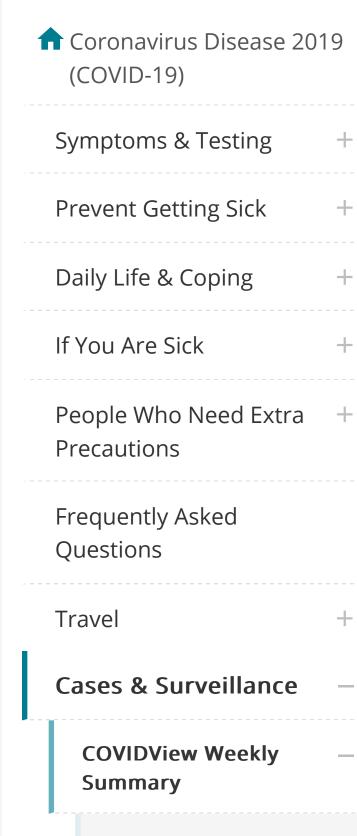
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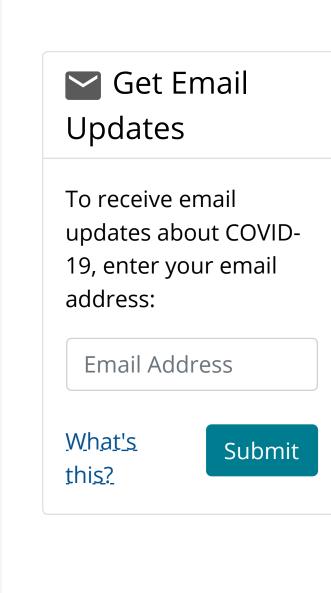
Coronavirus Disease 2019 (COVID-19)

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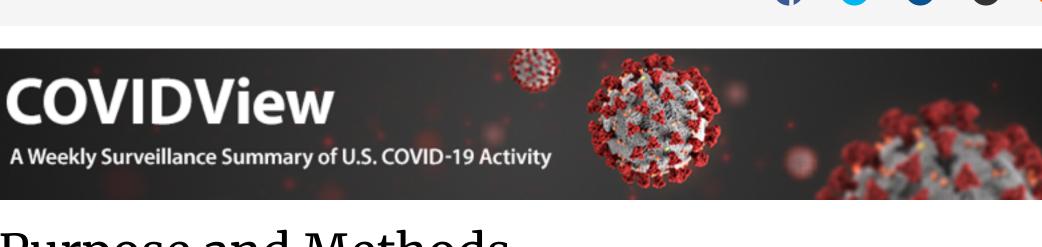




Laboratories

Resources

Communication



## Purpose and Methods Updated April 10, 2020

For surveillance of COVID-19 and its cause, SARS-CoV-2, in the

United States, CDC is using multiple surveillance systems run in collaboration with state, local and territorial health departments, public health, commercial and clinical laboratories, vital statistics offices, health care providers, emergency departments and academic partners to monitor COVID-19 disease in the United States. COVIDView provides a weekly summary and interpretation of a variety of surveillance systems that will be used to track the progression and severity of COVID-19 disease throughout the course of the pandemic. The data summarized in COVIDView draws from a combination of existing influenza and viral respiratory disease surveillance systems, syndromic surveillance systems, and reporting of laboratory results. These systems, when evaluated together, create an

Virologic Surveillance **Outpatient and Emergency Department Illness Surveillance** Hospitalization Surveillance Mortality Surveillance

inform the U.S. national public health response to COVID-19. The data presented in COVIDView each week are preliminary and may change as more data are received. The U.S. COVID-19 Surveillance goals are to: • Monitor spread and intensity of COVID-19 disease in the United States • Understand disease severity and the spectrum of illness

ongoing picture of the spread of SARS-CoV-2 and its effects in the United States and provide data to

Monitor for changes in the virus that causes COVID-19

• Understand risk factors for severe disease and transmission

- Estimate disease burden
- Produce data for forecasting COVID-19 spread and impact
- Surveillance System Components
- 1. Virologic Surveillance

