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# Study of Levels of Permeability and Wayfinding for Patients Staying in Bridgepoint Active Healthcare Toronto Ontario Canada

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## Abstract

The research focuses on Bridgepoint Active Healthcare. This research purpose is to analyze space syntax accessibility referring to existing content to provide the result of permeability and wayfinding levels. Bridgepoint Active Healthcare was founded in 2013 with a scale of 680,000 square meters in Canada. The building serves as a location that encourages urban health. and is common in offering healthcare to people. The spatial hierarchy analysis method via the leveling numbering graph evaluates the chosen case study's floor plans. The result has shown moderate accessibility and is planned in a private permeability to suit its purpose. The highest permeability level is semi-private, and the level of wayfinding is moderate for the building. The analysis showed that the design is environmentally sustainable for the neighborhood. However, the depth of permeability and wayfinding may be higher according to the analyzed result.

**Discipline**: Architectural Engineering, Hospital & Healthcare Management.

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## 1 Introduction

The case study for the space syntax in this paper focuses on Bridgepoint Active Healthcare, Toronto, designed by Stantec Architecture/ KPMB Architects and Design and Compliance Architect HDR Architects/ Diamond + Schmitt Architects. The design's primary purpose was to reinforce the

patient's relation to the city, nature, and urban landscape and provide amenities that would enhance social contact and encourage physical activities (Alvaro, 2014). Besides, the purpose-built facility is to care for patients with health problems and those in need of recovery, in . Empirical experiments using space syntax indicate that monitoring efficiency and human navigation decisions are primarily influenced by the architecture and structure of buildings and urban settings (Haq & Luo, 2012), as architecture heal. This building is significant because of its complexity in wayfinding and permeability in its design. Compared to other research in healthcare environments, the significance of topological characteristics in surveillance and discovery is promoted (Khan, 2013). The numbering indication system, justified graph, and summary will be conducted through the case study (Yusoff, 2019) following the space syntax of wayfinding and permeability (Lim, 2019). The chosen case study building for the study of space syntax analysis has won several awards. The awards such as "The Generative Space Award 2015", "Bridgepoint is T.O.'s First LEED Silver Hospital", "Good Design is Good Business Award 2016", and "Governor General's Medal in Architecture 2016". The research objective is to analyze the complexity of movement accessibility space syntax by referring to the content and providing wayfinding and permeability of its level.

## 2 Literature Review

The syntax of space is a method for defining the relationships between human activities and space in the inhabited space (Asif, 2018). External preparation, monitoring, and permeability must deal with the high frequency of human movements to prevent additional difficulties in all respects (Rahaman, 2019). Permeability is defined as the degree of space usability. The simpler the room is, the higher the permeability level. Wayfinding is the context's user interface (Abrams, 2010). Space syntax is about the perception and evaluation of spatial systems embodied in a collective lifestyle (Tan, 2020). The syntax of space does not investigate a location or building's character but rather illustrates the network between spaces (Nes, 2014). The study of space syntax is then rigorously driven by reason, instead of discerning identity by observation, which helps the intuitive design process by incorporating justification. (Munir, 2019).

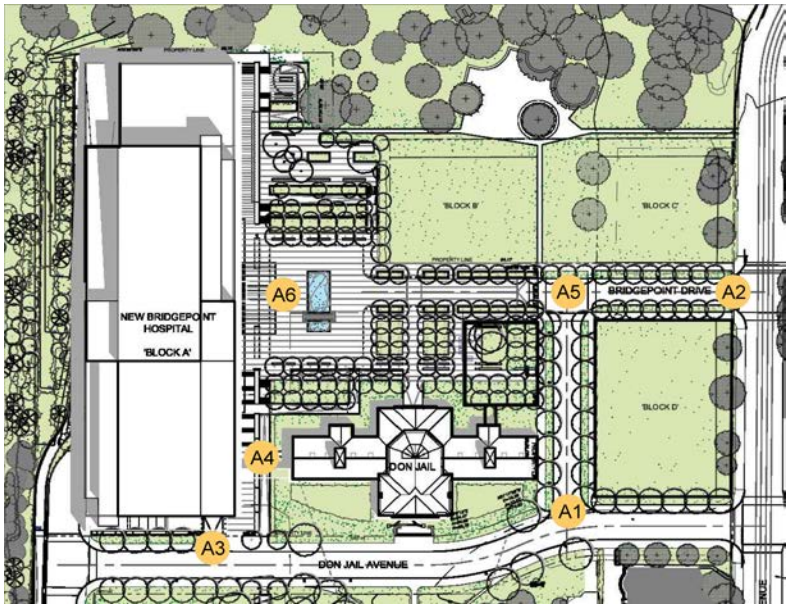
Bridgepoint Active Healthcare is under the medical and health clinics category. The building is debatably one of the most complex building types (Kumar, 2011), as shown in Figure 1. Buildings for healthcare are also limited by these stakeholders' process-driven practices (Wurzer, 2013). The Semi-Private is used in the case study building design in different perceptions, i.e., selecting predictive variables for a particular behavior, such as spatial placement of nurses in medical-surgical units or movement of visitors in hospital public areas (Anantakarn et al., 2019).

