Investigation of Outdoor Lighting Design at the Main Entrance of a Hospital: Assessing Performance, Safety, Aesthetics, and Energy Efficiency

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ABSTRACT

This project aims to evaluate the effectiveness of outdoor lighting design at the main entrance of a hospital by examining its impact on performance, safety, aesthetic appeal, and energy efficiency during the nighttime. Also, it also aims to assess the adequacy of illumination levels, glare mitigation, and uniformity of light distribution at the main entrance of a hospital as well as to analyse how the outdoor lighting design and performance contribute to the safety and security perceptions of patients and visitors at the main entrance

METHODOLOGY

Research Design

Using the research design method, describe the overall research approach as a mixed-method study combining qualitative and quantitative analyses.

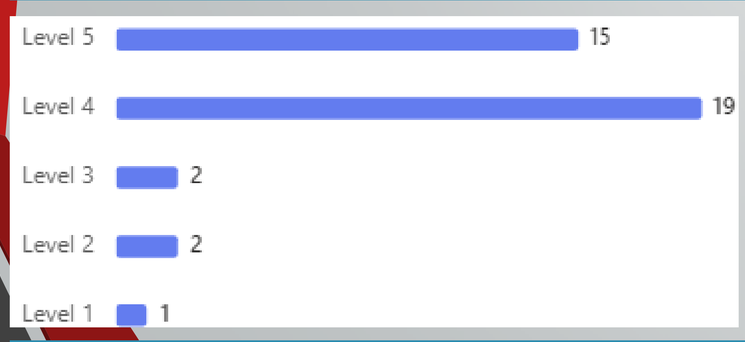
Data Collections

Surveys and Questionnaires: structured surveys to gather quantitative data on user perceptions of safety, comfort, and aesthetic appeal related to outdoor lighting.

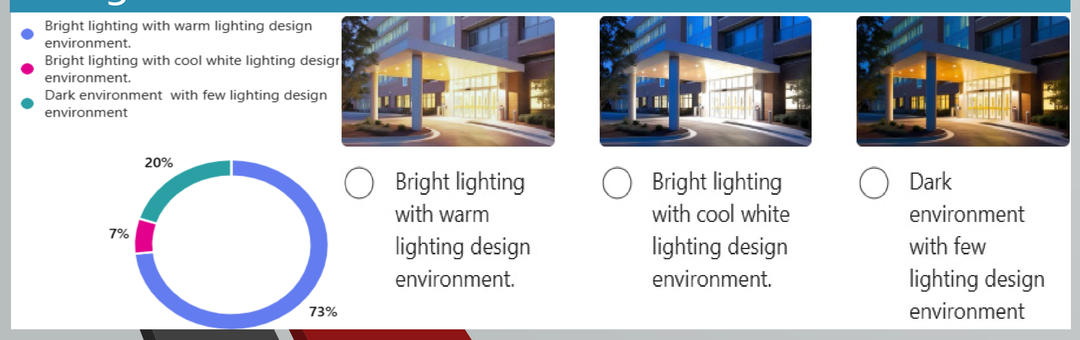
Data Analysis

Statistical methods can be employed to analyze survey data, focusing on correlations between lighting conditions and user perceptions of safety and comfort.

Survey results on users agreement on entrance lighting influences staff efficiency

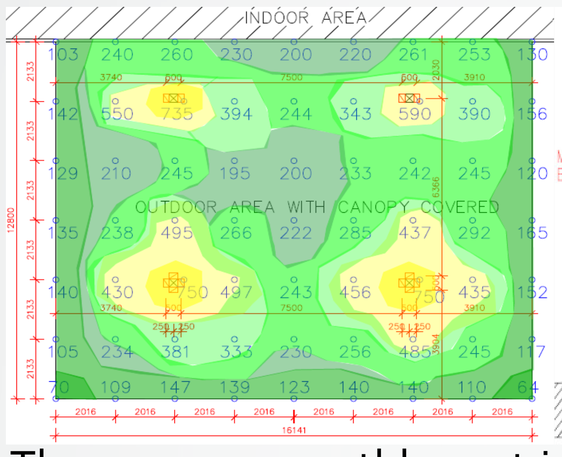


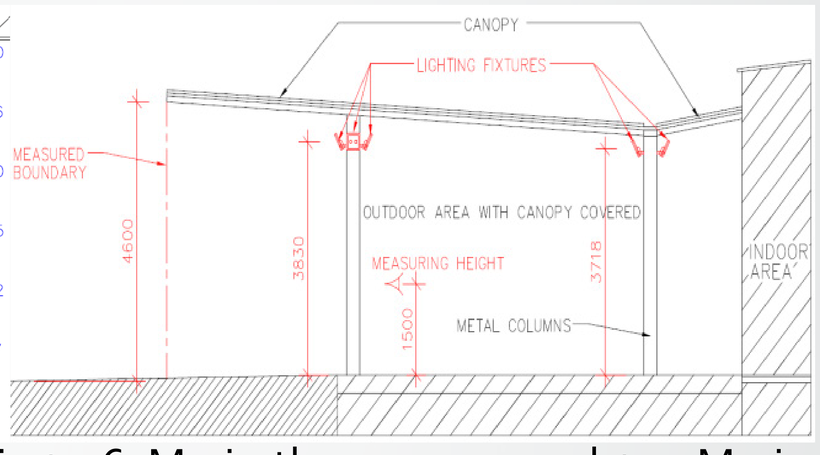
Survey results on users preference of lighting design influence perception of patient safety during evening or nighttime visits.



Survey to architect and lighting designer

Onsite measurement for the lumen of an improvement project at Central Government-Aided Emergency Hospital (CGAEH)





The average monthly cost is $0.65Mn in the summer and $0.5Mn in the winter. In comparison to cost and power consumption in CGAEH, the hospital entrance light is HK$157 and 146.3 kWh per month, respectively, which is only 0.024% to 0.031% of the entire tariff bill

Solutions to outdoor lighting challenges

Encourage sustainability by installing UV panel at the canopy of the entrance. (Tseung Kwan O Hospital Sample)

Besides utilizing daylight, they also convert solar energy into electrical energy to help reduce electricity consumption.

Uplighting and downlighting are two methods that can be used to minimize glare while highlighting landscaping and architectural features.

Adopt smart lighting systems

Timer, photocell sensor can be installed for the different natural light conditions and seasons in Hong Kong.

CONCLUSION

In conclusion, major advantages in terms of performance, safety, aesthetics, and energy efficiency are revealed by the study of outdoor lighting design at a hospital's main entrance. Cost and maintenance constraints notwithstanding, there are significant ramifications for enhancing patient satisfaction and operational sustainability. Future studies could examine the long-term effects of lighting improvements and look into how to use more sophisticated smart technologies to improve outdoor lighting systems even more.

Survey for the "Investigation of Outdoor Lighting Design at the Main Entrance of a Hospital".