safety, along with the visible lack of people, gives the site a sense of isolation, evoking discomfort and fear.

 The route from the Outpatient Garden to the Wellness Center leads through the Wellness Center Fitness Trail, located adjacent to the old County General Hospital. During my visit, a hospital employee of the Pediatric Surgery department asked to take a seat beside me presumably during her lunch break. I was seated at a round table with attached benches for about twenty minutes prior to her arrival and no other person had taken a seat during peak lunch hours. Out of the twenty alternative seating options, the doctor made the conscious decision to take a seat next to the only other person within sight. This decision indicates the innate human desire to perceive

a heightened sense safety in the presence of other individuals displaying similar behavioral intentions. As seen in the adaptation of the Herman Miller Inc. Foundations and Guidelines (Figure 9), individuals feel most safe when there's a balance of sense of community and solitude. Allowing individuals to seek out both private and shared moments in healing spaces offers patients a spectrum of both private and interactive places, enhancing their comfort and sense of security (Gee 2007). A self-drawn diagram of mapped observations of the Wellness Center Fitness Trail, along with the three alternative sites, can be found in Appendix B. Below, Figure 21 & Figure 22 depict the limited use of the Outpatient Garden during one observational data collection period.

Figure 21: Limited Use at the Outpatient Garden

Figure 22: Outpatient Garden with the Old County General in the Background

The LAC+USC Public Life Data Protocol Survey (see Appendix B details survey responses based on the Stationary Activity Mapping worksheet (see Appendix B). The far-left column lists survey questions outlined in the Stationary Activity Mapping worksheet. The

remining four columns detail survey responses according to data collection periods at the four observation sites, *Patient Financial Services & Pharmacy Waiting Lobby, Outpatient Lobby Level 2, Wellness Center Outpatient Garden, and the Wellness Center* (including the Wellness Center's Fitness Trail). As instructed by Gehl's Public Life Data Protocol, this research utilized a scale with four response categories to indicate, listed in the far-left column of the chart. The response category scale includes the following response categories: *absolutely, mostly yes, mostly no, and no.*

The response category *absolutely* indicates that the observed site undoubtedly contains the environmental qualities presented in the survey questions. Response category *mostly yes* indicates a strong presence of the environmental qualities presented in the survey questions but shows that while in most cases the surveyed question is true, it is not always true. For example, limitations to survey questions are shown in the response to question, "Can you comfortably have a conversation with another person in the space?" When observing the Patient Financial Services & Pharmacy Lobby, the most common response indicated *mostly yes.* This response indicates that in most cases, the Patient Financial Services & Pharmacy Lobby allows for people to carry on comfortable conversations within the space. This response takes into account observational bias. On all four occasions during which I collected data at the Patient Financial Services & Pharmacy Waiting Lobby, I observed multiple individuals carrying out *comfortable* conversations (easily conversating with others without the obstruction of physical or sound barriers). On all four observation dates at the Patient Financial Services & Pharmacy Waiting Lobby I indicated that people could *mostly* carry on comfortable conversations, recording, *mostly yes,* to account for individuals who may face challenges conversating comfortably based on

language ability, physical ability, or based on the fact that the lobby was particularly loud and some individuals find loud rooms disruptive when holding a conversation.

The response category *mostly no* indicates that on most occasions the environment does not support questions asked in the survey. The response category *no* indicates that in all observed situations the surveyed question is not supported by the environment. In some cases, the response categories defined in the Public Life Data Protocol's Stationary Activity Mapping worksheet direct the data collector to respond with dichotomous responses, in one case the two possible answers are either *attractive* or *unattractive.* In the second case, data collectors are directed to respond to a second dichotomous question: "Does the environment support sitting, climbing, walking on/over/around physical barriers, or does it not support these types of activity." In the third case, observers are directed to respond to survey questions based on a scale with three possible answers, *low, medium, or high.* This response category relates to questions that rank the presence of vegetation (trees, plantings, etc.). In the final response category, observers are given the option to record the response, *not sure,* to account for situations of personal bias or if observers face confounding factors that prevent them from accurately answering the question. This option is available when observers respond to the question, "If you do not feel safe in the space, why?" This option also applies to the question, "Could someone access this space using a wheelchair?" In the case of safety, answering questions about personal safety relies on an individual's emotional experience and may change based on the observer. Questions concerning wheelchair accessibility should be determined by individuals who use wheelchairs and their responses may vary depending on different abilities. The chart below lists the most frequently reported responses to each survey question after a total of sixteen site observation periods.

Figure 17: Public Life Data Protocol Survey: Stationary Activity Mapping

	Patient Financial Services & Pharmacy Waiting Lobby	Outpatient Lobby Level 2	Wellness Center Outpatient Garden	Wellness Center Fitness Trail
Does the space have areas that provide shade/shelter?	Absolutely	Mostly Yes	Absolutely	Absolutely
Does the space have areas to stay in the sun during cooler weather conditions?	Mostly Yes	Mostly Yes	No	Absolutely
Does the space have areas to spend time/sit and rest?	Absolutely	Mostly No	Absolutely	Absolutely
Does the space have areas to be active/play?	No	No	Absolutely	Absolutely
Can you comfortably have a conversation with another person in the space?	Mostly Yes	No	Absolutely	Absolutely
How strong is the presence of vegetation? (trees, plantings, etc.)	Low	Low	Medium	High
How would you rate the visual environment?	Unattractive	Unattractive	Unattractive	Attractive
Does the space appear to be well-lit at night?	Yes	Yes	No	Not Sure
Do you feel safe in the space, overall?	Mostly Yes	Absolutely	Mostly Yes	Mostly Yes
If you do not feel safe in the space, why? (Other people, lack of other people, lack of lighting, cleanliness)	State of cleanliness & unattractive	N/A	N/A	N/A
Could someone access this space using a wheelchair?	Yes	Yes	Yes	Most Areas
If the space has physical boundaries, can you... (see through, see over, sit on, climb over, walk around) **them?**	Sit /climb/walk on/over/around them	See through or over them OR sit /climb/walk on/over/around them	See through or over them OR sit /climb/walk on/over/around them	Sit /climb/walk on/over/around them

LIMITATIONS

Due to the size of the hospital, it was not possible to survey more than four publicly accessible spaces during the course of this research project. In many interviews with professionals in the field, general consensus suggests that funding priorities are most concerned with obtaining advanced health care machinery, appliances, and doctor training, allotting fewer resources to partner with transformational design firms.

