1 Room Utilization

Figure 1 is a direct view of room utilization in Site 1 and Site 2. We observe that there is a consistency among all rooms. For Site 1, the average room utilization is 69%, which is not good. For Site 2, the average room utilization is 80%. We also want an improvement on all ORs in these rooms.

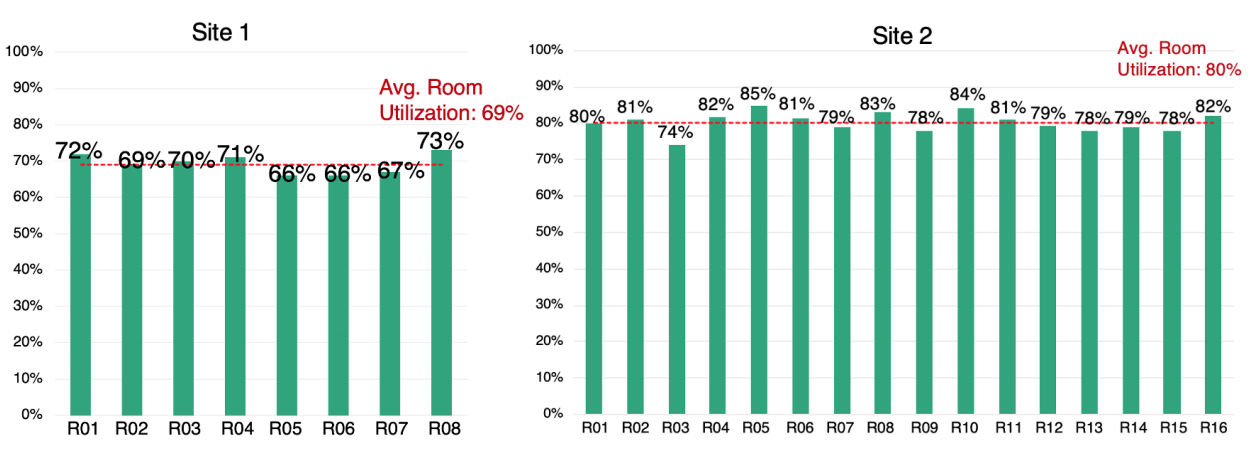

Figure 1: Room utilization for Site 1 and Site 2

Figure 2 is a view of room utilization for Site 4. We see an inconsistency among some of the ORs. R13 to R16 have significantly low utilization, since they are designed for emergency and special use. R05 is also one OR designed for urgent cases only. R11 is usually closed, and deal with some small cases of the service that is not that commonly seen when it is open, which possibly causing its low utilization.

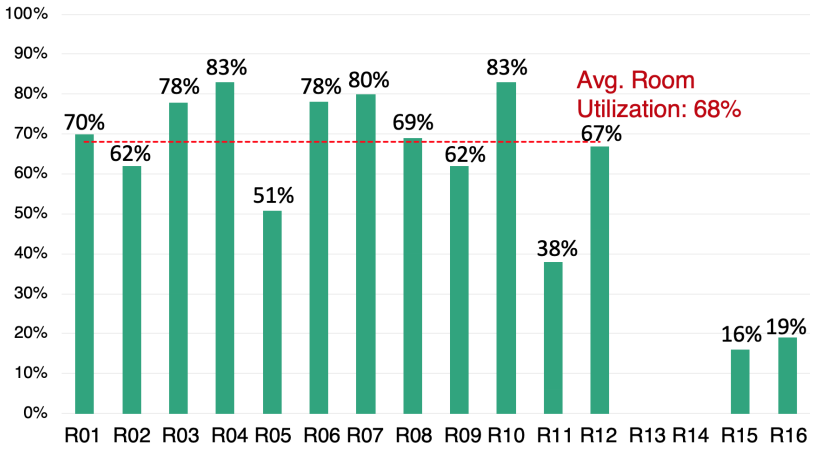

Figure 2: Room utilization for Site 4

2 Block Utilization

In this section, we include a detailed analysis of Block Utilization for Site 1, Site 2, and Site 1. In Section 2.1, we present the analysis of utilization for each room in each site. In Section 2.2, we present the analysis

of utilization for each service in each site.

2.1 Block Utilization for Room

Site 1 and Site 2 are similar in that in general, ORs in these two sites have out-block utilization much higher than in-block utilization. Figure 3 is a straightforward view of in-block and out-block utilization among Site 1 and Site 2 ORs. We observe that in Site 2, R01 to R05, and R12 to R16 have out-block utilization (over 50%) almost twice as in-block utilization (around 25%). We further look into the block schedule of Site 2, and observe that R06 to R11 have block schedule that is almost consistent for each workday (each room is assigned for one service only for all weekdays), while R01 to R05 and R12 to R16 have very complicated schedule (scheduled for different services every weekday), which might cause confusion when scheduling.

