Log transformed FluSight Manuscript 2021-2023

CDC FluSight Team

2023-12-07

#### Get data

All values were log transformed prior to scoring.

##### WIS Calculations

##### Season inc rankings: Table S3

Table S3

| Model | Absolute WIS | Relative WIS | MAE | 50% Coverage (%) | 95% Coverage (%) | % of Forecasts Submitted |
| --- | --- | --- | --- | --- | --- | --- |
| **2021-2022** | | | | | | |
| CMU-TimeSeries | 0.31 | 0.78 | 0.47 | 47 | 90 | 100 |
| Flusight-ensemble | 0.33 | 0.83 | 0.50 | 48 | 86 | 100 |
| PSI-DICE | 0.33 | 0.84 | 0.50 | 43 | 82 | 100 |
| UMass-trends\_ensemble | 0.36 | 0.91 | 0.53 | 71 | 97 | 100 |
| SGroup-RandomForest | 0.38 | 0.97 | 0.59 | 47 | 95 | 100 |
| CU-ensemble | 0.39 | 0.98 | 0.57 | 44 | 77 | 100 |
| GT-FluFNP | 0.38 | 0.98 | 0.54 | 39 | 69 | 96 |
| CEID-Walk | 0.39 | 0.99 | 0.55 | 52 | 82 | 89 |
| Flusight-baseline | 0.40 | 1.00 | 0.56 | 49 | 83 | 100 |
| SigSci-TSENS | 0.40 | 1.01 | 0.55 | 38 | 72 | 96 |
| IEM\_Health-FluProject | 0.40 | 1.02 | 0.58 | 50 | 85 | 100 |
| LUcompUncertLab-TEVA | 0.41 | 1.05 | 0.59 | 54 | 86 | 89 |
| LUcompUncertLab-VAR2\_plusCOVID | 0.42 | 1.08 | 0.60 | 42 | 74 | 94 |
| MOBS-GLEAM\_FLUH | 0.42 | 1.08 | 0.59 | 32 | 63 | 91 |
| UT\_FluCast-Voltaire | 0.45 | 1.14 | 0.71 | 50 | 91 | 99 |
| UVAFluX-Ensemble | 0.45 | 1.14 | 0.57 | 38 | 64 | 99 |
| LUcompUncertLab-VAR2K\_plusCOVID | 0.47 | 1.20 | 0.68 | 42 | 74 | 89 |
| SGroup-SIkJalpha | 0.49 | 1.24 | 0.63 | 18 | 46 | 100 |
| LUcompUncertLab-VAR2 | 0.53 | 1.35 | 0.77 | 39 | 72 | 94 |
| LUcompUncertLab-VAR2K | 0.61 | 1.56 | 0.93 | 42 | 83 | 89 |
| LosAlamos\_NAU-CModel\_Flu | 0.63 | 1.60 | 0.90 | 26 | 59 | 100 |
| GH-Flusight | 0.74 | 1.88 | 0.79 | 6 | 13 | 94 |
| SigSci-CREG | 0.80 | 2.03 | 1.04 | 19 | 44 | 89 |
| **2022-2023** | | | | | | |
| MOBS-GLEAM\_FLUH | 0.37 | 0.65 | 0.54 | 38 | 75 | 93 |
| CMU-TimeSeries | 0.41 | 0.70 | 0.62 | 46 | 84 | 94 |
| MIGHTE-Nsemble | 0.41 | 0.70 | 0.58 | 48 | 79 | 96 |
| PSI-DICE | 0.42 | 0.71 | 0.60 | 45 | 77 | 100 |
| Flusight-ensemble | 0.44 | 0.74 | 0.62 | 51 | 77 | 100 |
| JHU\_IDD-CovidSP | 0.49 | 0.82 | 0.69 | 47 | 78 | 83 |
| UMass-trends\_ensemble | 0.49 | 0.83 | 0.69 | 60 | 87 | 100 |
| CU-ensemble | 0.51 | 0.85 | 0.69 | 45 | 66 | 85 |
| SGroup-RandomForest | 0.52 | 0.88 | 0.75 | 48 | 81 | 96 |
| GT-FluFNP | 0.53 | 0.89 | 0.66 | 52 | 72 | 95 |
| UNC\_IDD-InfluPaint | 0.52 | 0.94 | 0.74 | 36 | 71 | 75 |
| Flusight-baseline | 0.59 | 1.00 | 0.73 | 41 | 68 | 100 |
| UGA\_flucast-OKeeffe | 0.61 | 1.02 | 0.82 | 41 | 67 | 94 |
| UVAFluX-Ensemble | 0.61 | 1.03 | 0.75 | 20 | 39 | 98 |
| CEPH-Rtrend\_fluH | 0.58 | 1.05 | 0.89 | 38 | 74 | 88 |
| VTSanghani-ExogModel | 0.63 | 1.05 | 0.83 | 27 | 58 | 81 |
| SigSci-TSENS | 0.66 | 1.09 | 0.88 | 50 | 68 | 93 |
| SigSci-CREG | 0.68 | 1.16 | 0.83 | 32 | 54 | 90 |
| ISU\_NiemiLab-Flu | 0.71 | 1.25 | 0.93 | 29 | 51 | 77 |