The Public Life Stationary Mapping tool requires that observers conduct site assessments based on their own personal interpretation space. Questions such as, *"Do you feel safe in the space,"* along with *"Can you comfortably have a conversation with another person in the space,"* evoke the observer's personal opinion. Safety is not always quantifiable. Although individuals can easily observe the number of safety violations within a space, such as crimes or acts of aggression, the tool does not account for feelings of patient safety based on familiarity with the site. If an individual has lived in Boyle Heights for their entire life, they may feel an increased sense of safety in their own neighborhood. In the case of LAC+USC, many patients are transported to the hospital from other cities within LA County, disadvantaging their sense of personal safety compared to those who are familiar with the neighborhood. Likewise, as noted in interviews with NLSLA staff, individuals with strong associations of historical trauma likely hold negative perceptions of safety at the site.

To assess emotional qualities that are not emphasized in the Stationary Mapping tool, the Social Space Survey was used to enhance the meaning behind most frequently reported responses to the Stationary Mapping tool survey questions. Questions such as, "D*oes the place have gateways or well-defined entrances,"* may result in an increased sense of accessibility among those who feel comfortable reading signage in the posted language. Although the hospital

incorporates extensive programming through the Wellness Center, offering weekly farmers'

markets, legal, immigration, and mental health services, the majority of signage at the hospital is

written only in English and Spanish, excluding those who speak alternative languages. Given the

inability of some patients to read posted signage in a language they comprehend, the Stationary

Mapping tool may yield responses that fail to account for physical features of space that hinder

interaction, personal ability differences, and experiential perceptions.

POLICY RECOMMENDATIONS

ALLOT INCREASED FUNDING TO HOSPITAL PROGRAMMING INITIATIVES

Funding for the initial Replacement Facility did not prioritize hospital design in its budgeting. Rather, the site prioritized outfitting the hospital with advanced technology and top-tier medical equipment. These budgeting priorities functioned as a way to attract top care providers to the hospital while providing MediCal dependent patients with equitable access to modern equipment as they received primary care, check-ups, and immunizations.

The findings shown throughout this research offer an opportunity for the completion of a related follow-up study, or possibly a second wave of informed research and data collection to implement design initiatives that support preventative health care. If the study were repeated, researchers should obtain access to LAC+USC hospital spaces not accessible to the public, such as patient examination rooms and surgery units. Future researchers who choose to continue with this project will need to take precautions to ensure the respect of patient privacy if they choose to observe behavior in private medical spaces. Follow-up studies should survey patients, families of patients, and hospital care providers to better inform a community-based needs assessment of human-centered design implementation.

At sites in which people come and go, staying only momentarily, it becomes important for designers to recognize the brain and the mind as social beings. As humans change in their physical response through engagement with others, space and design determine the quality of engagement within a specific site. Design dictates the potential of positive experiences to create human interaction, providing opportunities for individuals to engage with others and strengthen sense of community. In the case of hospitals, easing patients into a comfortable and informative health care experience must be prioritized through design. Within the hospital's publicly

accessible sites, the majority of human and patient interaction takes place. LAC+USC should prioritize not only sites of patient-to-provider exchange but should also look to sites of sites of patient-to-patient exchange. LAC+USC can work to improve its physical environment by installing increased elements of public art and by working toward improving the sense security among patients and visitors. Research conducted throughout this study reveals that the least positive responses, shown in the Stationary Activity Mapping Survey, respond to the questions, "How would you rate the visual environment" and "Do you feel safe in the space overall?" Increasing human-centered approaches to design at the Replacement Facility will allow the hospital complex to improve core design principals that encourage safety as an essential element of the patient health care experience.

COMMUNITY OUTREACH THROUGH PARTICIPATORY DESIGN & FEASIBILITY STUDIES

To succeed in developing hospital programing that encourages community partnerships, LAC+USC must engage in patient dialogue with individuals less concerted in their efforts to engage in the hospital's policy and decision-making process. Interviews with NLSLA attorneys suggest approaching the issue of historical trauma felt by community can be improved with community involvement efforts that prioritize, storytelling, archival research, and participatory design initiatives. Through the institution of conceptual approaches to participatory design, future planners can more easily propose projects of inclusionary affordable housing on the complex to address the health needs of the county's expansive homeless population, supporting the development goals of the Restorative Care Village.

Figure 23: Boyle Height Opportunity Zone
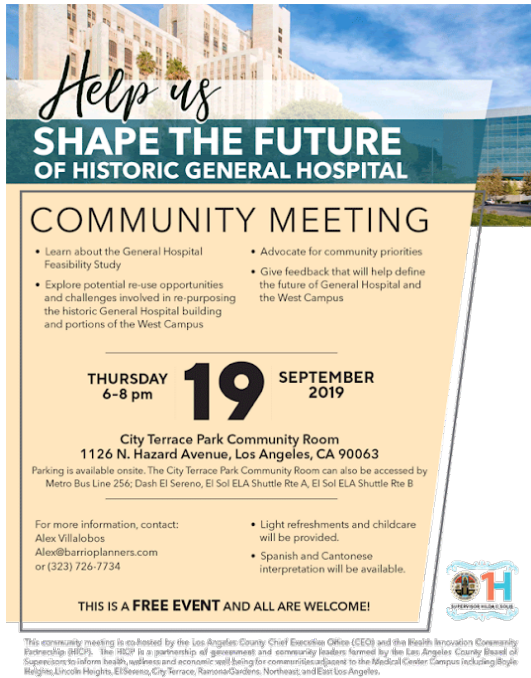
Specifically, LAC+USC should provide community members with increased opportunities to participate in interactive decision making. Throughout 2019, a series of community meetings were held at the hospital. The image to the left depicts a typical community meeting flyer (Figure 23). The September meeting, "Help Us Shape the Future of Historic General Hospital," was sponsored by the LA County Board of Supervisors and intended to increase participatory design efforts at the old County General Hospital. The process of hosting community meetings is useful to identify future research the County should conduct prior to the Board of Supervisors' decision-making process.

