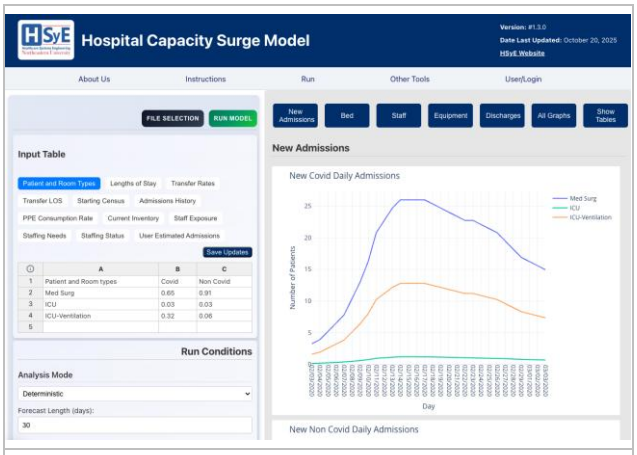
HSyE | Northeastern University
Healthcare Systems Engineering Institute

Hospital Capacity Surge Tool – Winter Study

Overall aim – Use and help evaluate a hospital surge capacity model during winter 2026-2027 to better anticipate and manage surges and shortages.

Tool summary

We developed an online computer model that predicts daily demand for beds, staff, and equipment on a rolling basis, both during extreme surges (outbreaks etc.) and during more routine operations (winter flu etc.). The general idea is that models such as this can help hospitals more proactively anticipate and manage capacity surges, including when to (and not to) make various adaptive decisions, so that overall operations can work more smoothly with minimal disruptions to other patient flows, service lines, and so on. The tool is easy to run, intuitive, and produces a 30-day ahead look at unit-by-unit bed demand, staffing needs, and equipment use. The model has undergone extensive usability and accuracy testing as part of an AHRQ research study, but primarily offline and using historical or simulated data. We now wish to further evaluate the model's accuracy, usefulness, and usability in actual practice by using the tool during the 2026-2027 winter with a number of varied hospitals.



Hospital capacity tool - screenshot

Winter study activities and timeline

The table below summarizes the general plan, consisting of orientation this fall, tool use this winter (we can assist if useful), and brief periodic check-ins to address any issues and to learn about your experiences.

Activity	When	Time	Who	Description
General study orientation call	early November	20-30 minutes	Leadership	Provide overview of the study, tool, and benefits
Tool use & setup training	late November	1 hour session (virtual)	Hospital staff who will run tool	Orient someone at hospital in how to set up and run tool
Run / use tool	Dec 2026 - Feb 2027	5-10 minutes (daily or weekly)	Hospital staff who will run tool	Hospital runs tool daily or weekly, with our assistance if useful
Periodic check-ins as useful	Winter 2026 - 2027	Bi-weekly at first, as needed once winter is here	Hospital staff who will run tool	Address any questions or issues and help us understand user experiences.
Debriefing interview	Any convenient time Dec - Feb	1 hour	Staff and leadership	Virtually at convenient time to learn about model use, utility, perceptions, improvements, etc.
Possibly data sharing	Ad hoc	--	--	Model inputs, etc.

More information: Tool, Survey

This study has been approved by the Northeastern University IRB. A data sharing agreement is not required but can be provided upon request.