##### Forecasts & Observed

##### Absolute WIS by model: Figure S6

##### Coverage Figures

##### 95% Coverage by model

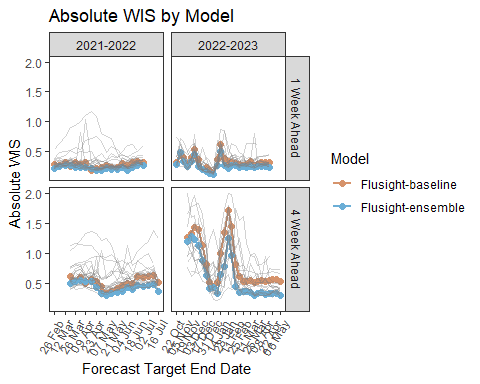
##### 50% coverage by model

##### Coverage Tables: Table S4

Table S4

| Model | Relative WIS | % WIS Below Baseline | 1 Wk Coverage | 2 Wk Coverage | 3 Wk Coverage | 4 Wk Coverage | % Cov abv 90 (1 Wk) | % Cov abv 90 (2 Wk) | % Cov abv 90 (3 Wk) | % Cov abv 90 (4 Wk) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2021-2022** | | | | | | | | | | |
| CMU-TimeSeries | 0.78 | 88.46 | 90.17 | 91.45 | 90.60 | 86.54 | 50.00 | 72.22 | 61.11 | 27.78 |
| Flusight-ensemble | 0.83 | 96.15 | 89.32 | 86.11 | 85.15 | 83.33 | 55.56 | 33.33 | 27.78 | 38.89 |
| PSI-DICE | 0.84 | 86.54 | 88.89 | 83.87 | 78.31 | 76.50 | 38.89 | 27.78 | 5.56 | 0.00 |
| UMass-trends\_ensemble | 0.91 | 63.46 | 96.15 | 97.65 | 96.90 | 96.15 | 100.00 | 100.00 | 100.00 | 100.00 |
| SGroup-RandomForest | 0.97 | 65.38 | 95.41 | 94.87 | 94.66 | 94.12 | 88.89 | 88.89 | 83.33 | 88.89 |
| CU-ensemble | 0.98 | 59.62 | 79.59 | 80.66 | 76.50 | 71.90 | 16.67 | 11.11 | 0.00 | 0.00 |
| GT-FluFNP | 0.98 | 60.00 | 70.11 | 68.67 | 68.22 | 70.11 | 5.56 | 16.67 | 16.67 | 22.22 |
| CEID-Walk | 0.99 | 59.62 | 82.09 | 83.77 | 81.01 | 81.85 | 37.50 | 37.50 | 31.25 | 37.50 |
| Flusight-baseline | 1.00 | 0.00 | 82.26 | 84.19 | 82.48 | 81.62 | 27.78 | 22.22 | 22.22 | 22.22 |
| SigSci-TSENS | 1.01 | 52.00 | 74.11 | 73.44 | 70.54 | 69.20 | 11.11 | 5.56 | 5.56 | 5.56 |
| IEM\_Health-FluProject | 1.02 | 50.00 | 91.45 | 86.54 | 82.59 | 78.21 | 72.22 | 38.89 | 22.22 | 22.22 |
| LUcompUncertLab-TEVA | 1.05 | 38.46 | 84.86 | 85.58 | 86.06 | 86.18 | 25.00 | 18.75 | 25.00 | 31.25 |
| LUcompUncertLab-VAR2\_plusCOVID | 1.08 | 50.00 | 76.70 | 74.77 | 73.30 | 70.14 | 17.65 | 5.88 | 5.88 | 5.88 |
| MOBS-GLEAM\_FLUH | 1.08 | 36.00 | 71.11 | 65.80 | 59.79 | 56.49 | 0.00 | 0.00 | 0.00 | 0.00 |
| UT\_FluCast-Voltaire | 1.14 | 30.77 | 94.73 | 90.96 | 89.13 | 90.42 | 83.33 | 72.22 | 55.56 | 61.11 |
| UVAFluX-Ensemble | 1.14 | 17.31 | 66.05 | 65.51 | 62.58 | 60.95 | 11.11 | 0.00 | 0.00 | 0.00 |
| LUcompUncertLab-VAR2K\_plusCOVID | 1.20 | 28.85 | 75.72 | 75.24 | 74.04 | 72.72 | 6.25 | 0.00 | 0.00 | 0.00 |
| SGroup-SIkJalpha | 1.24 | 7.69 | 40.28 | 45.73 | 48.08 | 48.29 | 0.00 | 0.00 | 0.00 | 0.00 |
| LUcompUncertLab-VAR2 | 1.35 | 5.77 | 73.87 | 72.29 | 72.17 | 70.81 | 11.76 | 5.88 | 11.76 | 11.76 |
| LUcompUncertLab-VAR2K | 1.56 | 7.69 | 81.97 | 81.49 | 83.05 | 85.46 | 6.25 | 18.75 | 25.00 | 37.50 |
| LosAlamos\_NAU-CModel\_Flu | 1.60 | 13.46 | 65.28 | 59.29 | 56.52 | 54.06 | 5.56 | 0.00 | 0.00 | 0.00 |