During Gloria Molina's service on the LA County Board of Supervisors, the LA City Council conducted a 2-to-3 year-long case study to determine funding priorities to develop the Replacement Facility. During this process, the Board of Supervisors' office sponsored community meetings to gather public opinion, later conducting community needs-based assessments to identify potential research opportunities before the decision-making process. The following step includes navigating the architectural credentialing process, which requires approval on the state, federal, and county levels. Following approval, LA County determines whether or not a project is eligible for federal funding. Following approval, the County again assesses the need for additional. In the final step, the Board of Supervisors votes on whether or not they approve the commencement of a specific project.
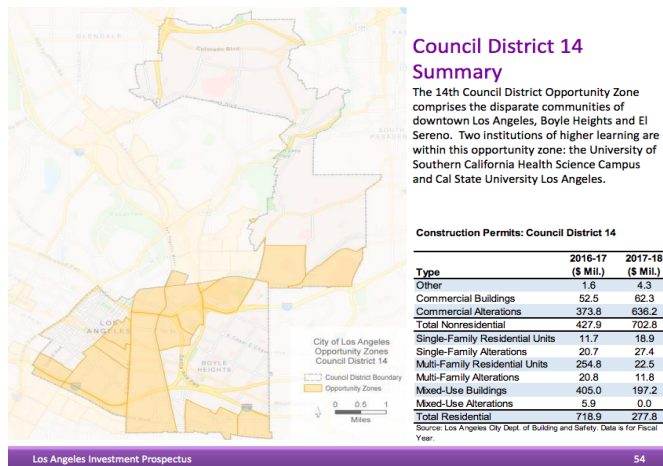
Community-based meetings serve as the initial step in gathering essential research to expedite large scale projects. Participatory design studies, founded in research science, determine whether or not counties should implement specific policy measures based on factual findings. County officials are highly informed by public opinion, necessitating community forums as a resource to draw policy conclusions. Although the series of community meetings hosted in 2019 were positioned as casual forums, free of charge, LAC+USC should be more inclusive in flyer distribution, extending welcome to community members throughout the county.

Engaging patients and hospital affiliates with limited experience in public forums will allow the hospital to include a greater variety of citizen opinions in future planning and redesign efforts. To most effectively empower local residents and patients who receive care both on and off the campus, community outreach initiatives should also extend to patients served by the LAC+USC staff at alternative sites.

> Five days a week, USC healthcare workers hit the streets of L.A. County to meet patients where they live — on sidewalks, park benches, and under freeways. They see about 30 homeless patients a week. According to the 2019 LA County Homeless Count, there were nearly 59,000 people living on the streets. A little more than a year ago, USC started a small street medicine team to keep up with the increasing number of homeless patients admitted to Los Angeles County-USC Hospital (Perry 2020).

The regular series of meetings conducted at Wellness Center should prioritize participatory engagement with programming beneficiaries in an effort to address the hospital's role as a cause of historical trauma. Democratization within the design processes will succeed only by engaging the least engaged patients.

FUTURE APPROACHES TO RESEARCH

Council District 14 Summary

The 14th Council District Opportunity Zone comprises the disparate communities of downtown Los Angeles, Boyle Heights and El Sereno. Two institutions of higher learning are within this opportunity zone: the University of Southern California Health Science Campus and Cal State University Los Angeles.

Construction Permits: Council District 14

Type	2016-17 ($ Mil.)	2017-18 ($ Mil.)
Other	1.6	4.3
Commercial Buildings	52.5	62.3
Commercial Alterations	373.8	636.2
Total Nonresidential	427.9	702.8
Single-Family Residential Units	11.7	18.9
Single-Family Alterations	20.7	27.4
Multi-Family Residential Units	254.8	22.5
Multi-Family Alterations	20.8	11.8
Mixed-Use Buildings	405.0	197.2
Mixed-Use Alterations	5.9	0.0
Total Residential	718.9	277.8

Source: Los Angeles City Dept. of Building and Safety. Data is for Fiscal Year.

City of Los Angeles Opportunity Zones Council District 14

Council District Boundary
Opportunity Zones

0   0.5   1
Miles

Los Angeles Investment Prospectus   54

Figure 24: General Hospital Feasibility Study Community Meetings

Adaptive reuse presents a unique approach to address the needs of vulnerable populations, a movement that has gained traction across the United States. At LAC+USC, current projections outline the 1.5 million square-foot project that will utilize unoccupied facilities and laboratories predominantly located on the vacant upper levels of the old County General Hospital (Sharp 2018). Los Angeles County Board of Supervisors Representative, Hilda Solis of District 1, first proposed adaptive reuse of the old County General Hospital in November of 2018, citing a strong need for housing that serves homeless and low-income individuals.

Through the passage of a 2017 Congressional tax bill, LAC+USC is situated in a census tract within the perimeters of an identified opportunity zone (Sharp 2018). By designating the immediate census tract an opportunity zone, the hospital can favorably utilize its positioning as an economic development tool. Given that opportunity zones incentivize economic development and job creation in distressed communities, the hospital's positioning should be used to motivate LAC+USC planners to conduct improved feasibility studies that identify the needs of community members without stable housing situations or steady work. These conversations will instigate future policies that translate the role of humanistic hospital design in its relationship to beneficial community programming initiatives.

As my research concluded, leading hospitals throughout the world began to release information about how they were managing and preparing for the Coronavirus (COVID-19) pandemic. While hospitals are generally considered a refuge for the sick, hospitals present unique risks to patients and care providers during the current pandemic, putting everyone inside the hospital at risk (Anthes 2020). Under these conditions, it becomes necessary for hospitals to prepare their resources to handle current and future outbreaks, often enforcing stricter sanitation precautions and the repurposing of hospital layouts. "A key element of preparedness is the ability for hospitals to retrofit or reallocate parts of their facilities, accommodating worse-case scenarios such as a serious outbreak" (Eastwood 2020). It is important to understand that the design of health care facilities, specifically how they are operated and maintained, can help limit the spread of infectious disease and save lives. (Anthes 2020). "When doctors in Wuhan, China, where the new Coronavirus first emerged, studied 138 early cases, they concluded that 41 percent of patients had most likely contracted the disease in a hospital (Anthes 2020). In addition to the widely reported measures to prepare hospital communities for an increase in patients, such as ensuring an adequate supply of protective personal gear such as stockpiles of masks and gloves, additional *environmental* changes should be implemented.

Eli Perencevich, an infectious-disease doctor and epidemiologist at the University of Iowa, suggests that hand sanitizer is too often placed only in hospital entryways and near doors. Current fire safety codes prevent the placement of hand sanitizer next to patient beds due to its high flammability. Perencevich insists sanitizer-related fires are exceptionally rare, encouraging planners to reevaluate current risks to health given the COVID-19 crisis. Further, Kevin Van Den Wymelenberg, director of the Institute for Health in the Built Environment at the University of

Oregon, suggests hospitals increase ventilation rates to increase the presence of fresh air to dilute virus concentration among indoor air supply. Increasingly, improvements in air-handling infrastructure become a necessary step as hospitals generally refrain from opening building windows.

