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Large-scale Individual-based Models of Pandemic Influenza Mitigation Strategies KAI KADAU, TIMOTHY GERMANN, Los Alamos National Laboratory, IRA LONGINI, University of Washington and Hutchinson Cancer Research Center, CATHERINE MACKEN, Los Alamos National Laboratory — We have developed a large-scale stochastic simulation model to investigate the spread of a pandemic strain of influenza virus through the U.S. population of 281 million people, to assess the likely effectiveness of various potential intervention strategies including antiviral agents, vaccines, and modified social mobility (including school closure and travel restrictions) [1]. The heterogeneous population structure and mobility is based on available Census and Department of Transportation data where available. Our simulations demonstrate that, in a highly mobile population, restricting travel after an outbreak is detected is likely to delay slightly the time course of the outbreak without impacting the eventual number ill. For large basic reproductive numbers R_0, we predict that multiple strategies in combination (involving both social and medical interventions) will be required to achieve a substantial reduction in illness rates. [1] T. C. Germann, K. Kadau, I. M. Longini, and C. A. Macken, Proc. Natl. Acad. Sci. (USA) **103**, 5935-5940 (2006).

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