For Site 1, Figure 3 presents that the out-block utilization (around 40%) of all rooms is around 10% to 15% greater than in-block utilization(below 30%). By looking at the block schedule, we observe a high complexity in Site 1 schedule. In general, these two sites have a significant incoherence with block schedule based on the great discrepancy between in-block and out-block utilization, which we further observe might be due to the complexity of block schedule. We will look into the other three sites to verify.

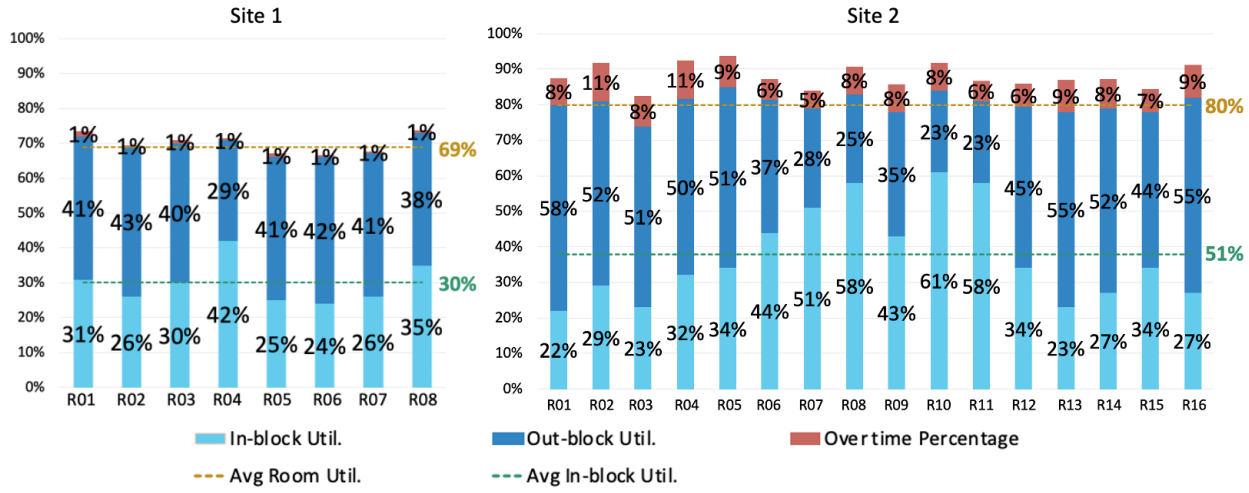

Figure 3: Block utilization for Site 1 and Site 2

In Site 4, Figure 4 shows that all rooms have relatively high in-block utilization than out-block utilization except the following ORs: R02 and R05 are designed for emergency cases; R03 has complicated block schedule; R11 is offline most of the time, and may deal with some urgent cases when needed.

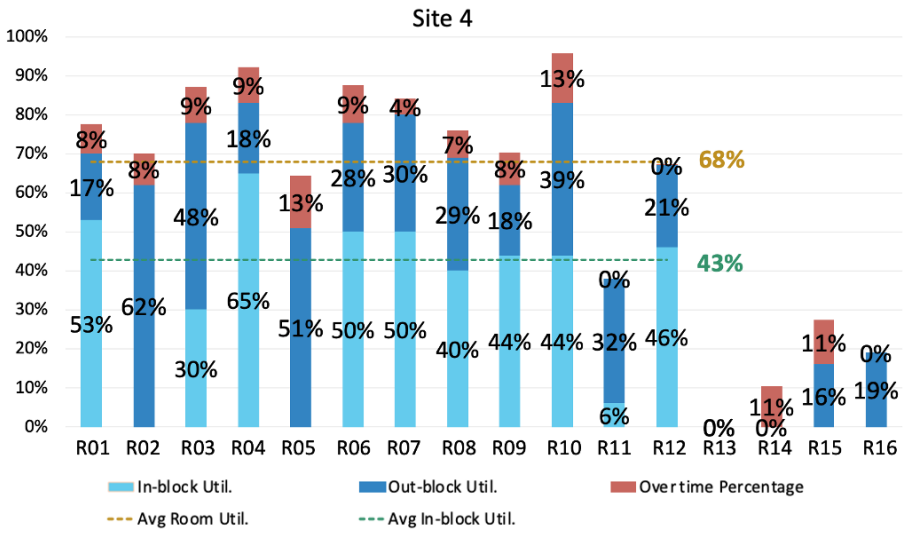

Figure 4: Block utilization for Site 4

In conclusion, we see that the ORs for emergency use and the ORs with more complex schedule usually have lower in-block utilization and higher out-block utilization. We would like to design a scheduling model to better fit the cases into the block, such that on the premise of same or higher room utilization, we would improve the in-block utilization as much as possible.