Some hospitals are approaching changes in design with the understanding that sunlight can inactivate certain kinds of microbes to provide safer conditions for hospital maintenance staff. The positive effects of sunlight are a core element of biophilic design, incorporating natural lighting and ventilation to create more healthful spaces. Herman Miller's Design Principles (see Figure 9) attribute positive mood and stimulation to natural light. As studies show small architectural changes that can minimize risk of infection, hospital designers are needed to implement recent findings into planning efforts. By incorporating antimicrobial surfaces in hospitals, sites of health care can help reduce and prevent the spread of harmful pathogens. "Coronavirus is more stable on plastic and steel (up to three days) than on porous fabrics like cotton, leather, and even cardboard (less than 24 hours)" (Murphy 2020). Additionally, redesigning hospital floor plans can incorporate more private patient rooms to reduce the risk of hospital-acquired infections. Designing separate emergency entrances for contagious patients will minimize the risk for infection infiltration. (Eastwood 2020) Hospital emergency rooms are largely designed for waiting. Given that the emergency department, by design, is typically the first point of facility entry, it can be identified as a major design flaw in the case of widespread disease (Giacobbe 2020). Specifically, LAC+USC, along with other hospitals that incorporate gardens in hospital design, can secure outdoor waiting areas for patients, limiting patients' sense of private isolation and eliminating the use of indoor communal wait rooms which often harbor disease. (Anthes 2020)

As of March 20, 2020, LAC+USC had nearly maximized patient capacity in the Intensive Care Unit (ICU), and most of the ICU beds were occupied by non-Coronavirus patients (Stiles and Lee 2020). It becomes increasingly necessary that hospitals that serve wide geographic populations, like LAC+USC, utilize adaptability strategies during worst-case scenarios, such as the COVID-19 pandemic (Eastwood 2020).

Through the use of humanistic approaches to design and disaster planning, LAC+USC has shown its value of human dignity, uniting as a fighting force that services a human-centered approach to patient and community wellness through direct patient care and through satellite support services.

CONCLUSION

Los Angeles County+USC is the largest academic teaching hospital on the West Coast and one of the largest public hospitals in the nation. Serving the majority of Los Angeles County's MediCal-dependent patients, the site presents an interesting case study of issues of equity and resource division through its intersection with design. Throughout my preliminary research, I came across very few project implementations that looked to the dispersion of privilege and equity in human-centered design. By assessing physical and emotional hospital features, Gehl's Public Life Data Protocol tools helped develop independent research metrics to better understand the ways in which architects and planners arrange hospital design.

While the concept of people-centered planning inherently excludes community members who do not participate in feasibility studies, this project presents a strong case for improving inclusion efforts in hospital planning. These conclusions are based on the research of biophilic design, social impact studies, environmental and health care psychology, and the emerging field of design theory that prioritizes human dignity in its principles. Human-centered design holds the potential to create direct and positive impacts in the lives of countless individuals who navigate the health care facility. LAC+USC presented me with the opportunity to develop an assessment of public space to encourage hospital planners to design, fund, and reflect upon issues of equity within good hospital design.

As this project concludes, the promise of human-centered design offers a window into the development of the Recovery Village, presenting opportunities to strengthen feasibility studies. Incorporating the best practices of sustainability and community consciousness will best serve patients' needs while supporting human-centered design efforts on the LAC+USC Hospital campus.

APPENDIX

Appendix A: Interview Questions

- What is your experience with/or knowledge of human-centered design?
- How do designers best plan for hospital design projects?
- Have you worked with health care facilities or hospital design in your career?
- How do design architects accommodate human needs (such as communication and safety) in their work?
- What do you believe to be the challenges of implementing and funding human-centered design in hospitals?
- Describe your understanding of the difference between private and public health centers/hospitals. Do these institutions serve different people?
- Are you familiar with the ways in which low and lower-income patients cover the cost of care at county hospitals?
- Describe your understanding of the relationship between human-centered hospital design and health outcomes.
- What design companies/cities/counties/states or other countries demonstrate exemplary hospital design?
- What do you believe to be the challenges of implementing and funding human-centered design in hospitals? Why might county hospitals face further implementation challenges?
- In what ways is the LA County government incentivizing improvement in hospital design?

Appendix B: Public Life Data Protocol Tool

Stationary Activity Mapping

DIRECTIONS

Mapping people spending time is like taking a snapshot of all activities taking place in the survey area at a given moment. It is not based on a predesignated amount of time—it may take 5 seconds or 20 minutes depending on how many people are spending time in an area. You need to cover the full survey area in your shift, once each hour.

- Define a route through your space and use the same route for each hour.

- There are predefined categories and a symbol for each activity—see the example sheet on this page. The symbols will be below your maps, so no need to memorize them.

- To record activities, walk through the space outlined on your map and use the symbols to mark what people are doing, where they are doing it, and how many people are doing the same activity within the same area.

- Map everyone inside the outlined area, not only along the line (feel free to map activity outside the marked area, but do not add this to the summary of activities).

- If an area is small you may be able to do the mapping from one location.

- Map everyone spending time in the area. Do not map people moving through unless they are moving within the area (e.g., a skateboarder using an edge to practice tricks).

- If you are mapping more than one location or mapping the same location more than one time, please make sure to use individual maps and summarize all activity on each map individually.

- Please take notes of any observations you make during your mapping and also note if anything out of the ordinary happens or if large groups are doing the same activity.

ADD YOUR NAME, DATE, & DAY OF THE WEEK TO THE SHEET. SUM TOTALS BEFORE HANDING IN.

POSTURES

- ● Standing
- ☐ Public sitting
- △ Private sitting
- ○ Commercial sitting
- ⊠ Informal sitting
- ▬ Lying down
- ✕ Multiple movement

ACTIVITIES

Waiting for transportation

Consuming food and beverage

Commercial activity

Conversing

Cultural activity

Recreation and play/exercise

MAP NAME DATE WEATHER

LOCATION TIME

ADD MAP HERE

POSTURE	TALLY choose one per person	ACTIVITIES choose as many as apply				
		WAITING TRANSPORT	CONSUMING FOOD/BEV.	COMMERCIAL ACTIVITY	CULTURAL ACTIVITY	RECREATION PLAY/EXERCISE
STANDING ●						
SITTING PUBLIC □						
SITTING PRIVATE △						
SITTING COMMERCIAL ○						
SITTING INFORMAL ⊠						
LYING DOWN ▬						
MULTIPLE/ MOVEMENT ✕						

Place Inventory Worksheet

DIRECTIONS

This tool is not about mapping or counting people, but about the physical features of a space and how they support the experience of spending time there. There is no set amount of time for this exercise. If the area is large, you may need to walk through it to cover all areas.

The Place Inventory Sheet has two overall components:

Page 2–3: Inventory of the PHYSICAL FEATURES in a place that can support public life.
Page 4: An assessment of the EXPERIENCE that the public space provides. How does the space feel, look, etc.?

- Walk through the space and take inventory of the physical features using an area map and page 1 of your Place Inventory sheet.