## Public health laboratories, commercial laboratories and clinical laboratories located throughout all 50 states, Puerto Rico, and the District of Columbia report SARS-CoV-2 testing results to CDC. At this point in the outbreak, all laboratories are performing primary diagnostic functions; therefore, the

## percentage of specimens testing positive across laboratory types can be used to monitor trends in COVID-19 activity. As the outbreak progresses, it is possible that different types of laboratories will take on different roles and the data interpretation may need to be modified.

the outpatient and ED settings.

All laboratories report each week the total number of respiratory specimens tested for SARS-CoV-2 and the number positive; public health laboratories also report the age of the person tested, if available. The weekly percentage of specimens positive for SARS-CoV-2 is presented for all laboratory types and the weekly percentage of specimens positive by age group (0-4 years, 5-17 years, 18-49 years, 50-64 years, and ≥65 years) is reported for specimens tested at public health laboratories. These data are presented at a national level and for each of the 10 HHS regions .

2. Outpatient and Emergency Department Illness Surveillance Two syndromic surveillance systems are being used to monitor trends in outpatient and emergency department visits that may be related to COVID-19. Each system monitors a slightly different

syndrome, and together these systems provide a more comprehensive picture of mild to moderate

social distancing. These changes affect the numbers of people and their reasons for seeking care in

The **U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet)** provides data on visits

for influenza-like illness (ILI) (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore

## COVID-19 illness than either would individually. Both systems are currently being affected by recent changes in health care seeking behavior, including increasing use of telemedicine and recommendations to limit emergency department (ED) visits to severe illness, as well as increased

throat without a known cause other than influenza) to approximately 2,600 primary care providers, emergency departments, and urgent care centers in all 50 states, Puerto Rico, the District of Columbia, and the U.S. Virgin Islands. During the 2018-19 influenza season, approximately 60 million patient visits were captured in ILINet. Sites with electronic medical records use an equivalent definition as determined by public health authorities. Mild COVID-19 illness presents with symptoms similar to ILI, so ILINet is being used to track trends of mild COVID-19 illness and allows for comparison with prior influenza seasons. Each week, health care providers around the country report to CDC the total number of patients seen for any reason and the number of those patients with influenza-like illness (ILI) by age group (0-4

years, 5-24 years, 25-49 years, 50-64 years, and ≥65 years). A subset of health care providers also

these providers account for more than half the patient visits captured in ILINet.

report the number of patients seen for any reason by age group. For the 2019-2020 influenza season,

The national overall percentage of patient visits to health care providers for ILI reported each week is calculated by combining state-specific data weighted by state population. This percentage is compared each week with the national baseline of 2.4% for the 2019-2020 influenza season. The baseline is developed by calculating the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons and adding two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza in public health

laboratories. Due to wide variability in regional level data, it is not appropriate to apply the national

baseline to regional data; therefore, region-specific baselines are calculated using the same methodology. Regional baselines established for the 2019-2020 influenza season are: **Region 1** — 1.9% (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont) **Region 2** — 3.2% (New Jersey, New York, Puerto Rico, and the U.S. Virgin Islands) **Region 3** — 1.9% (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia) Region 4 — 2.4% (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina,

and Tennessee) **Region 5** — 1.9% (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin)

**Region 6** — 3.8% (Arkansas, Louisiana, New Mexico, Oklahoma, and Texas) **Region 7** — 1.7% (Iowa, Kansas, Missouri, and Nebraska)

**Region 8** — 2.7% (Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming)

**Region 10**— 1.5% (Alaska, Idaho, Oregon, and Washington) The national percentage of patient visits to health care providers for ILI by age group is calculated for