## 3 Case Study: Bridgepoint Active Healthcare

Bridgepoint Active Healthcare is located at 14 St. Matthews Road, Toronto, Ontario, which is next to the Don River in the Riverdale neighborhood of the city. Bridgepoint Active Healthcare was built in 2013 with 680,000 sq. feet in Canada (Bozikovic, 2016). In 2006, the master plan was completed by Urban Strategies, which is shown in Figure 2. Bright and open spaces welcome the patients through their journey (Alvaro, 2015) into the Bridgepoint. In 2015, this building was

awarded the AIA-National Healthcare Design Awards. The building acts as a place that promotes healthcare in an urban area. By considering patients' feelings, the building maximizes daylight access and natural elements to enhance the indoor environment's quality (Canadian Architect, 2015). After years, Bridgepoint Active Healthcare is famous for providing healthcare to those who suffer from tuberculosis, diphtheria, measles, scarlet fever, and polio (Arban. 2013a; 2013b).

**Figure 1:** Aerial view of Bridgepoint Active Healthcare, Toronto.
(Source: https://archello.com/story/53076/attachments/photos-videos/3)




| No. | Spaces |
|---|---|
| A1 | South entrance |
| A2 | East entrance |
| A3 | Ambulatory Care Entrance |
| A4 | Bridge to Administration Building |
| A5 | Junction road |
| A6 | Main drop-off |

**Figure 2:** Site plan of Bridgepoint Active Healthcare. (Source: Retraced image from canadianarchitect.com)

Figure 3, the south entrance (A1) and the Ambulatory Care Program (A3) are located near the basement parking to help patients feel easier in wayfinding and yet to shorten the distance to treatment areas. According to the typical floor plan, the stacked neighborhood concept is applied vertically. Patients' interaction is being enhanced through shared dining and social spaces. The color and floor patterning (Huelat, 2015) are considered to promote clarity of wayfinding, as shown in Figures 3, 4, and 5.


**Figure 3:** Ground Floor plan of Bridgepoint Active Healthcare (Source: Retraced image from ArchDaily.com)

**Table 1:** List of spaces for the ground floor plan which correspond to the labeling in Figure 3.

| No. | Spaces | No. | Spaces |
|---|---|---|---|
| E1, E2, E3, E4, E5, E6, E7 | Entrance | 15, 20, 21, 23, 27, 28, 29, 30, 39, 40, 41 | Office |
| S1, S2, S3, S4, S5 | Staircase | 19, 22, 24, 32, 44, 45 | Meeting room |
| L1, L2, L3 | Lift | 14, 17, 31, 38, 42 | Waiting area |
| T1, T2, T3, T4 | Toilet | 16, 46, 51 | Archive, Storage |
| 1, 2 | Café | 18, 43 | Pantry |
| 3, 4, 25, 26 | Serveries | 34, 37 | Library |
| 5, 9, 10 | Kitchen | 35, 36 | Library office |
| 6, 7, 8 | Cold storage | 47, 48, 49, 50 | Auditorium |
| 11, 12, 13, 33 | Retail | C1-C9 | Corridor |

