Abhijin Review #2

This is a much better version of this paper. I do have some questions that leave me a little confused.

The major comments:

* I’m still confused about the pathways. There is no question about the spread due to the two local pathways – natural spread and farm-city-farm spread. My confusion is with long distance travel. Are both intra-country and inter-country covered by the same equation/methodology? It’s not clear how trade between countries is handled. It looks like you consider trade in Figure 1, but after that it almost looks to me like everything is intra-country. I guess my confusion comes from the description of the flow . It states that the flow between cities I and j within a country. These flows are a function of the country’s imports and exports. Is this the only place where imports and exports appear, or is there a place where city i is in one country and city j is in another. I’m confused!
* The gravity model accounts for domestic trade, i.e., trade within countries. Trade between countries is considered only in one case: Malaysia to Singapore. This is because, for other country pairs, the trade volume is very low compared to domestic flows.
* The imports and exports correspond to those outside the focus region. For example, we consider flow from India to Bangladesh.
* I have read the results section numerous times but I still don’t know what the main results are. The real early in this section there should be something like: “We modeled the spread of …. considering the conditions … and found that ??? and ???. These results are important since ???? Even if there are five main and important results they should be listed early in the section. Discussion of the particular caveats and minor interesting facts about the results should be given after the statement of the main results. As the paper reads now, one gets the impression that this paper should be published because (1) we developed a cool model, and (2) we did a lot of work. A paper written like this will not fly.
* Results are summarized at the end of Introduction.
* The best section of the paper is the one titled “Multi-pathway spread model”. This is a really good section. Figure 2 (a) is great. The caption on this figure should be greatly expanded. Additionally, each of the three pathways should be shown. The paragraph after this one should have the list of results suggested in the above comment.
* Thanks. Student put lot of effort.
* Should the section “Pathways of entry” be in the results section or proceed it? It does not seem to contain a result.
* This is not relevant now as Results has been restructured.
* The “Assessing … Bangladesh” section seems to be a collection of calibration steps followed by sensitivity steps to “tune” the model. Is this true? It’s not clear but seems to me that your likelihood arguments apply only to the 8 locations shown in Figure 3. Is that what this section is about – calibration and sensitivity analysis? Once again: What is the main result? Somewhere on Figure 3 there should be a statement about what the scale means. After reading the paper I assume that it is the number of months to first infection.
* This is restructured. Sensitivity analysis is separately addressed in the section following “Assessing … Bangladesh”.
* Does the main result appear in the section “Predicting the spread in Southeast Asia”? What are the units of distance on the plot? As I understand it, the points are the values of accumulated probabilities for all cells a specific distance from the initial starting point. Are there the same number of cells in each of the bins 800, 1000, …, 2000? Is this plot misleading if one distance has, say, 10 times more cells than another one?
* This has been addressed.
* Does page 10 contain the main result?: “monitoring a subset of locations which are critical for the spread” I wonder what Figure 5 looks like!! Is this truly the main point of this paper?? Why does it come so late? It seems to me that this whole section should be rewritten starting with (1) the statement that you show that a few locations are important in stemming the infection rates. (2) Then state that this is through a model that considers three different pathways (the stuff describing Figure 2). (3) The model is calibrated using a likelihood argument, (4) Many possible “calibrated models” with likelihoods >6 are possible. (6) Sensitivity analysis shows that the most important parameters, and (6) for all of the calibrated parameter values monitoring a few cells is the same as shutting down long distance trade. Did I get this right??
* Hopefully, the results of each subsection are clear now.
* Is it true that any model with the long distance parameter that is something other than zero gives a likelihood less than 5.5?
* No. What I am trying to convey is that there are two types of parameter instances which with likelihood. In Class A, long distance is zero while in Class B, it is not. Of course, this classification is not really 0-1. For example it is possible that in Class A, setting long distance parameter to a small value (say 0.01), will not make much of a difference in the spread.