- Use the categories and symbols below to label the physical features on your map.
- If you see more than one item representing a category (e.g., three benches) use the appropriate symbol and indicate how many (e.g., 10X)
- If you're unsure about the correct category to use, make notes on the map describing what you see and where.
- Sum the total number of seats for each of the four seating categories.
- Turn the sheet over and assess the experience of the space based on the questions on Place Inventory sheet page 2.
- Use your gut feeling, but also try and imagine how others might feel, such as a child or an elderly person.

Please take photos of physical features related to the inventory sheet and the experience of the space. Take notes of any specific features that are not represented in the Place Inventory Sheet, but are key to the feel or use of the space.

....

MAPPING

Please label physical features on the map provided and take photographs to document the conditions described below.

1   Map the location of seating using the symbols provided and write how many below:

   ▬   Benches   #_____

   ☐   Moveable Chairs   #_____

   △   Café Seating — Private   #_____

   ▨   Other Seating (not chairs or benches)   #_____

2   Map the location of vegetation using the symbols provided:

   ⊙   Tree

   ⬭   Planting

3   Map the location of shade/shelter using the symbols provided:

   ◨   Awning

   ⊠   Umbrella

   ⊞   Arcade

4   Map the location of bike parking using the symbol provided:

   ∧   Bike Parking

5   Map the location of trash and recycling bins using the symbol provided:

   ●   Trash/Recycling Bin

6   Map the location of lighting using the symbol provided:

   ○   Lighting

7   Map the location of areas to play using the symbols provided:

   P   Playground / Areas that invite play

   S   Sports Facility

8   Map the location of water features (fountain, lake, etc.) using the symbol provided:

   W   Water Feature

9   Map the location of public art (statue, mural, etc.) using the symbol provided:

   ★   Public Art

10   Map the location of walking/wheelchair obstacles using the symbols provided:

   ✕   Surface (broken paving, driveway, etc.)

   ⊗   Object (pillars, seating, etc.)

11   Map the location of physical boundaries using the symbols provided:

   ⫿⫿⫿   Boundary (fence)

   ——／—   Boundary (wall)

   ∿∿   Boundary (planting)

12   Map the location of street crossings using the symbol provided:

   ▭   Crossing

MAP

NAME   DATE   WEATHER

LOCATION   TIME

PLACE MAP HERE

EXPERIENCE

COMMENTS:

Answer the following questions about the place you are studying. Consider your gut reaction, but also how others (such as children) might feel.

1 Does the space have areas that provide shade/shelter?

○——○——○——○
No   Mostly No   Mostly Yes   Absolutely

2 Does the space have areas to stay in the sun during cooler weather conditions?

○——○——○——○
No   Mostly No   Mostly Yes   Absolutely

3 Does the space have areas to spend time/sit and rest?

○——○——○——○
No   Mostly No   Mostly Yes   Absolutely

4 Does the space have areas to be active/play?

○——○——○——○
No   Mostly No   Mostly Yes   Absolutely

5 Can you comfortably have a conversation with another person in the space?

○——○——○——○
No   Mostly No   Mostly Yes   Absolutely

6 How strong is the presence of vegetation? (trees, plantings, etc.)

○——○——○
Low   Medium   High

7 How would you rate the visual environment?

○——○——○——○
Ugly   Unattractive   Attractive   Beautiful

8 Does the space appear to be well-lit at night?

○——○——○   ○
No   Somewhat   Yes   Not Sure

9 Do you feel safe in the space, overall?

○——○——○——○
No   Mostly No   Mostly Yes   Absolutely

10 If you do not feel safe in the space, why? (check all that apply)

☐ Dominated by vehicular traffic
☐ Other people
☐ Lack of other people
☐ Lack of lighting
☐ State of cleanliness
☐ Other: _____

11 Could someone access this space using a wheelchair?

○——○——○——○
No   Some Areas   Most Areas   Yes

12 If the space has physical boundaries, can you... (check all that apply)

☐ See through or over them
☐ Sit on them
☐ Climb over them
☐ Walk around them

13 If there is moving vehicular traffic nearby, please indicate the approximate amount of traffic.

○——○——○
Low   Medium   High

14 Do you feel safe crossing the street?

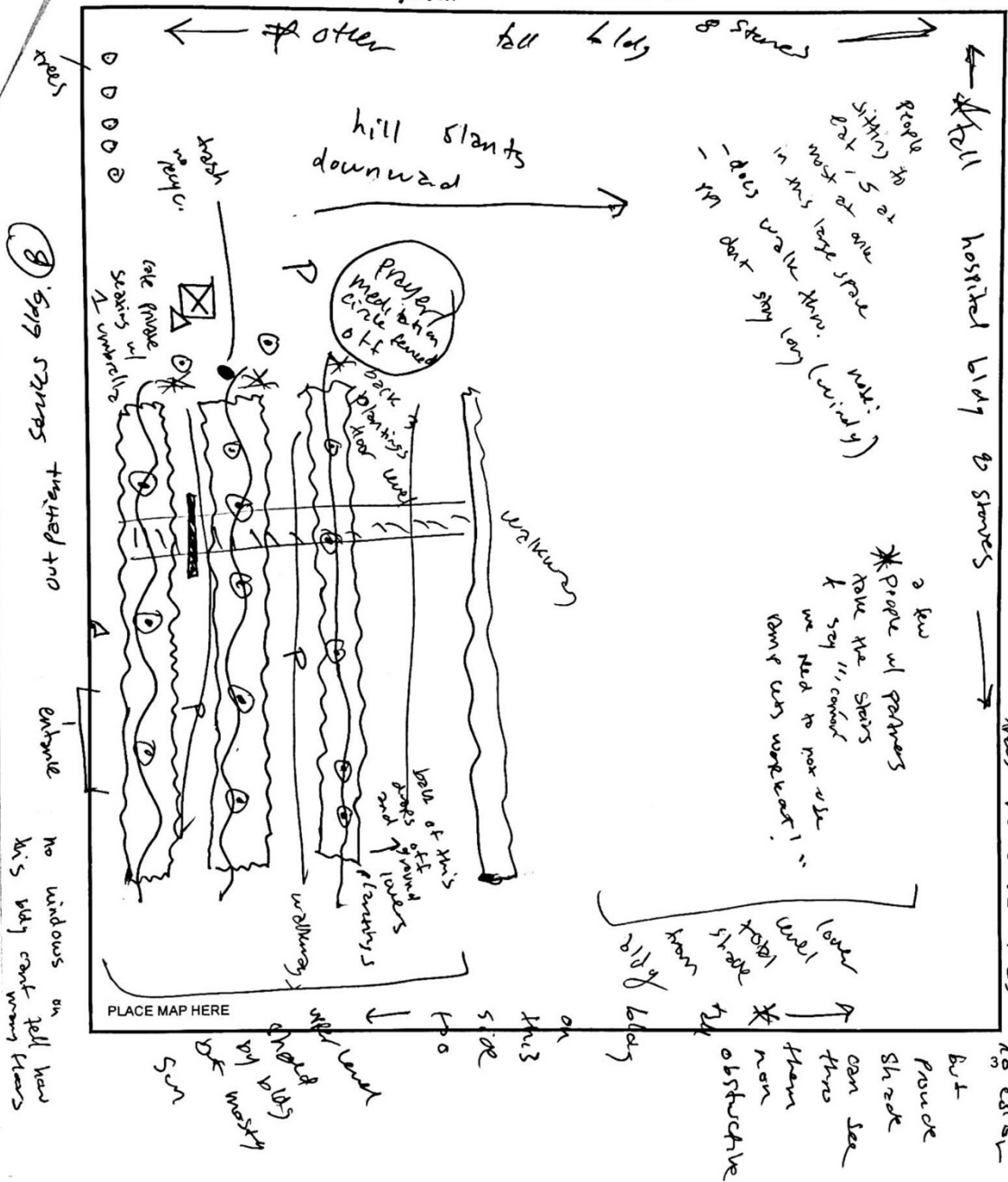○——○——○——○
No   Mostly No   Mostly Yes   Absolutely

