
Evacuate or Not? A POMDP Model of the Decision Making of Individuals in Hurricane Evacuation Zones - SUPPLEMENT

Adithya Raam Sankar

Institute for Artificial Intelligence
University of Georgia
Athens, GA 30602

Prashant Doshi

Department of Computer Science
University of Georgia
Athens, GA 30602

Adam Goodie

Department of Psychology
University of Georgia
Athens, GA 30602

In Fig. 9 (see next page), we show two complete time-slices of the DID. Nodes prefixed with ‘HN’ are the hidden variables while those prefix with ‘O’ are the observation variables. Observe that the DID reflects the structure of a POMDP – previous state variables and action influence next state variables, and previous action and current state variables influence the observations. A time-slice has 6 time-independent demographic state variables (shared across time-slices), 7 time-dependent experiential variables, 9 observation variables, 3 hidden nodes and the assessed risk node in addition to the decision and utility nodes. We unroll this DID over four time-steps.

We discuss one limitation of our model in addition to the obvious constraint imposed by a limited amount of data. Our survey did not have questions about the timeline of when the participant decided to evacuate prior or post hurricane making landfall. For example, one participant might have evacuated immediately after an evacuation order but another participant might have waited until the situation became worse and then evacuated. These two cases are not differentiated by our survey, though our decision-making model exhibits a temporal dimension.

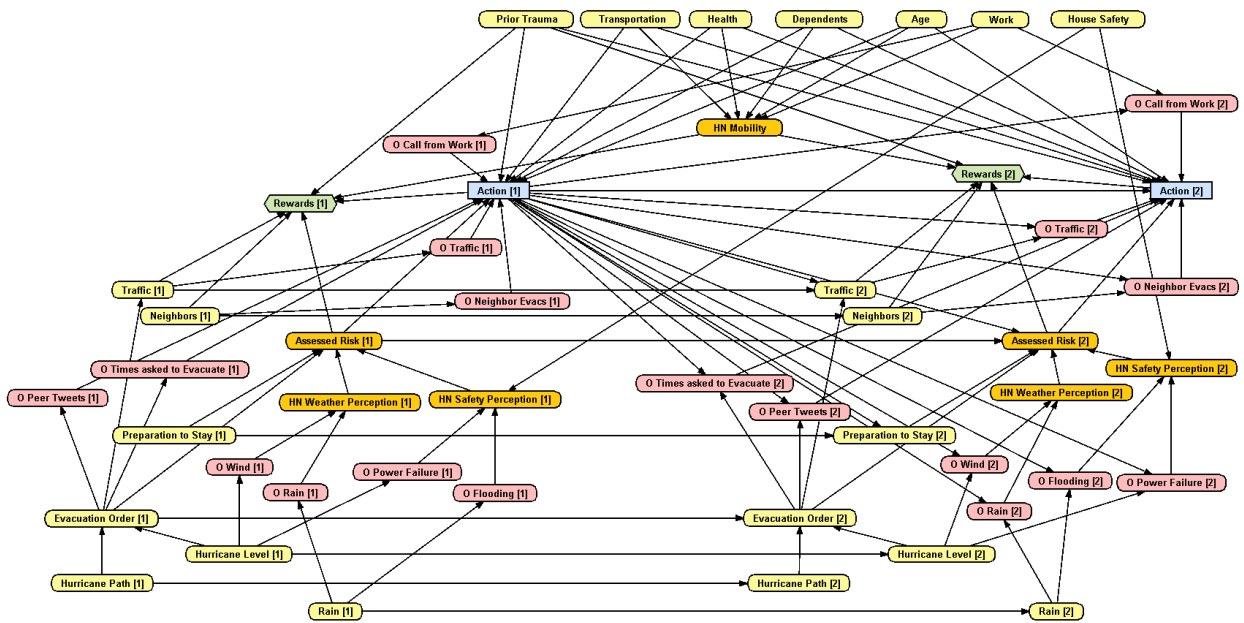


Figure 9: A two time-slice DID representation of the POMDP model for evacuation decision making.