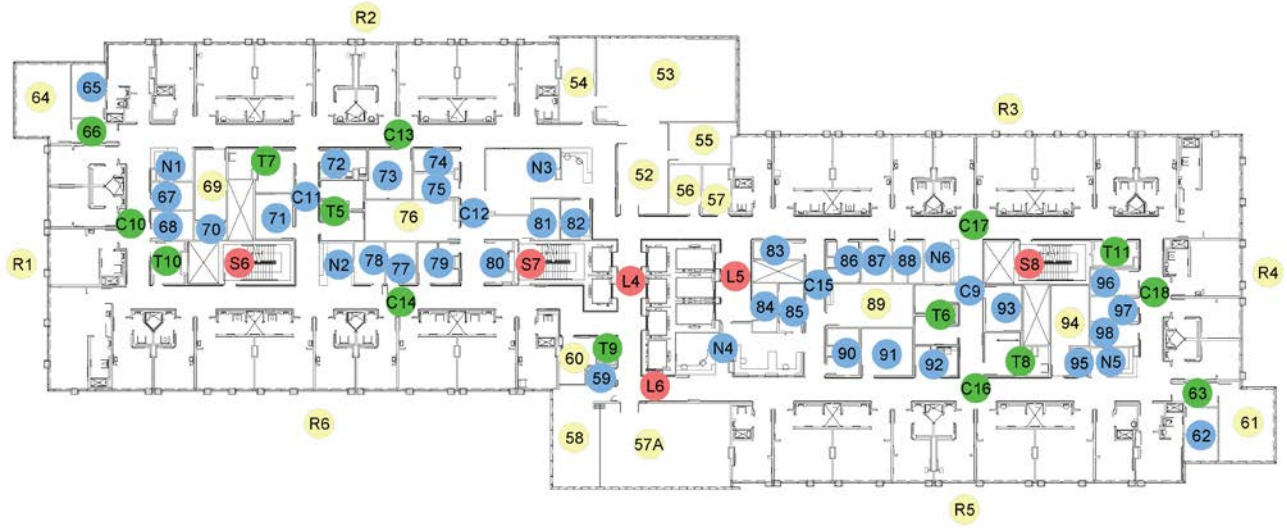



**Figure 4:** Typical Floor plan of Bridgepoint Active Healthcare *(Source: Retraced image from ArchDaily.com)*

**Table 2:** List of spaces for the typical floor plan which corresponds to the labeling in Figure 4.

| No. | Spaces | No. | Spaces |
|---|---|---|---|
| N1, N2, N3, N4, N5, N6 | Nurse station | 79, 87, 88, 93, 95 | Archive, Storage |
| S6, S7, S8 | Staircase | 71, 77, 78, 80, 82, 83, 85, 86 | Medical room |
| L4, L5, L6 | Lift | 72, 81, 90, 92 | Nurse room |
| T5, T6, T7, T8, T9, T10, T11 | Toilet | 60, 67, 68, 96, 97, 98 | Doctor room |
| 62, 64 | Patient lounge | 52, 53, 54, 55, 56, 57 | Therapy Gym |
| 61, 65 | Staff lounge | 69, 70, 76, 89, 94 | Complex Continuing Care core program |
| 62, 66 | Transition area | 57A, 58 | Shared Dining and activity room |
| 91 | Meeting room | R1 – R6 | Patient room |
| C10 - C18 | Corridor | | |


**Figure 5:** Top Floor plan of Bridgepoint Active Healthcare (Source: Retraced image from ArchDaily.com)

**Table 3:** List of spaces for the top floor plan which corresponds to the labeling in Figure 5.

| No. | Spaces | No. | Spaces |
|---|---|---|---|
| N7, N8, N9, N10 | Nurse station | 115, 124 | Archive, Storage |
| S9, S10, S11 | Staircase | 121, 122, 123, 127 | Medical room |
| L7, L8, L9 | Lift | 103, 128 | Nurse room |
| T12, T13, T14, T15, T16 | Toilet | 100, 111, 112, 113 | Doctor room |
| 110 | Patient lounge | 99 | Patient Auditorium |
| 109 | Staff lounge | 114, 117 | Complex Continuing Care core program |
| 102, 108, 126 | Transition area | 104, 105, 106, 107 | Shared Dining and activity room |
| 118 | Meeting room | R7 – R9 | Patient room |
| 126 | Rooftop garden | 125 | Garden deck |
| C19 - C23 | Corridor | | |

# 4 Methodology

## 4.1 Level of Permeability and Wayfinding

A practical step for understanding wayfinding is performing an analysis of the spatial hierarchy via a leveling numbering graph (Abrams, 2010). The analysis is undertaken by evaluating the chosen case study's floor plans using a scale of measurement graph, numbering scheme, and Likert measurement scale. Each space will be labeled in the graph with the numbering system for each space, together with different colors and categories (Hor et al., 2019). The permeability and wayfinding are measured through the Likert Scale.

