



17th International Input-Output Conference

TITLE: PROBABILISTIC MODELING OF WORKFORCE-BASED DISRUPTIONS AND INPUT-OUTPUT ANALYSIS OF INTERDEPENDENT RIPPLE EFFECTS: APPLICATION TO A PANDEMIC SCENARIO

AUTHORS: SANTOS, JOOST ;

EMAIL: jrs8e@virginia.edu

COUNTRY: UNITED STATES

KEYWORDS: PANDEMIC ; WORKFORCE RECOVERY ANALYSIS ; RISK ANALYSIS ; MONTE CARLO SIMULATION ; DYNAMIC INPUT-OUTPUT ANALYSIS

PAPER CONFERENCE CODE: 41

FULL PAPER IN CD?: NO

ABSTRACT:

A pandemic outbreak is one of the major planning scenarios considered by emergency preparedness policymakers. Although a pandemic event has not struck the modern society, historical accounts have clearly manifested its plausibility and the dire consequences it can bring to the general population. The consequences of a pandemic can significantly affect and disrupt a large spectrum of workforce sectors in today's society. This paper considers the effects of a pandemic on the workforce and the resulting adverse consequences in terms of disruptions to the broader interdependent economy. In this paper, we model pandemic intensity as a probability distribution with which statistical measures such as average and extreme workforce disruptions can be derived. Results reveal that workforce disruptions can dramatically increase in the event of a pandemic relative to baseline scenarios. This serves as a motivation to further model the effects of a pandemic on the general workforce sectors to take into account the direct effects as well as the cascading nature of consequences to a regional economy. Using a dynamic recovery analysis model, we assess the interdependent effects of a pandemic on various workforce and economic sectors within a simulated recovery horizon.