Reviewer’s report

Title: Snowbirds and infection--new phenomena in pneumonia and influenza hospitalizations from winter migration of older adults: A spatiotemporal analysis

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Reviewer: David Fisman

Reviewer’s report:

I very much enjoyed having the opportunity to review this paper. The authors should be congratulated on an extremely creative piece of work that has important implications, as they say, for health services provision, especially in the US and (where I’m writing from) Canada (we have snowbirds too!).

I have a few limited suggestions:

1. Introduction: “The dynamics of influenza are well understood”. I don’t think this is a true statement. We have extensive information on the timing of influenza epidemics over the past 80 years in the United States and Canada, but that’s quite different from understanding disease dynamics well, or at all. If we understand influenza dynamics so well, why are we so totally awful at predicting the severity and timing of seasonal influenza epidemics and pandemics? I don’t think we understand dynamics well at all…indeed, Jonathan Dushoff et al., in a paper in PNAS about 5 years ago, noted that because seasonality probably represents dynamical resonance, the actual drivers of seasonal surges in flu incidence may be too small to expect accurate and consistent measurement, and thus may remain unidentified for some time to come.

2. With respect to summertime pneumonia in non-residents surging in northern states: could this be the footprint of legionellosis? That’s a summertime seasonal disease, is classically associated with travel, tourism, and hotels, affects almost exclusively the age group described in this study, and is thought to be markedly under-diagnosed (some authors suggest up to 14% of CAP = legionellosis). Outside the scope of the current work, to be sure, but curious what the authors think of this idea.

3. The one week lag in peak of snowbird P&I hospitalizations as opposed to hospitalizations in state residents would make sense if these individuals were incubating while travelling south, and came from regions with later peaking influenza epidemics. However, I don’t think there’s any predictable north-south gradient on timing, and furthermore the snowbirds probably start moving well before flu season peaks (November?). How else might this pattern be explained? Are out-of-staters diagnosed and hospitalized more slowly due to fewer ties to the Florida medical system?

Level of interest: An article of outstanding merit and interest in its field
Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

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