## 4.2 Graph and Numbering System

The level of permeability and wayfinding is determined according to the user differentiated into workers and customers. With the assistance of the floor plan, the level of permeability, and the layout of Bridgepoint Active Healthcare can help evaluate permeability. The measurable scale graph is measured on a four-category scale: public, semi-public, semi-private, and private. Permeability level and wayfinding will be measured using the Likert scale to define the result based on spatial networking consistency. Visual evaluation and action are a direct way to perform the measurement. The data result from the analysis will then use the graphs to justify.

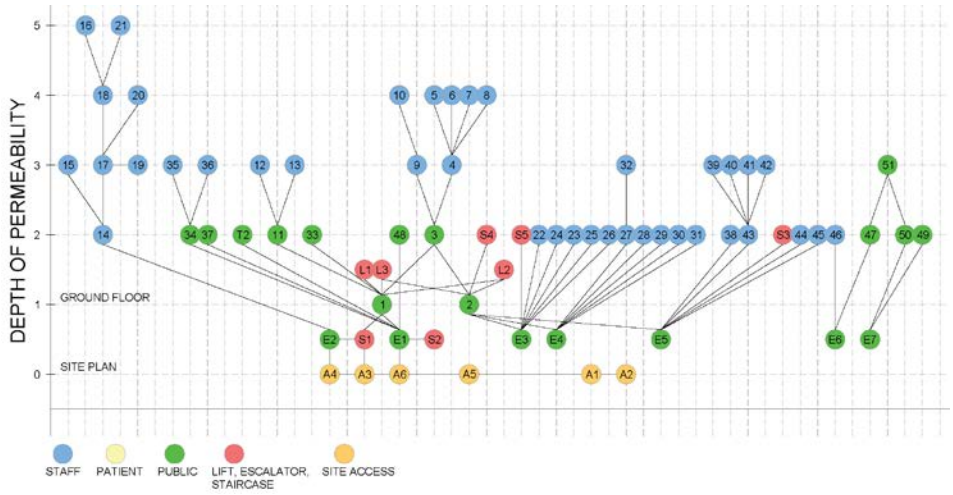



**Figure 6:** Example of a measurement scale graph.

For the justified graphs shown in Figure 6, the numbering with various function categories is retrieved from each of the numberings labeled floor plan. Each space is labeled by category in the alphabet and different colors represent the depth of the level. The alphabet E represents entrance where (E1, E2), alphabet L represents lift or escalator, lift lobby, or services lift which is (L1, L2, L3), alphabet S represents staircase (S1, S2, S3). The numbers are mentioned to indicate each space on a given floor. The labels are converted into a justified graph to illustrate the level of permeability and wayfinding. The graph's vertical axis indicates permeability from most public spaces to most private spaces. The horizontal axis defines spaces of equal depth on a particular floor. The lines connecting the circle-labeled spaces represent the direct connection between the spaces linked. The coloring represents the particular space's privacy where the colour coding can be referred to in Figure 6. On the graph's base, it can be inferred that the higher level of the vertical axis reflects higher space density, greater privacy of space, and therefore lower permeability levels.

## 4.3 Likert Scale of Measurement

In this analysis, the depth levels of permeability and wayfinding are used to clarify the space's permeability and wayfinding level in the case study building. The increase of depth number is based on the level of permeability and wayfinding will be more challenging. The Likert Scale Figure 7 is defined as six levels.

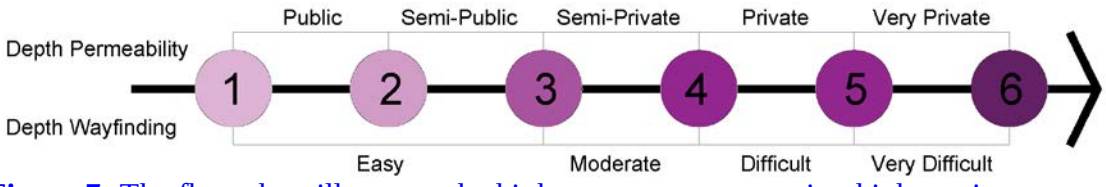



**Figure 7:** The flow chart illustrates the higher amount representing higher privacy space.

The collective data is generated in the Likert scale table for each floor level to identify permeability and wayfinding levels. The table shows the percentages on the level depth of permeability and wayfinding of each space for further discussion.

# 5 Results of Analysis

Figure 8 shows the overall result of space syntax. The user's categories are into two types,

the patient indicated in yellow, and staff indicated in blue respectively shown in the justified graph. The permeability level depth and the wayfinding rate of the space are determined for patient and staff usability purposes.

