Reviewer’s report

Title: Recursive neural networks in hospital bed occupancy forecasting

Version: 0 Date: 04 Jul 2018

Reviewer: Rodney Jones

Reviewer’s report:

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Nice work. Several points. Firstly, I note that the model seems to consistently perform poorly on the weekends. Some comments are required. Two older papers by G Davis and W Lowell in 1998 and 1999 in Am J Medical Qual on neural networks are probably worth a mention. My own work on bed occupancy has shown that the number of deaths are a primary driver of bed occupancy, see http://www.hcaf.biz/2010/Publications_Full.pdf and this is also worth a mention. I have also found that bed occupancy and emergency admissions show on/off switching behaviour and this on/off behaviour may well show up in the data on model performance listed by year in the paper. Some comments on how well the model may cope with unexpected on/off switching would be valuable. Temperature is also a well-known factor in emergency admissions (and deaths) and since this is not measured some comments regarding this would be welcome. Hence considerably expand the scope of introduction and discussion.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
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Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

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I recommend additional statistical review

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