**Region 9** — 2.4% (Arizona, California, Hawaii, and Nevada)

regional baselines to age group specific data. **ILI Activity Indicator Map:** — Data collected in ILINet are also used to produce a measure of ILI

activity for all 50 states, the District of Columbia, New York City, Puerto Rico and the U.S. Virgin

compared with the average percent of ILI visits that occur during weeks with little or no influenza

Islands. Activity levels are based on the percent of outpatient visits due to ILI in a jurisdiction

variable; therefore, baselines are adjusted each week based on which sites within each jurisdiction provide data. To perform this adjustment, provider level baseline ratios are calculated for those that have a sufficient reporting history. Providers that do not have the required reporting history are assigned the baseline ratio for their practice type. The jurisdiction level baseline is then calculated using a weighted sum of the baseline ratios for each contributing provider.

The activity levels compare the mean reported percent of visits with ILI for the current week to the

mean reported percent of visits due to ILI for non-influenza weeks. There are 13 activity levels that

correspond to the number of standard deviations below, at or above the mean for the current week

compared with the mean of the non-influenza weeks. The levels are classified as minimal (levels 1-3),

virus circulation (non-influenza weeks) in that jurisdiction. The number of sites reporting each week is

the subset of data from providers that report total patient visits by age group. Due to wide variability

in the percentage of visits for ILI in different age groups, it is not appropriate to apply the national or

low (levels 4-5), moderate (levels 6-7), high (levels 8-10) and very high (11-13). More specifically: Level 1 – below the mean • Level 2 – less than 1 standard deviation above the mean • Level 3 – more than 1, but less than 2 standard deviations above the mean • Level 4 – more than 2, but less than 3 standard deviations above the mean • Level 5 – more than 3, but less than 4 standard deviations above the mean • Level 6 – more than 4, but less than 5 standard deviations above the mean • Level 7 – more than 5, but less than 6 standard deviations above the mean • Level 8 – more than 6, but less than 7 standard deviations above the mean

• Level 11 –12 to 15.9 standard deviations above the mean • Level 12 – 16 to 19.9 standard deviations above the mean • Level 13 – at least 20 standard deviations above the mean The ILI Activity Indicator map reflects the level of ILI activity, not the extent of geographic spread of influenza, within a jurisdiction. Therefore, outbreaks occurring in a single city could cause the state to

display high activity levels. In addition, data collected in ILINet may disproportionally represent

certain populations within a state, and therefore, may not accurately depict the full picture of

Emergency Department (ED) visits captured through the National Syndromic Surveillance

Program (NSSP) are also being used to monitor COVID-19-like illness. NSSP is a collaboration among

CDC, federal partners, local and state health departments, and academic and private sector partners

cough or shortness of breath or difficulty breathing) and ILI to a subset of emergency departments in

47 states are being monitored. Visits meeting the ILI or CLI definition that also have mention of flu or

influenza are excluded. The percentage of ED visits for each syndrome nationally and for each of 10

Laboratory-confirmed COVID-19-associated hospitalization rates are monitored through the COVID-

to collect, analyze, and share electronic patient encounter data received from multiple health care

settings. To track trends of potential COVID-19 visits, visits for COVID-19-like illness (CLI) (fever and

influenza activity for the whole state. Differences in the data presented here by CDC and

independently by some state health departments likely represent differing levels of data

completeness with data presented by the state likely being the more complete.

• Level 9 – more than 7, but less than 8 standard deviations above the mean

• Level 10 – 8 to 11.9 standard deviations above the mean

19-Associated Hospitalization Surveillance Network (COVID-NET). COVID-NET conducts all-age, population-based surveillance for laboratory-confirmed COVID-19-associated hospitalizations in more than 250 acute care hospitals in 99 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR and TN) and four Influenza Hospitalization Surveillance Project (IHSP) states (IA, MI, OH and UT). In total, ~10% of the U.S. population is covered by this surveillance system. Cases must be a resident of a designated catchment area and hospitalized within 14 days of a positive SARS-CoV-2 test. Testing is performed at the discretion of health care providers. Cases are identified through active review of notifiable disease and laboratory databases and hospital admission and infection control practitioner logs. Data gathered are used to estimate age-specific hospitalization rates on a weekly basis and describe characteristics of persons hospitalized with

conditions are recorded in the chart at the time of hospitalization: Asthma/reactive airway disease; Blood disorder/hemoglobinopathy; • Cardiovascular disease; Chronic lung disease; Chronic metabolic disease; Gastrointestinal/liver disease;

Patient charts are reviewed to determine if any of the following categories of underlying medical

Immunocompromised condition;

Prematurity (pediatric cases only);

• Rheumatologic/autoimmune/inflammatory conditions.