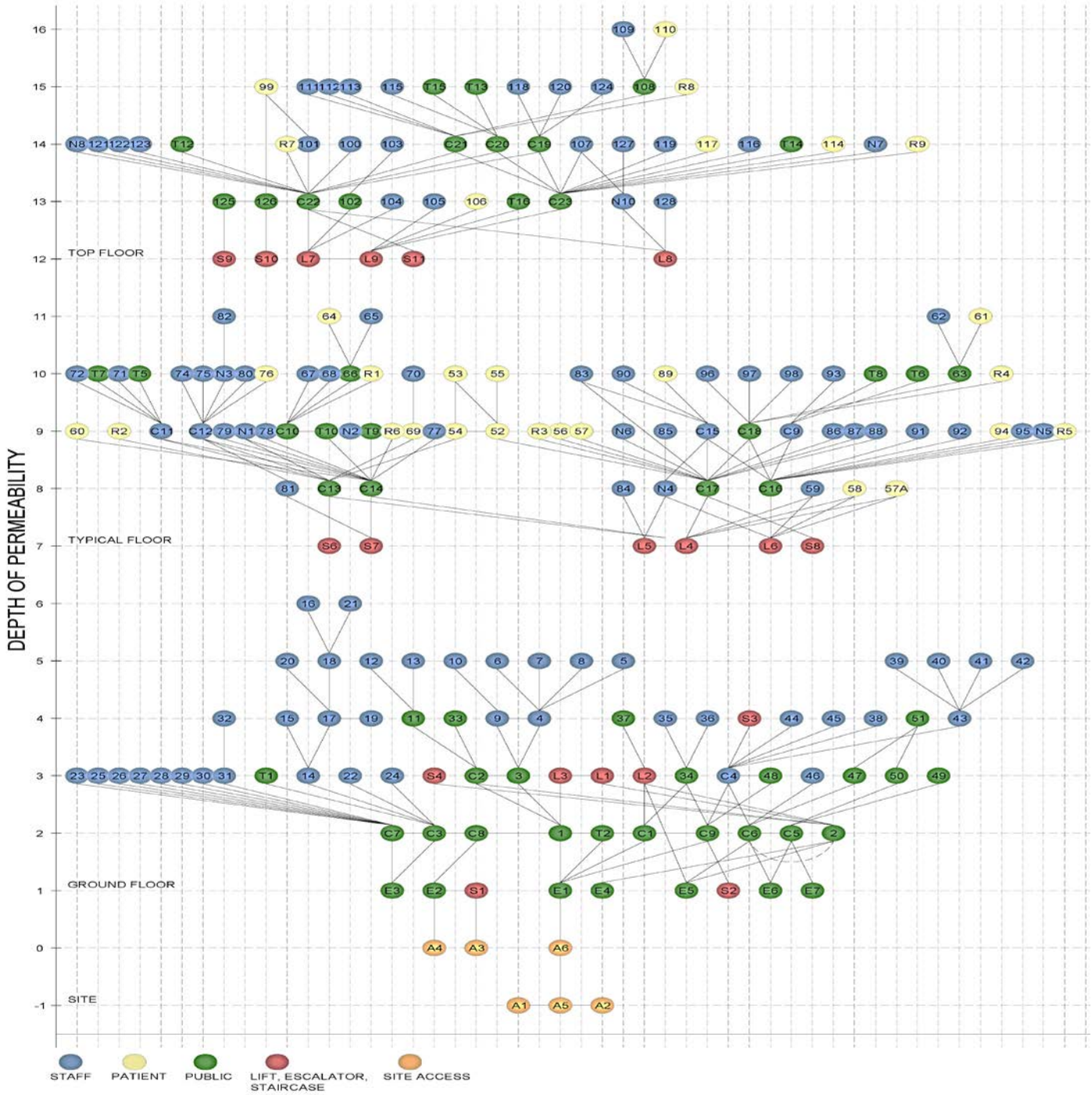



**Figure 8**: Overall measurable scale graph

## 5.1 Level of Permeability and Wayfinding

The justified graph has a two-depth level for the site plan, designed for simple accessibility. The ingress and egress area for patients is the main drop-off, south entrance, and east entrance which are A1, A2, and A5 as they are public entrances to the building. While for the staff, access is from A4. For the patient who arrives by ambulance, car A3 is the entrance ambulatory care entrance. The depth levels of permeability for A1, A2, and A5 are considered public, while A3 and A4 are considered private, mainly for staff access. Table 4 shows the easy level of wayfinding is for patient accessibility, and the moderate level is for staff accessibility.