Social Space Survey Self-Drawn Maps

MAP

☐ S → these are exercise machines

NAME Olivia O.   DATE 2/3/20   WEATHER 61°
LOCATION wellness center fitness trail   TIME 2:28 PM   sunny wind gusts

✕ old hospital was here

* one woman from pediatric surgery came to sit down next to me. said she used to work at OXY. There are different benches and she asked if she could sit w/ me. I indicated that people seem safer when others are around and present. She said people don't stay long in the space. you sit down to read and then immed. want to leave.

☐ S
☐ P   ● TRASH

↑ moreno this direction

↑ moreno st.

☐ A ○ △ S ○○○ P/s

This walkway just seems too long. its less inviting b/c the space is to big, no much shade. Can't see who is sitting at other end

→ Pathway though, no one walking here

9 ft tall wall so adult cld see over looking at main bldg.

swing

PLACE MAP HERE

(Benny cushy) pated floor

☐ S
☐ P
△
△

(exercise machines, colorful but not inviting awkwardly tucked away and saw 1 person use it in 20 min)

wall left high w/ historic hospital in bkgnd.

◖ ◗ TRASH

3

signs for smoke-free area posted

MAP

Patient financial services & pharmacy & waiting ~~room~~ lobby
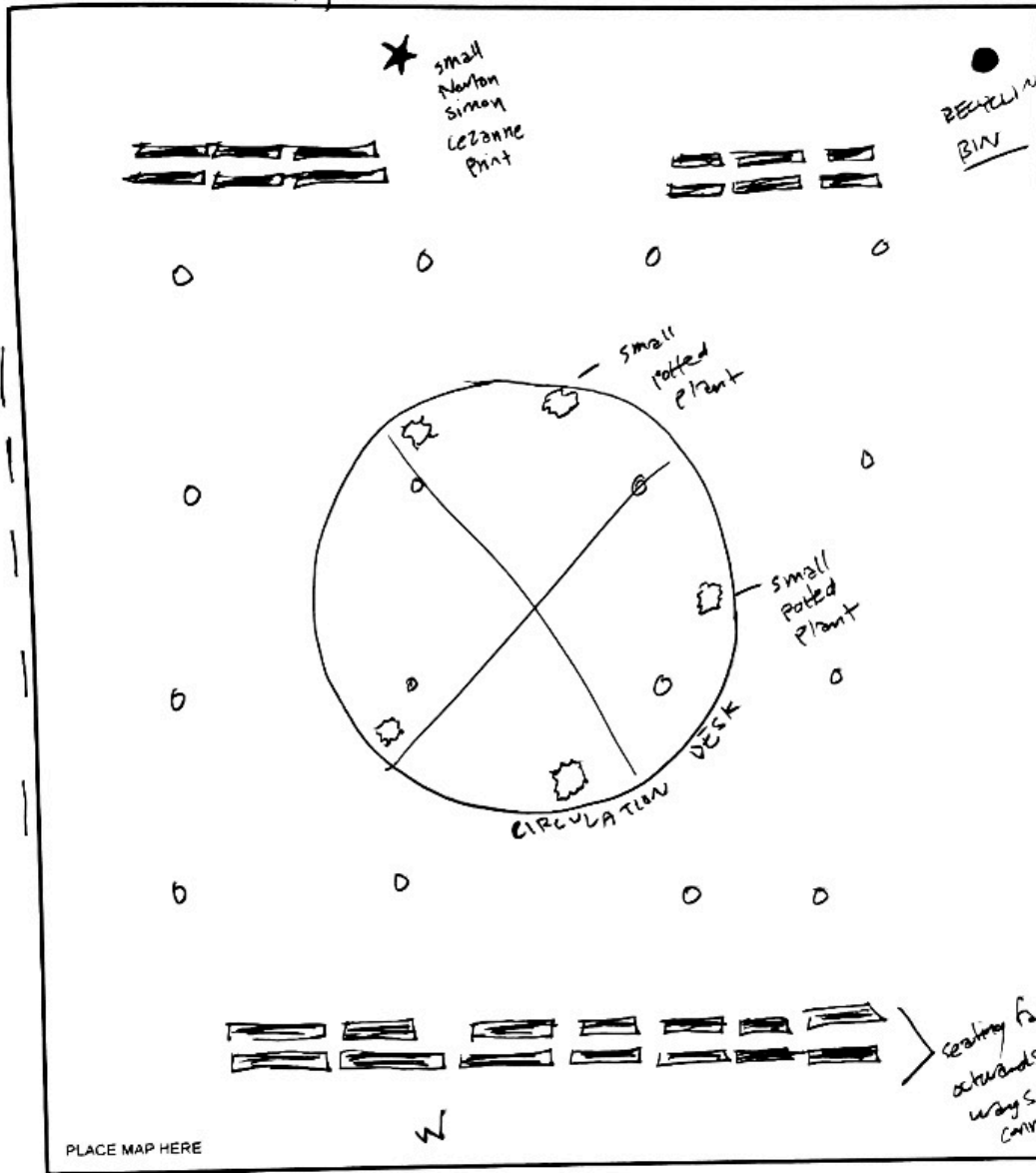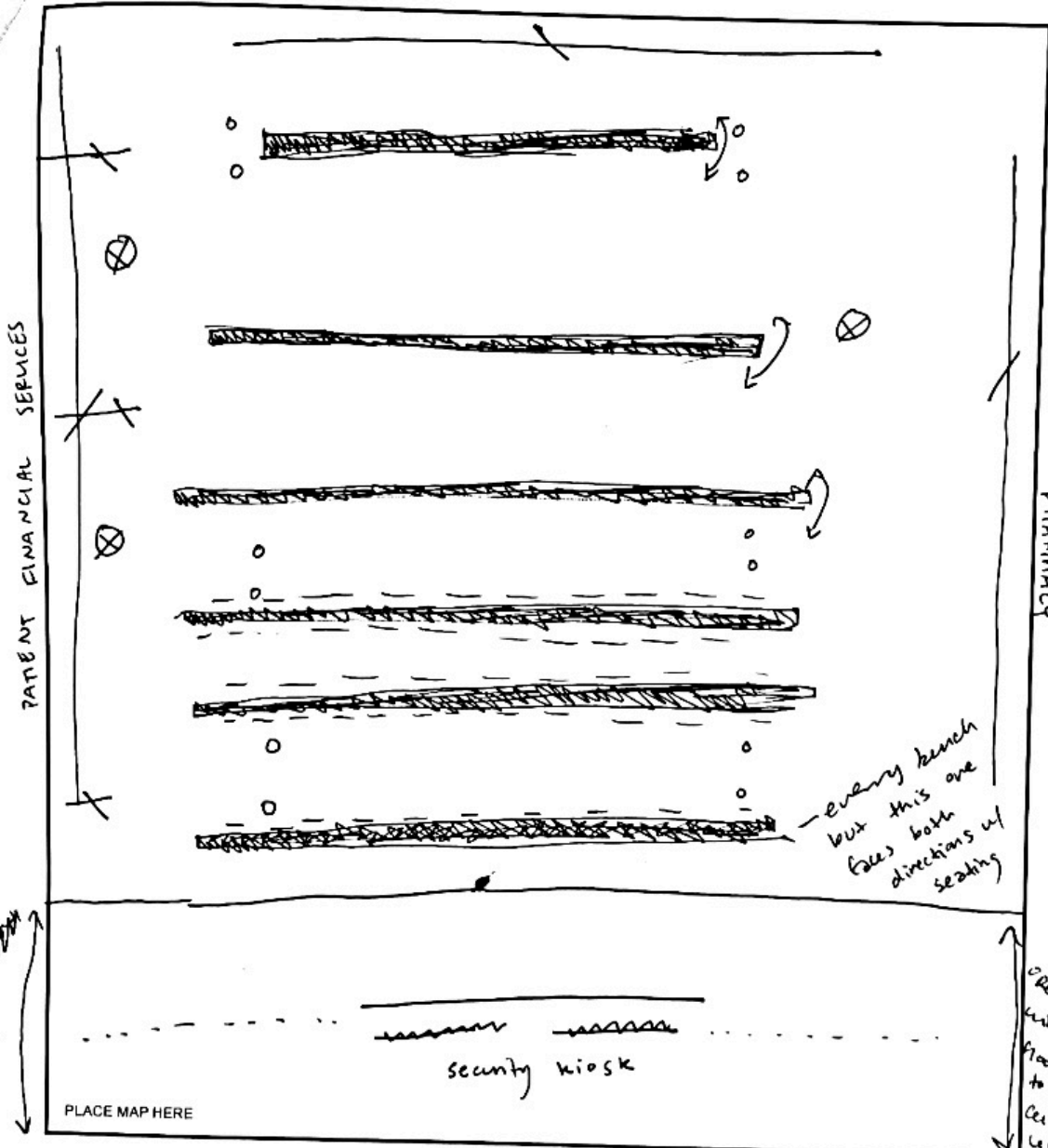
any one can access