Neurologic disorder;

Pregnancy status;

• Renal disease; and

Obesity;

HHS regions is calculated weekly.

COVID-19 illness.

3. Hospitalization Surveillance

percentage of all deaths that are due to COVID-19, the percentage of all deaths that are due to influenza and the percentage of all deaths that are due to pneumonia (excluding pneumonia deaths involving influenza or COVID-19). If a death certificate includes both COVID-19 and influenza as a cause of death, that death will be captured in both categories. Deaths due to COVID-19 may be classified as pneumonia deaths in the absence of positive test results, and pneumonia may appear on

are being conducted and will be summarized in COVIDView as warranted.

NCHS data are also used to monitor the percentage of death occurring in a given week that had pneumonia and/or influenza (P&I) listed as a cause of death. Pneumonia and influenza (P&I) deaths are identified based on ICD-10 multiple cause of death codes. NCHS surveillance data are aggregated by the week of death occurrence. To allow for collection of enough data to produce a stable P&I percentage, NCHS surveillance data are released one week after the week of death. The NCHS surveillance data are used to calculate the percent of all deaths occurring in a given week that had pneumonia and/or influenza listed as a cause of death. The P&I percentage for earlier weeks are continually revised and may increase or decrease as new and updated death certificate data are received from the states by NCHS. The P&I percentage is compared to a seasonal baseline of P&I deaths that is calculated using a periodic regression model incorporating a robust regression procedure applied to data from the previous five years. An increase of 1.645 standard deviations above the seasonal baseline of P&I deaths is considered the "epidemic threshold," i.e., the point at which the observed proportion of deaths attributed to pneumonia or influenza was significantly higher than would be expected at that time of the year in the absence of substantial influenza-related mortality.

Content source: National Center for Immunization and Respiratory Diseases (NCIRD), Division of Viral Diseases

Additional COVID-NET hospitalization data, including rates for different age groups and by surveillance site, are available on the <u>COVID-NET\_interactive\_data\_page</u>. 4. Mortality Surveillance National Center for Health Statistics (NCHS) mortality surveillance data – NCHS collects death certificate data from state vital statistics offices for all deaths occurring in the United States. The provisional counts for coronavirus disease (COVID-19) deaths are based mortality data in the National Vital Statistics System. National provisional counts include deaths occurring within the 50

states and the District of Columbia that have been received and coded as of the date specified. It can

take several weeks for death records to be submitted to NCHS, processed, coded, and tabulated.

Death counts for earlier weeks are continually revised and may increase or decrease as new and

updated death certificate data are received. COVID-19 death counts shown here may differ from

The NCHS data presented in COVIDView include the weekly number of deaths from all causes, the

other published sources, as data currently are lagged by an average of 1–2 weeks.

death certificates as a comorbid condition. Thus, increases in pneumonia deaths may be an indicator of excess COVID-19-related mortality. Analyses to understand other potentially comorbid conditions

Additional provisional death counts from NCHS are available on NCHS' National Vital Statistics System.



**HAVE QUESTIONS?** 

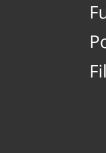
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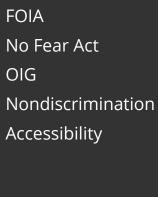
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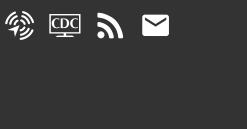




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