**Table 4**: Likert Scale for Space Syntax Analysis for Site Plans.

| Area | Space | Depth of Space | Level of Permeability | Level of Wayfinding |
|---|---|---|---|---|
| A1 | South entrance | -1 | Public | Easy |
| A2 | East entrance | -1 | Public | Easy |
| A5 | Road Junction | -1 | Public | Easy |
| A6 | Main drop-off | 0 | Public | Easy |
| A3 | Ambulatory Care Entrance | 0 | Semi-Private | Moderate |
| A4 | Bridge to Administration Building | 0 | Semi-Private | Moderate |

Table 5 shows six levels of depth of permeability for the ground floor plan, including the public spaces to private spaces. The main entrance is labeled E1 and E2 to E7 as sub-entrances to the building based on the results shown for permeability depth levels. The patient also can access the basement car park through escalators S1 and S2, all the facilities like the lift (L1), toilet (T1), café (1), and fire staircase (S3) are under public usage. Will be semi-private as it is designed with more inner depth in the layout. The ground floor's wayfinding levels are mainly easy as it is designed for a more welcoming and serving configuration layout. There are five moderate levels: meeting room (19), serveries, waiting for the area, and library office (35) on this floor. The very private permeability is the office (11) and archive storage (16) mainly for stuff.

**Table 5**: Likert Scale for Space Syntax Analysis for Ground Floor Plan.

| Area | Number of Space | Space | Depth of Space | Level of Permeability | Percentage of Level of Permeability | Level of Wayfinding | Percentage of Level of Wayfinding |
|---|---|---|---|---|---|---|---|
| E1, E2, E3, E4, E5, E6, E7 | 7 | Entrance | 1 | Public | Public: 30/79x100% = 38% | Easy | Easy: 36/79x100% = 45.6% |
| S1, S2 | 2 | Escalator | 1 | Public | | Easy | |
| 1, 2 | 2 | Café | 2 | Public | | Easy | |
| S3, S4, S5 | 3 | Staircase | 2 | Public | | Easy | |
| T1, T2, T3, T4 | 4 | Toilet | 2-3 | Public | | Easy | |
| C1-C9 | 9 | Corridor | 2-3 | Public | | Easy | |
| L1, L2, L3 | 3 | Lift | 3 | Public | | Easy | |
| 11, 12, 13, 33 | 4 | Retail | 4-5 | Semi-Public | Semi-Public: 10/79x100% = 12.7% | Easy | |
| 34, 37 | 2 | Library | 3-4 | Semi-Public | | Easy | |
| 47, 48, 49, 50 | 4 | Auditorium | 3 | Semi-Public | | Moderate | Moderate: 21/79x100% = 26.6% |
| 19, 22, 24, 32, 44, 45 | 6 | Meeting room | 3-4 | Semi-Private | Semi-private: 17/79x 100% = 21.5% | Moderate | |
| 35, 36 | 2 | Library office | 3 | Semi-Private | | Moderate | |
| 3, 4, 25, 26 | 4 | Serveries | 3-4 | Semi-Private | | Moderate | |
| 14, 17, 31, 38, 42 | 5 | Waiting area | 3-5 | Semi-Private | | Moderate | |
| 18, 43 | 2 | Pantry | 4-5 | Private | Private: 8/79x100% = 10.1% | Difficult | Difficult: 8/79x100% = 10.1% |
| 5, 9, 10 | 3 | Kitchen | 4-5 | Private | | Difficult | |
| 6, 7, 8 | 3 | Cold storage | 5 | Private | | Difficult | |
| 15, 20, 21, 23, 27, 28, 29, 30, 39, 40, 41 | 11 | Office | 4-6 | Very Private | Very Private: 14/79x100% = 17.7% | Very Difficult | Very Difficult: 14/79x100% = 14.7% |
| 16, 46, 51 | 3 | Archive, Storage | 3-6 | Very Private | | Very Difficult | |
| 79 | | 100% | | | | 100% | |

There are five depth levels on the typical floor plan, including the patient and staff spaces shown in Table 6. The private spaces included staff lounge (61), patient lounge (62), meeting room (91), archive storage (79), medical room (71), and nurse room (72). The semi-private are specific for

patient healthcare program usage where the area is a doctor room (60), therapy gym (52), complex continuing care core program (69), and others. For semi-public, the public may reach the areas like a nurse station (N1). The public level such as lifts (L4), toilets (T5), and shared dining and activity room (57A). The levels of wayfinding on this floor plan mainly is moderate for the patient as patients' rooms surround the design. The nurse station can be found on each side, and the lift is in the middle of the plan.