AP

NAME Olivia O.   DATE 2/3/20   WEATHER 54°, windy

LOCATION LAC+USC   TIME 1:28 pm

PATIENT FINANCIAL SERVICES

PHARMACY

every bench but this one faces both directions w/ seating

open window floor to ceiling let in slight

PLACE MAP HERE

security kiosk

Main Entrance (glass ceiling to floor)

* no public a/x

Social Space Survey

INVENTORY THE SITE

Investigate whether the space has design elements or program elements that are likely to invite diverse publics and foster social interaction. These features may not be obvious during your first visit. Use your best judgment or ask someone who uses the space frequently. Also note any spatial elements that might hinder interaction.

PHYSICAL FEATURES OR PROGRAMMING THAT INVITE INTERACTION + DIFFERENT TYPES OF USERS

1 Does the place offer a variety of places to sit and rest?

○ No   ○ Yes   _____ How many?

2 Does the place offer things to look at / nice views?

○ No   ○ Yes

3 Does the place have a slope or steps that are nice for sitting?

○ No   ○ Yes

4 Does the place have gateways or well-defined entrances?

○ No   ○ Yes

5 Does the place offer areas for exercise?

○ No   ○ Yes

12 Does the place offer areas for team sports?

○ No   ○ Yes

6 Does the place have a playground or kid-friendly play space?

○ No   ○ Yes

7 Does the place have a multipurpose lawn? (i.e., a lawn big enough for frisbee or picnics)

○ No   ○ Yes

8 Does the place have a multipurpose plaza? (i.e., a plaza big enough for markets or demonstrations)

○ No   ○ Yes   _____ How many?

9 Are there fixed food and drink vendors in the place? (Including food carts.)

○ No   ○ Yes

10 Are there a variety of active ground floor businesses adjacent to the place — including food and drink vendors?

○ No   ○ Yes   _____ How many?

11 Does the place have tables for eating and socializing?

○ No   ○ Yes

13 Does the place have public restrooms?

○ No   ○ Yes

14 Does the place have good lighting at night?

○ No   ○ Yes   ○ Not sure

PHYSICAL FEATURES THAT HINDER INTERACTION

15 Are there any unnecessary permanent fences / barriers?

○ No   ○ Yes

16 Are there any off-limits areas?

○ No   ○ Yes

17 Are there any extreme grade changes, uneven paving, or other barriers for people with limited mobility?

○ No   ○ Yes

18 Are the only food or shopping options very expensive or only accessible to high-income people?

○ No   ○ Yes

SKETCH THE "PATTERNS" OF THE SITE

This tool focuses on three patterns which, when working together, usually facilitate social interaction. Use the three symbols provided and diagram the key elements of the site and their relationships to one another. In architecture, this type of drawing is called a parti. Use your thick pen for symbols and your thin pen for labels and notes. You can make up your own diagrams if you feel they are necessary. The diagram does not have to be to scale.

