

## For older adults, flu season tends to peak first in Nevada, last in Maine

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A map shows the west to east movement of peak seasonal flu timing in the United States over 13 seasons (measured from July 1 to June 30). Nationwide, the average seasonal peak occurred during the third week of January, or the 28th week of the season. Credit: \*Source: Wenger JB, Naumova EN. PLoS ONE. 2010. 5(4): e10187. "Seasonal Synchronization of Influenza in the United States Older Adult Population." Published online April 15, 2010, doi: 10.1371/journal.pone.0010187

An analysis of hospitalization records for adults age 65 and over found that seasonal flu tends to move in traveling waves, peaking earliest in western states such as Nevada, Utah, and California and working its way east. New England states such as Rhode Island, Maine, and New Hampshire tend to have the latest peak in seasonal flu, according to public health researchers at Tufts University in Boston. The researchers detected patterns between peak timing and intensity of seasonal flu. The

findings may help healthcare providers prepare for flu outbreaks in this vulnerable population.

"Because the peak of [seasonal flu](#) runs its course nationwide in a matter of weeks, it is often too late to adjust resources including vaccinations and [antivirals](#) once the first outbreak hits. We have identified patterns in seasonal [flu](#) and developed a model that allows us to better predict outbreak peak timing. This research will enable public health officials and hospitals to better prepare for seasonal flu, and work to reduce the number of patients experiencing more serious complications of the flu," said senior author Elena Naumova, PhD, professor of public health and community medicine at Tufts University School of Medicine.

"Analyzing this comprehensive data set, we also found that flu seasons that peaked early tended to be more intense, meaning there were more cases of the flu in years with early seasonal peak," Naumova continued.

Despite the geographic distance between the earliest peaking state (Nevada) and the latest peaking state (Maine), the analysis of 13 flu seasons showed that the flu peaked in every state within a four week span. Nationwide, the average [flu season](#) peak occurred during the third week of January.

"We found that of the 9.7 million hospitalizations in the elderly that occurred annually, 1.03 million (10.5 percent) were due to pneumonia and influenza. Adults over the age of 65 have the highest rates of complications or death as a result of the flu, and studying the patterns of influenza in this population will help us better predict when and where an especially intense season will occur," said Naumova.

Naumova and first author Julia Wenger, MPH, a student at the time and now a graduate of the Master of Public Health program at Tufts University School of Medicine, analyzed hospitalization records from

the Centers for Medicare and Medicaid Services from 1991 to 2004 and identified more than 248,000 hospitalization records relating to flu. The researchers used dynamic mapping as one of the tools to visualize data from each of the 48 states and Washington, DC, for each of the 13 influenza seasons, measured from July 1 and ending on June 30.

"By synthesizing this data in dynamic maps, we can visualize a huge volume of data in a compact form. This approach allows us to assess the data and identify patterns which are hard to detect when using traditional means of data analysis," said Naumova.

This study, published in *PLoS ONE*, is one of four recent studies Naumova has co-authored that examines risk factors for influenza in an older adult population. In earlier research, Naumova and colleagues developed a dynamic mapping tool that allows researchers to create a visual representation of data over time. The team created a set of principles designed to enhance the use of dynamic mapping technology in epidemiological research, which Naumova applied in this study and is using in her ongoing study of influenza in the older adult population.

Provided by Tufts University

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