| GH-Flusight | 1.88 | 3.85 | 18.33 | 12.90 | 11.99 | 10.63 | 0.00 | 0.00 | 0.00 | 0.00 |
| SigSci-CREG | 2.03 | 8.00 | 46.87 | 43.98 | 43.86 | 43.13 | 0.00 | 0.00 | 0.00 | 0.00 |
| **2022-2023** | | | | | | | | | | |
| MOBS-GLEAM\_FLUH | 0.65 | 100.00 | 78.42 | 74.60 | 73.41 | 75.32 | 30.77 | 19.23 | 15.38 | 15.38 |
| CMU-TimeSeries | 0.70 | 94.23 | 84.13 | 84.84 | 84.76 | 84.13 | 50.00 | 57.69 | 65.38 | 65.38 |
| MIGHTE-Nsemble | 0.70 | 100.00 | 83.65 | 81.19 | 78.10 | 72.22 | 56.00 | 52.00 | 60.00 | 52.00 |
| PSI-DICE | 0.71 | 98.08 | 86.09 | 78.18 | 73.22 | 71.60 | 57.69 | 61.54 | 57.69 | 53.85 |
| Flusight-ensemble | 0.74 | 100.00 | 83.14 | 78.18 | 74.70 | 73.59 | 57.69 | 61.54 | 57.69 | 53.85 |
| JHU\_IDD-CovidSP | 0.82 | 72.55 | 84.86 | 79.03 | 75.27 | 72.04 | 59.09 | 54.55 | 50.00 | 50.00 |
| UMass-trends\_ensemble | 0.83 | 92.31 | 90.01 | 88.24 | 85.21 | 83.65 | 73.08 | 69.23 | 65.38 | 65.38 |
| CU-ensemble | 0.85 | 92.31 | 67.83 | 67.05 | 65.12 | 62.76 | 36.36 | 45.45 | 45.45 | 45.45 |
| SGroup-RandomForest | 0.88 | 92.31 | 88.08 | 81.38 | 78.23 | 76.46 | 68.00 | 64.00 | 64.00 | 60.00 |
| GT-FluFNP | 0.89 | 86.00 | 73.24 | 69.58 | 72.07 | 74.65 | 50.00 | 50.00 | 50.00 | 61.54 |
| UNC\_IDD-InfluPaint | 0.94 | 70.59 | 71.93 | 70.56 | 71.05 | 71.84 | 55.00 | 40.00 | 55.00 | 50.00 |
| Flusight-baseline | 1.00 | 0.00 | 74.63 | 69.30 | 65.83 | 64.05 | 50.00 | 50.00 | 50.00 | 50.00 |
| UGA\_flucast-OKeeffe | 1.02 | 52.94 | 76.31 | 67.69 | 62.75 | 60.39 | 40.00 | 36.00 | 28.00 | 28.00 |
| UVAFluX-Ensemble | 1.03 | 37.25 | 40.87 | 41.25 | 37.03 | 37.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| CEPH-Rtrend\_fluH | 1.05 | 50.00 | 70.99 | 75.92 | 74.83 | 73.24 | 34.78 | 39.13 | 47.83 | 34.78 |
| VTSanghani-ExogModel | 1.05 | 40.38 | 63.00 | 58.15 | 55.31 | 55.13 | 0.00 | 0.00 | 0.00 | 4.76 |
| SigSci-TSENS | 1.09 | 12.00 | 71.60 | 68.97 | 67.54 | 65.63 | 46.15 | 46.15 | 46.15 | 50.00 |
| SigSci-CREG | 1.16 | 14.00 | 61.83 | 54.74 | 50.70 | 48.15 | 38.46 | 38.46 | 34.62 | 34.62 |
| ISU\_NiemiLab-Flu | 1.25 | 3.85 | 54.81 | 55.19 | 49.42 | 46.35 | 20.00 | 25.00 | 10.00 | 10.00 |
| Table S4: % WIS Below Baseline shows the percent of WIS values for each model below the corresponding FluSight-Baseline WIS. The '% Cov abv 90' columns show the percent of weekly 95% coverage values that are greater than or equal to 90% for each model by horizon. |  |  |  |  |  |  |  |  |  |  |

##### Model rank plot: Figure S5



##### Absolute WIS by week table

## Model Ranking

##### Relative WIS by Location: Figure S7

