

**Instructions:** Do the reading, then go through the questions, think about them, referring back to the reading when necessary, and write short answers (ranging between 1-2 sentences and couple paragraphs) for each. (If you feel you addressed one question in an answer to another, feel free just to refer to that.) Turn in your answers on the day the reading is due. You may discuss these questions with others but all answers should be written in your words (though you may use occasional quotes).

**To be turned in:**

1. What are your overall thoughts?
2. What are the issues Silver suggests for the mispredictions of H1N1 outbreaks? Do you disagree with any of Silver's explanations?
3. Evaluate Silver's statements that the *[2009 swine flu] predictions also proved to be unwarranted* in light of both the data Silver gives (quoted from a Wall Street Journal article), and the following data from CDC researchers from [http://cid.oxfordjournals.org/content/52/suppl\\_1/S75.long](http://cid.oxfordjournals.org/content/52/suppl_1/S75.long)  
approximately 60.8 million cases (range: 43.3–89.3 million) 274,304 hospitalizations (range: 195,086–402,719) and 12,469 deaths (range: 8,868–18,305) from pH1N1 the 2009–2010 flu season.<sup>1</sup> The CDC paper also states, compared with averages for seasonal flus from the 90's, that the death rates for pH1N1 in 2009–2010 were about 8 times greater for children, 12 times greater for adults 18–64, though only 1/5 as much for senior citizens. Which data do you think is more reliable?
4. How might you estimate the actual number of incidents of a disease or a crime based on the reported number? What are the limitations/uncertainties of your approach?
5. Do you think it's true that people lie on surveys (cf. endnotes 83 and 84)? If so, why, and how do you think mitigate or account for this?
6. (based on lecture, not reading) Let  $X$  be the sum of two fair die rolls. Compute (with justification) the expected value  $E[X]$ , and the variance  $Var(X)$ .

**Not be turned in:** (you don't need to write up, but think about if you have time, and we may discuss in class)

7. What are some ideas to evaluate agent-based models for the spread of disease? Should the evaluation be any different than evaluating other models?

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<sup>1</sup>Silver's reference in footnote 42 (report to the president) about 90,000 Americans may die explicitly says *PCAST [The President's Council of Advisors on Science and Technology] emphasizes that this is a planning scenario, not a prediction.*