Reviewer's report

Title: Functional mapping of hospitals by diagnosis-dominant case-mix analysis

Version: 1 Date: 19 January 2007

Reviewer: Michael M Kashner

Reviewer's report:

General
This is an interesting paper that discusses an important topic of interest to a worldwide audience. Important elements are the application of the policy-relevant Diagnosis Procedure Combination case-mix system to compute a rarity index, complexity index, and diversity index. These indices, in turn, are used to describe differences in "functionality" between facilities classified in terms of public vs. private, inpatient vs. outpatient, teaching vs. non-teaching, and size.

I think the paper has merit because it introduces some interesting concepts and it explores a very large database describing an entire health care system. International readers are familiar with the long lengths of stay in Japan, and understanding how they are dealing with this problem will be important to the field of health services research.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached).

While the authors include references, they should provide more background for DPC, and more explanation for Ri, Ci, and especially Di. This is of interest to international readers, and is critical for the paper. This may repeat existing literature, but their summary here I think is worth journal space.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

I strongly urge that the authors consider a Table 2 in which they look at differences in indices, by facility divided into characteristics. That is, compare Ri, Ci, and Di differences between teaching and non-teaching facilities, large vs. small facilities, hospital vs. outpatient facility. Should provide significance tests, p values, and confidence intervals.

The figure is interesting. Three indices are introduced in the text, but the figure explores only two plus expenditures. Di is described in the text.

The complexity index for outpatient care must rely on values computed from disorders involving inpatient care. The logic here, I suppose, is that the DPC classifications work, but some discussion of this is highly recommended. For instance, does DPC create homogenous groupings with respect to complexity, or are these classifications based on other objectives. Again, further discussion concerning DPC would be useful (how were they grouped).

The policy relevance of this paper is that the high costs of care in Japan may be the result of differences in functionality among health care providers. However, these findings suggest such differences may be necessary to accomplish the clinical care, teaching, and research missions of the industry. I think that this point needs further emphasis in the conclusion

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Discretionary Revisions (which the author can choose to ignore)
It might be helpful if the authors used shorter sentences. For example, in their section: "In Japan, health policy ... service fees." you might try: "To control health care costs, Japan has attempted to foster cooperation between primary and specialty care service providers. Specifically, these measures include, among others, limiting the size of hospital beds through regional healthcare programs, as well as building incentives through its service fees."

**What next?:** Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

**Level of interest:** An article of outstanding merit and interest in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**
I declare that I have no competing interests.