**Table 6**: Likert Scale for Space Syntax Analysis for Typical Floor Plans.

| Area | Number of Space | Space | Depth of Space | Level of Permeability | Percentage of Level of Permeability | Level of Wayfinding | Percentage of Level of Wayfinding |
|---|---|---|---|---|---|---|---|
| L4, L5, L6 | 3 | Lift | 7 | Public | Public: 24/115x100% = 20.9% | Easy | Easy: 32/115x100% = 27.9% |
| S6, S7, S8 | 3 | Staircase | 7 | Public | | Easy | |
| 57A, 58 | 2 | Shared Dining and activity room | 8 | Public | | Easy | |
| T5, T6, T7, T8, T9, T10, T11 | 7 | Toilet | 9-10 | Public | | Easy | |
| C10-C18 | 9 | Corridor | 8-9 | Public | | Easy | |
| N1, N2, N3, N4, N5, N6 | 6 | Nurse station | 8-10 | Semi-Public | Semi-Public: 8/115x100% = 7.0% | Easy | |
| 63, 66 | 2 | Transition area | 10 | Semi-Public | | Easy | |
| 60, 67, 68, 96, 97, 98 | 6 | Doctor room | 9-10 | Semi-Private | Semi-Private: 61/115x100% = 53% | Moderate | Moderate: 61/115x100% = 53% |
| 52, 53, 54, 55, 56, 57 | 6 | Therapy Gym | 9-10 | Semi-Private | | Moderate | |
| 69, 70, 76, 89, 94 | 5 | Complex Continuing Care core program | 9-10 | Semi-Private | | Moderate | |
| R1-R6 | 44 | Patient room | 9-10 | Semi-Private | | Moderate | |
| 91 | 1 | Meeting room | 9 | Private | Private: 22/115x100% = 19.1 % | Difficult | Difficult: 22/115x100% = 19.1% |
| 79, 87, 88, 93, 95 | 5 | Archive, Storage | 9-10 | Private | | Difficult | |
| 72, 81, 90, 92 | 4 | Nurse room | 9-10 | Private | | Difficult | |
| 71, 77, 78, 80, 82, 83, 85, 86 | 8 | Medical room | 10-11 | Private | | Difficult | |
| 62, 64 | 2 | Patient lounge | 11 | Private | | Difficult | |
| 61, 65 | 2 | Staff lounge | 11 | Private | | Difficult | |
| 115 | | 100% | | | | 100% | |

According to Table 7, there are five depth levels of permeability shown in the justified graph in Figure 8. The top floor plan's depth of permeability is where the semi-private level is the most area on the top floor, and it has a rooftop garden (126). In contrast, the garden is considered a semi-public area. Besides, the common spaces like the lift (L7), staircase (S9), and toilet (T12) are under the public level of permeability. The depth levels of wayfinding for the top floor plan through the results shown in Table 8 mainly moderate level in most areas such as the patient room (R7-R9), Doctor room (100), and others by refereed to the table data. Next, the accessibility to the common area, corridor (C9-C23), and transition area (102) are the easy level of wayfinding as they are designed with distributed evenly surrounded by vertical access.

**Table 7**: Likert Scale for Space Syntax Analysis for Top Floor Plan.

| Area | Number of Space | Space | Depth of Space | Level of Permeability | Percentage of Level of Permeability | Level of Wayfinding | Percentage of Level of Wayfinding |
|---|---|---|---|---|---|---|---|
| L7, L8, L9 | 3 | Lift | 12 | Public | Public: 19/68x100% = 27.9% | Easy | Easy: 19/68x100% = 27.9% |
| S9, S10, S11 | 3 | Staircase | 12 | Public | | Easy | |
| 102, 108, 126 | 3 | Transition area | 13-14 | Public | | Easy | |
| C19-C23 | 5 | Corridor | 13-14 | Public | | Easy | |
| T12, T13, T14, T15, T16 | 5 | Toilet | 13-15 | Public | | Easy | |
| N7, N8, N9, N10 | 4 | Nurse station | 13-14 | Semi-Public | Semi-Public: 6/68x100% = 8.9% | Moderate | Moderate: 37/68x100% = 54.5% |
| 125 | 1 | Garden Deck | 13 | Semi-Public | | Moderate | |
| 126 | 1 | Rooftop garden | 13 | Semi-Public | | Moderate | |
| 104, 105, 106, 107 | 4 | Shared Dining and activity room | 13 | Semi-Private | Semi-private: 31/68x100% = 45.6% | Moderate | |
| 114, 117 | 2 | Complex Continuing Care core program | 14 | Semi-Private | | Moderate | |
| 100, 111, 112, 113 | 4 | Doctor room | 14-15 | Semi-Private | | Moderate | |
| R7 – R9 | 21 | Patient room | 14-15 | Semi-Private | | Moderate | |
| 103, 128 | 2 | Nurse room | 13-14 | Private | Private: 12/68x100% = 17.6% | Difficult | Difficult: 12/68x100% = 17.6% |
| 121, 122, 123, 127 | 4 | Medical room | 14 | Private | | Difficult | |
| 118 | 1 | Meeting room | 15 | Private | | Difficult | |
| 115, 124 | 2 | Archive, Storage | 15 | Private | | Difficult | |
| 99 | 1 | Patient Auditorium | 15 | Private | | Moderate | |
| 110 | 1 | Patient lounge | 16 | Private | | Moderate | |
| 109 | 1 | Staff lounge | 16 | Private | | Difficult | |
| 68 | | 100% | | | | 100% | |