MAGNET
Attraction / magnet (can be people). Increase size of symbol for stronger magnets. Label each magnet.

- Active storefront
- Event
- Great view
- Water feature
- Art
- Food / drink vendor
- Play area

RANGE OF PARTICIPATION
Ability to be at different levels of remove from magnet. Draw actual physical features like benches, seatwalls, or other 'occupiable edges.

- Slope
- Prospect / refuge
- Nice things to lean against
- Places to stay
- Places to people watch

COMPRESSION
Design feature that brings people closer together. A feature that allows casual closeness to a stranger without being perceived as rude.

- Gateway
- Path
- Alley

USE THE SYMBOLS ABOVE TO MAP THE PHYSICAL ELEMENTS THAT ARE IMPORTANT FOR THE SOCIAL LIFE OF THIS SPACE. Pay attention to overlapping patterns. Add entries and exits, and a general boundary line.
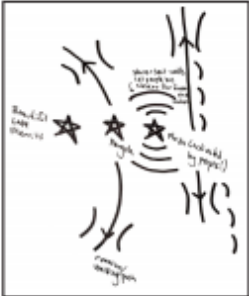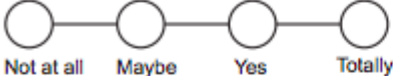
Example: Lake Merritt, Oakland, CA
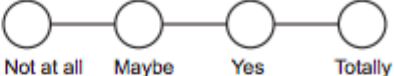
ADD MAP HERE (OPTIONAL)
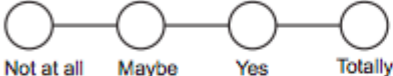
THOUGHTS + NOTES

Is this place good for...

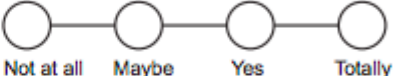People-watching / coexisting with people you don't know?

◯—◯—◯—◯
Not at all   Maybe   Yes   Totally

Doing different types of activities?

◯—◯—◯—◯
Not at all   Maybe   Yes   Totally

Being social / being with friends / family?

◯—◯—◯—◯
Not at all   Maybe   Yes   Totally

Inviting people with different interests / backgrounds?

◯—◯—◯—◯
Not at all   Maybe   Yes   Totally

1   **Observe who is here. In what ways are the people here diverse? In what ways are they homogeneous?** Identity is complex
It is not always visible to others. Nevertheless, think about age, race, gender, physical ability, profession, perceived income,
education, diversity, etc.

2   **Describe the big design and program elements that help or hinder this place to be diverse and foster interaction:**

3   **Look at where people are and what they are doing. Is social activity happening where you thought it might happen?
Why or why not?** (Reference Stationary Activity Mapping tool if you can)

Twelve Quality Urban Criteria

HOW-TO GUIDE

DESCRIPTION

The Twelve Quality Criteria worksheet is structured around three main themes: Protection, Comfort, and Enjoyment.

First, without basic protection from cars, noise, rain, and wind, people will generally avoid spending time in a space. Protection from these things is critical for a space to be regularly used.

Second, without elements that make walking, standing, sitting, seeing, and conversing comfortable, a place generally won't invite anyone to spend time there. Options for play and exercise can also make the space more inviting to people of all ages.

Finally, great public spaces tend to offer positive aesthetic and sensory experiences, take advantage of local climate conditions (for example, offering shade in warmer cities), and provide human-scale elements so visitors don't feel lost in their surroundings.

DIRECTIONS

Select your site: This tool works in a variety of public space types: plazas, parks, squares, and streets. You cannot expect that there is robust public life everywhere in a city, so choose a site where you think it is fair to conduct this assessment. When you are picking your space, consider it within a public space network. Spaces with low activity are not necessarily uninteresting to assess with this tool. Be aware that ground floor activities can be important for good public space.

Plan your trip: This survey will be most useful during an active time of day with good weather. But, it could also occur at any time of the day, on any day of the week, since it looks at elements that do not change very much.

Get ready: Bring a clipboard, a writing utensil, and clothes for the weather.

When you get to the site: Take about five minutes to simply observe. This survey is not timed, but it is important that you take time to understand the space before you do the survey itself. Depending on where you stand in a given space, you may find a different Quality Criteria outcome. Start where most people spend time in this place, and add other locations as you see fit.

If you are in groups be sure to perform the survey on your own and then convene at the end for a conversation and comparison of evaluations.

Participants assess and take notes on the public space and whether it lives up to the criteria. For every criterion, give it a score: a happy, neutral or sad face (meaning yes, in between, or no, respectively).

TWELVE URBAN QUALITY CRITERIA

LOCATION:

☺ = YES

😐 = IN BETWEEN

☹ = NO

Protection

Protection against traffic and accidents.
Do groups across age and ability experience traffic safety in the public space? Can one safely bike and walk without fear of being hit by a driver?

Protection against harm by others.
Is the public space perceived to be safe both day and night? Are there people and activities at all hours of the day because the area has, for example, both residents and offices? Does the lighting provide safety at night as well as a good atmosphere?

Protection against unpleasant sensory experience.
Are there noises, dust, smells, or other pollution? Does the public space function well when it's windy? Is there shelter from strong sun, rain, or minor flooding?

Comfort

Options for mobility.
Is this space accessible? Are there physical elements that might limit or enhance personal mobility in the forms of walking, using a wheelchair, or pushing a stroller? Is it evident how to move through the space without having to take an illogical detour?

Options to stand and linger.
Does the place have features you can stay and lean on, like a façade that invites one to spend time next to it, a bus stop, a bench, a tree, or a small ledge or niche?

Options for sitting.
Are there good primary seating options such as benches or chairs? Or is there only secondary seating such as a stair, seat wall, or the edge of a fountain? Are there adequate non-commercial seating options so that sitting does not require spending money?

Options for seeing.
Are seating options placed so there are interesting things to look at?

Options for talking and listening/hearing.
Is it possible to have a conversation here? Is it evident that you have the option to sit together and have a conversation?

Options for play, exercise, and activities.
Are there options to be active at multiple times of the day and year?

Enjoyment

Scale.
Is the public space and the building that surrounds it at a human scale? If people are at the edges of the space, can we still relate to them as people or are they lost in their surroundings?

Opportunities to enjoy the positive aspects of climate.
Are local climatic aspects such as wind and sun taken into account? Are there varied conditions for spending time in public spaces at different times of year? With this in mind, where are the seating options placed? Are they located entirely in the shadows or the sun? And how are they oriented/placed in relation to wind? Are they protected?

Experience of aesthetic qualities and positive sensory experiences.
Is the public space beautiful? Is it evident that there is good design both in terms of how things are shaped, as well as their durability?

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