2.2 Block Utilization for Service

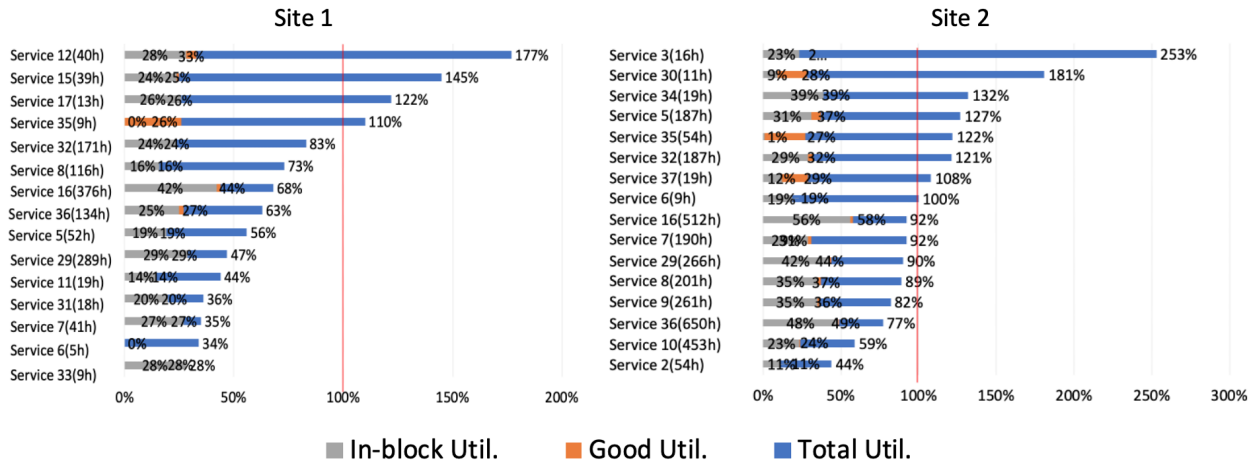

Figure 5: Block utilization for services in Site 1 and Site 2

Figure 5 shows block utilization for all services in Site 1 and Site 2. We see the gray bars are significantly shorter compared with the blue bars for all services, indicating a uniformly low in-block and high out-block utilization for all services. There are no specific service that causes the low in-block utilization for these two sites. We observe that Service 35 (Trauma), in both sites, have almost 0 in-block utilization due to its

urgency.

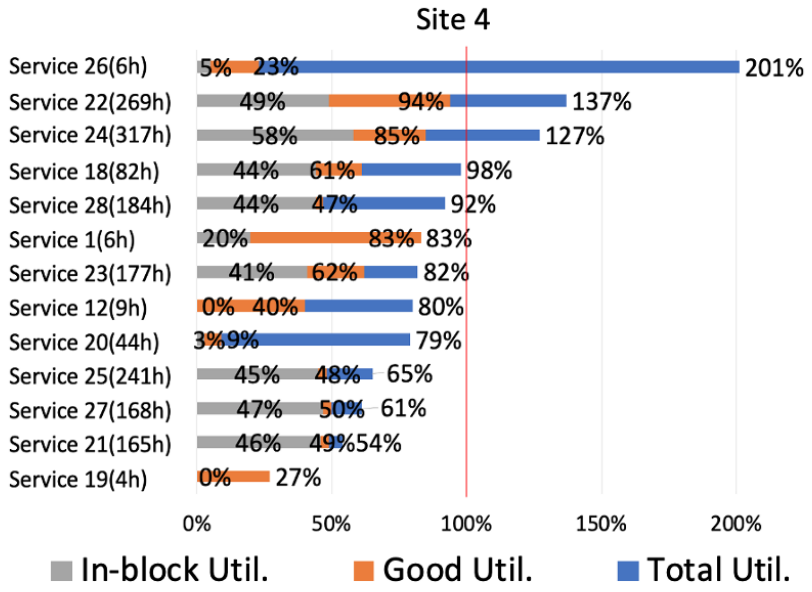

Figure 6: Block utilization for services in Site 4

In Site 4, Figure 6 shows that service 26, 12, 20, 19 have significantly short gray bars (in-block utilization). We loop up these services in block schedule for Site 4, and found out that the rooms assigned for these service are also shared with other services. It is scheduled for these service for just a few weekdays during the time frame, and is assigned for others for other services. This might cause a chaos when the hospital schedule for a surgery, causing low in-block utilization.

Combining with the analysis of Site 1 and Site 2, we observe that in general: (i) Sites with fewer types of cases to deal with have higher in-block utilization for services than the sites with various types of services, and(ii) Services that are urgent usually have lower in-block utilization.