**Table 8**: Likert Scale for Level of Permeability for Overall Building

| Level of Permeability | Overall Percentage of Level of Permeability |
|---|---|
| Public | 27.9% |
| Semi-Public | 9.2% |
| Semi-Private | 41.6% |
| Private | 16.0% |
| Very Private | 5.3% |

**Table 9**: Likert Scale for Level of Wayfinding for Overall Building

| Level of Permeability | Overall Percentage of Level of Permeability |
|---|---|
| Easy | 33.2% |
| Moderate | 45.4% |
| Difficult | 16.0% |
| Very Difficult | 5.4% |

## 6 Discussion

According to the study, the overall outcome of permeability and wayfinding properties is shaped by patient and staff usability circulation. The Bridgepoint Active Healthcare illustrates

moderate accessibility and is designed in private permeability to serve the building's purposed. The levels of permeability based on the result Table 9, the highest levels are semi-private, 41.6% and most of the semi-private level is on a typical floor, 53%. Next, the second higher-level percentages are public, 27.9% with the most public level on the ground floor, 38%. The tertiary level is private, 16% with the most private level on the typical floor, 19.1%. The lowest percentage levels of permeability are semi-public, 9.2%, and very private, 5.3% with most percentages on the ground floor. According to the result Table 10, the highest wayfinding percentages are moderate, 45.4%, and most percentages are located on the top floor, 54.5%. The secondary higher levels of wayfinding are easy, 33.2%, and most are located on the ground floor, 45.6%. While the tertiary higher levels of wayfinding are difficult, 16%, and most are located on the typical floor, 19.1%. Based on the result shown in Table 6, the connecting space through the ground floor consists of 7 entrances surrounding the floor layout, two escalators linked to the basement floor, 3 location lifts that serve every floor level, and three staircases. Retail, library, and auditorium are semi-public as there are more in-depth levels of permeability which occupy 12.7% of the permeability level. For the typical floor of connecting space shown in Table 7, three transition areas connect the nurse station, the doctor's room with the patient room, and the patient lounge. Next is patient rooms consisting of 44 rooms, and the rooms occupied on each typical floor level of permeability is 38.2%. For the top floor of the connecting space shown in Table 8, there is a rooftop garden which is semi-public with of permeability level, and a patient auditorium with is private permeability level.

## 7 Conclusion

Bridgepoint Active Healthcare is one of the ambiguities of space syntax by referencing the material and providing its wayfinding and permeability. In contrast, the building typology is medical healthcare mainly for patients and staff. The result has shown a semi-private permeability level of this building that provides the best rehab environment for patients to achieve a quiet, calm, relaxed, and clean environment while maximizing their best condition. The result also shows that the level of wayfinding overall is moderate. Hence, the patient may not easily reach the only spaces, but staff can easily approach the patient's room. The study showed that the design is environmentally friendly for the community surrounding the provided library, auditorium, café, and retails on the ground floor level. However, the percentage showed that the typical floor is the most semi-private space. The depth of permeability and wayfinding could be higher at the private level, which concerns the cause of some security issues for the building operation. In term of architecture for healthcare, architecture heal via quality design may help patients to recover faster thus reduce length of hospital stay. Thus, permeability and wayfinding is a vital part of quality design & quality space for management and services given by healthcare providers.

## 8 Availability of Data and Material

All data is included in this article.

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