Assignment 5: Data envelopment analysis

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1   Problem description

Five enterprising hospitals—Picard Hospital, Saint Guinan's Hospital, Crusher Cancer Centre, Worf Hospital, and Hospital Q—have created a competition amongst themselves to see who is most efficient. Each hospital will be measured on performance in its emergency department (ED) and surgical unit. You have been hired as the judge of this competition, and the means to select the winner(s) are left solely to your discretion.

2   The data

Data file `EfficiencyData.xlsx`

Contents Metrics for each hospital

The data file contains a series of metrics for each hospital for last fiscal year, as described in Table 1. Note that the hospitals vary in size, so a straight comparison of, say, the number of surgeries performed will disadvantage smaller hospitals.

3   Questions

Submit your Excel files and a brief PDF report that analyzes your findings and answers the following questions:

Table 1: `EfficiencyData.xlsx` data description

Column name	Information
Hospital	Hospital name
Surgical volume	Number of surgeries performed
ED volume	Number of ED patients seen
Surgical bed-days	Number of bed-days allocated to the hospital's surgical unit
ED bed-days	Number of bed-days allocated to the hospital's ED

1. What analysis method did you use? Why?

2. Of the metrics that were provided, which did you use? Did you use any metrics that were not explicitly provided by the hospitals?

3. Which hospital is most efficient?

4. How inefficient is each hospital, in a relative sense?

5. For each inefficient hospital, recommend a course of action to improve efficiency.