



# 2015–2016 Influenza Forecasts

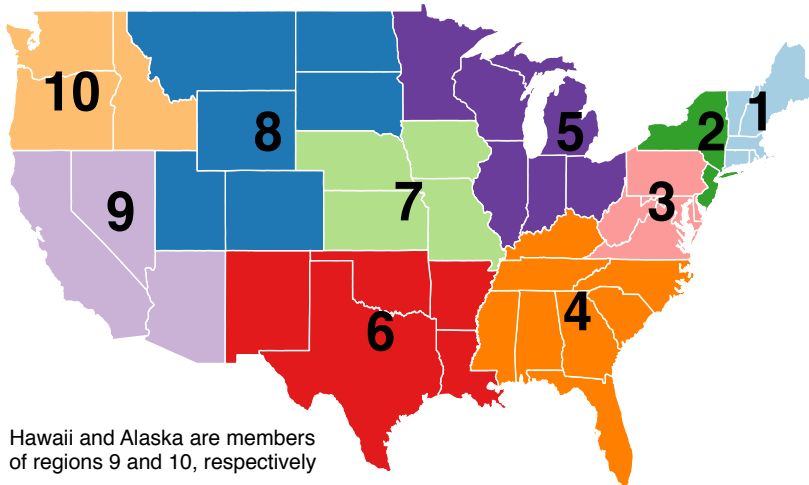
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(based on ILI+ data through 12/12/15 and Wikipedia data through 12/18/15)



Region	Chance (%) the flu season will start by ...			Chance (%) the flu season will peak ...					Chance (%) the flu season will be ...		
	12/13/15	12/20/15	12/27/15	before Jan.	in Jan.	in Feb.	in March	after March	Mild	Moderate	Intense
National	1	7	23	<1	10	55	33	2	77	19	4
Region 1	<1	<1	2	<1	4	33	51	12	85	11	4
Region 2	<1	2	8	<1	9	40	44	7	75	23	2
Region 3	1	4	15	<1	8	52	37	3	93	4	3
Region 4	13	31	53	1	22	50	25	2	83	14	2
Region 5	<1	2	10	<1	7	52	39	2	67	28	4
Region 6	<1	5	20	<1	12	53	34	1	90	7	3
Region 7	2	9	24	<1	15	55	27	2	85	14	1
Region 8	1	4	13	<1	9	45	41	6	73	24	3
Region 9	1	5	17	<1	8	47	41	4	64	27	9
Region 10	2	9	24	<1	3	32	55	9	84	14	3

## Health and Human Services Regions



Hawaii and Alaska are members of regions 9 and 10, respectively

**Model description:** Our model produces probabilistic forecasts of the flu season, similar to how weather, presidential elections, and sporting event outcomes are forecasted. This means our model produces information such as, “there is an 80% chance the flu will peak after January” rather than “the flu will peak after January”. This approach explicitly acknowledges uncertainty in the data and the model. Forecasts are created at national and regional levels (see map). Our model combines three components: historical flu information, a mathematical representation of how flu spreads through a population, and data for the current flu season provided by the Center for Disease Control and Prevention. When new data become available, the forecasts are updated. As a result, the model’s uncertainty about what may happen for the remainder of the flu season usually decreases with subsequent updates. Our forecasts will be updated every two weeks for the 2015–2016 flu season.

Previous forecasts can be accessed at [bsvgateway.org/flu/forecast-archives/](http://bsvgateway.org/flu/forecast-archives/)

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# 2015-2016 Influenza Forecasts FAQs

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## What are we forecasting?

We are forecasting Influenza-like Illness (ILI)+, which combines data from the ILI Surveillance Network (ILINet) and positive influenza samples provided by the National Respiratory and Enteric Virus Surveillance System (NREVSS) and US-based World Health Organization (WHO) collaborating laboratories.<sup>1</sup> ILINet provides weekly estimates of the proportion of outpatient health care provider patients with ILI. By virtue of ILINet’s construction, it will include patients with respiratory viruses other than influenza. To better approximate the proportion of ILINet patients with influenza, we multiply ILINet by the proportion of samples from the NREVSS and US-based WHO collaborating laboratories that tested positive for influenza. The resulting quantity is defined as ILI+.

## What is the “start” of the flu season?

The start (onset) of the flu season is defined as the surveillance week when the percentage of ILI+ reaches or exceeds the baseline value for *three consecutive weeks*. The CDC provides baseline values for ILINet nationally and for each Health and Human Service (HHS) region.<sup>2</sup> ILI+ baseline values are computed by multiplying ILINet baseline values by the historical mean proportion of positive test samples provided by the NREVSS and US-based WHO collaborating laboratories. The ILINet and ILI+ baseline values are presented in Table 1.

Table 1: ILINet and ILI+ Baseline Values

Region	ILINet Baseline (%)	ILI+ Baseline (%)
National	2.1	0.23
Region 1	1.3	0.11
Region 2	2.3	0.20
Region 3	1.8	0.20
Region 4	1.6	0.16
Region 5	1.9	0.24
Region 6	3.6	0.35
Region 7	1.7	0.14
Region 8	1.4	0.14
Region 9	2.6	0.28
Region 10	1.1	0.12

<sup>1</sup> Overview of Influenza Surveillance in the United States. <http://www.cdc.gov/flu/weekly/overview.htm>

<sup>2</sup> National Notifiable Diseases Surveillance System (NNDS). <https://wwwn.cdc.gov/nndss/downloads.html>

### How are the mild, moderate, and intense flu season cutoffs defined?

Cutoffs for mild, moderate, and intense flu seasons are computed at the HHS region level as percentiles of historical peak intensities of ILI+. Specifically, the 40<sup>th</sup> and 80<sup>th</sup> percentiles are computed from historical peak intensities of ILI+ for flu seasons 1997/1998 through 2014/2015 (sans 2008/2009 and 2009/2010). Flu seasons with peak intensities below the 40<sup>th</sup> percentile are defined as “mild” seasons. Flu seasons with peak intensities above or equal to the 40<sup>th</sup> percentile but below the 80<sup>th</sup> percentile are defined as moderate flu seasons. Flu seasons with peak intensities above or equal to the 80<sup>th</sup> percentile are defined as “intense” flu seasons. The mild/moderate and moderate/intense cutoffs nationally and for each HHS region are presented in Table 2.

**Table 2: Mild/Moderate and Moderate/Intense Cutoffs**

<b>Region</b>	<b>Mild/Moderate (%)</b>	<b>Moderate/Intense (%)</b>
<b>National</b>	1.39	2.07
<b>Region 1</b>	0.92	1.30
<b>Region 2</b>	0.91	1.68
<b>Region 3</b>	2.14	2.84
<b>Region 4</b>	1.04	1.72
<b>Region 5</b>	1.38	2.46
<b>Region 6</b>	2.64	3.62
<b>Region 7</b>	1.23	2.46
<b>Region 8</b>	0.90	1.62
<b>Region 9</b>	1.57	2.36
<b>Region 10</b>	1.37	2.07