KEY POINT SUMMARY

OBJECTIVES

This study looked to assess the "leanness" of healthcare facilities in the UK and facilitate a conversation between FM and business users concerning asset performance by examining alternative operational performance indicators in three separate facilities from existing data within a national database.

Operationalizing Lean Health Assets

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Key Concepts/Context

Prior research regarding facility management (FM) performance has been dominated by measurements associated with cost per unit area. Within healthcare settings, it could be argued that a more true value of performance should be measured by the amount of health outcomes per unit area. To date the most often measured indicators for health outcomes associated with FM have been absence of complaints and patient satisfaction. The use of these performance measures and prevailing practices for assessing healthcare facilities has done little to effectively determine if an individual facility is operating in the most effective manner to support the desired health outcomes.

Methods

For this research, a case study approach comparing three separate trusts was used to test the "leanness" of each healthcare facility. Researchers utilized existing data from the only available national dataset within the UK. The data was collected under a program known as Estates Return Information Collection (ERIC). ERIC was originated to hold trusts accountable for their resource usage. The ERIC dataset consists of three single entries: (1) gross internal area (GIA) of a trust's estate, (2) trust's total income, and (3) patient-occupied area (POA).

These output-based measures were evaluated using data envelope analysis (DEA). The DEA method defines an envelope linking the best performers on either ratio or a combination of both ratios by a line. This envelope is then assigned an efficiency of 100%, and calculates the relative efficiency of other units comparatively. Ratios of POA:GIA were used to provide indication of the design efficiency of an estate. Using the assumption that total income of a trust provides some indication of the volume of healthcare delivered, optimization of outputs was evaluated using ratios of net income:GIA. Space utilization of non-income-generating departments was measured through occupant density (m^2 per full-time equivalent employee).

The first case study was conducted in a teaching hospital with a significant research portfolio that is located in a large, previously industrial city. The hospital is also

DESIGN IMPLICATIONS
This research suggests that assessing a healthcare systems portfolio using an approach that challenges their existing performance indicators can enable FM, designers, and business managers make more valued decision on the amount of space needed to deliver quality care.

linked with a university medical school. The trust's estate contains five separate hospitals, three specialized and two general, across two main sites in its portfolio. The estates department was aware that several clinical and nonclinical departments were operating in very poor conditions.

The second case study was conducted with a mental health trust located in a large city and surrounding greater metropolitan area. Its property portfolio includes a high-security psychiatric hospital, a medium-secure regional facility, and a range of clinics/residential units for adult mental health (primarily young men) and older people (primarily acute dementia cases). Due to the significant portion of the total estate being comprised of residences, workshops, and underutilized offices, it was rated one of the least efficient estates in the mental health sector.

A Primary Care Trust (PCT) was the third case study. The PCT served a metropolitan borough within a larger urban area. The trust's 5.4-acre estate contained a Victorian workhouse along with several other buildings that sprawled around the site. The buildings had been erected over time, and all within the portfolio were in very poor condition. The Victorian workhouse, known as St. T's, carried a sentimental attachment for the staff that worked there.

Findings

The output ratios for case 1 pointed to a surplus of approximately 15% of the total estate. The 15% surplus was identified from the following facilities within the portfolio: former mill owner's houses, rented office property used for payroll function, accommodations for then-junior doctors that were apartment complexes built in the 1960s, a former Victorian workhouse on a site where a hospital had been built, and two buildings from the 1960s and 1970s that had outlived their original educational and research purposes. A business case was developed to remodel the former workhouse to support various nonclinical functions through a modern office environment. The existing estates department was being housed in two separate locations. A Victorian villa that was comprised of inefficient and ineffective space housed the executive functions and local estate management. "Temporary" buildings provided very poor workspace at a large expense for the rest of the nonclinical staff. It was determined that collocating the nonclinical staff into one building, an unused educational building, would lead to needed changes in workplace practices. This relocation led to several significant changes in computer systems, work environment (open offices vs. closed offices), data storage and retrieval (electronic and paper based), and new methods of working for trade staff and store management. These changes helped to reduce waste while providing greater opportunities for a collaborative work environment and standardized operational approach across departments. Upon completion of the relocation, the "temporary" structures were demolished, creating much-needed space on an already crowded hospital site.

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Case 2 reported a 33% surplus of the total estate. Two of the sites reported superficial efficiency ratings due to the lack of non-patient space. However, upon further investigation these facilities were failing to meet modern minimum standards. Both facilities were old and cramped, creating a suboptimal environment. Further investigation through focus groups and one-to-one interviews with staff and managers involved in delivery of services from the various sites revealed that the design and condition of the facilities impacted the quality of care. However, the participants were not able to quantify the impact.

Due to the composition of the estate, a lean strategy was adopted to more closely align the trust's portfolio with its mission. The Victorian workhouse was sold to another organization. The trust then leased space in office buildings around the town center to provide a range of a range of ambulatory care services specific to the surrounding community. Recognizing that customized buildings were not needed for many of these services provided a considerable saving in capital costs and a faster relocation from the St. T's site. Design of the new facilities was laid out with the patient experience at the forefront. Post-occupancy evaluations were performed through tours and interviews with service managers. One of the facilities that operated as a drug and alcohol treatment clinic reported waiting times for treatment dropped from 18 months to less than a week. The service manager also reported that there has not been a single "reportable incident" in the two years following the facilities opening.

Limitations

One major limitation to the study is the use of existing data to place a value on the "leanness" of a facility. The outcome indicators chosen have inherent issues and assumptions surrounding them, creating other limitations. For example: The use of revenue as an indicator for optimization does not accurately reflect profit or contribution. The ERIC data can also be susceptible to interpretation due to shortcomings in the codes, creating issues with classifying the purpose of the estate and distinguishing the various categories of nonclinical space that might affect performance. Further, these findings are not generalizable, as they are specific to the cases in this study. Future studies should look to expand the conversation about "leanness" through analytics and language that is relevant of both the business case and end user.