Methods for the Roadmap to Recovery Metrics

Washington State Department of Health

Revised January 28, 2021

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Background

Effective January 11, 2021, the State of Washington launched *Healthy Washington — Roadmap to Recovery* which uses a regional approach for the phased recovery plan. This report describes the four metrics and corresponding thresholds for the Roadmap to Recovery. More information on the phase recovery plan and reopening guidelines is available at this website.

The four metrics provide an overview of current COVID-19 trends and healthcare system readiness in each region. The four metrics are:

1) **Trend in case rate** - Trend in 14-day rate of new COVID-19 cases per 100,000 population;
2) **Trend in hospital admission rate -** Trend in 14-day rate of new COVID-19 hospital admissions per 100,000 population;
3) **Percent ICU Occupancy** - Average 7-day percent occupancy of ICU staffed beds; and
4) **Percent Positivity** - 7-day percent positive of COVID-19 tests.

Methods

Regions

The regions used in this report are largely based on the Emergency Medical Services (EMS) regions used for evaluating available healthcare services given the concern for COVID-19's potential impact on the healthcare system. Regions are defined as illustrated in the map below.

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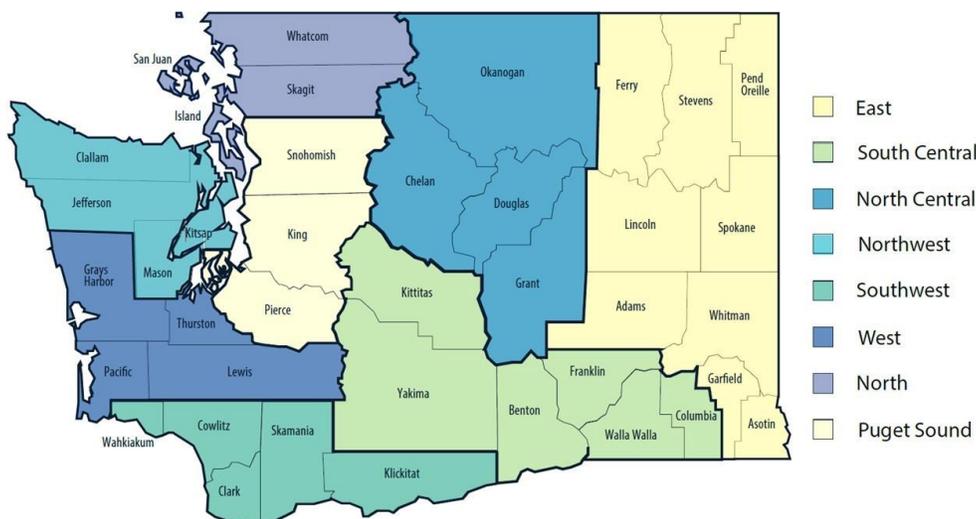
Population

The population data used to calculate the case and hospital admission rates is the single year 2019 intercensal estimate from the Washington State Office of Financial Management, found here.

Data sources

There are three data sources for these metrics: the Washington Disease Reporting System (WDRS), WA HEALTH, and the WA Department of Health (DOH) negative labs dataset. These data sources are all dynamic. They are updated daily as we receive more complete information and they change over time as we learn more.

We select time frames to maximize timeliness and completeness of the data, report data based on 7- or 14-day periods from Sunday-Saturday, and implement a standardized process for releasing the report on a regular schedule. Timeliness and completeness differ by data source. For this report, we consider the most recent 14 days of data from WDRS to be incomplete. It takes up to 12 days from specimen collection date for DOH to receive 90% of reported cases and there is a 2-day delay in preparing the report. We consider the most recent 18 days of data from the negative labs dataset to be incomplete and there is a 2-day delay in preparing the report. We consider the most recent 6 days of data from WA HEALTH to be incomplete as it takes up to 4 days for DOH to receive and conduct quality checks on the data and there is 2-day delay in preparing the report.

This results in different time frames used for the metrics because they come from these different data sources. Time delays for obtaining complete data from all data sources will be reviewed regularly and updated whenever possible.

Metrics

Trend in case rate

The *Trend in case rate* metric refers to the trend in 14-day rate of new COVID-19 cases per 100,000 population. This metric describes whether virus transmission is increasing, decreasing, or staying the same (referred to here as "flattening"). A case is defined as an individual with a molecular or antigen test that is positive for COVID-19. Cases are assigned to the date a specimen was collected for testing, called the specimen collection date.

This metric is calculated using the following steps:

1. Calculate the 14-day case rate for the most recent period and the 14-day case rate for the preceding period:

$$\frac{\text{Number of cases with a specimen collection date in the 14-day period}}{\text{Region population}} \times 100{,}000$$

2. Calculate the percent change between the case rates:

$$\frac{\text{14-day case rate for the most recent period} - \text{14-day case rate for the preceding period}}{\text{14-day case rate for the preceding period}} \times 100$$

3. Round to the nearest whole number

4. Assign the rounded percent change to the appropriate threshold category as specified below to determine the direction of the trend (i.e., whether the trend is decreasing, flat, or increasing). The thresholds for this metric are:
   - Decrease: -10% or more
   - Flat: between 0% to less than -10%
   - Increase: More than 0%

Data from WDRS are used for this metric. Metrics are calculated using the most recent complete data for two Sunday–Saturday weeks.

Trend in hospital admission rate

The *Trend in hospital admission rate* metric refers to the trend in 14-day rate of new COVID-19 hospital admissions per 100,000 population. This metric describes the impact on healthcare systems and whether the number of hospital admissions is increasing, decreasing, or flattening. A hospital admission is defined as an individual with confirmed COVID-19 infection who was admitted to the hospital. A hospital admission is assigned to the region of the hospital, not the region in which the individual lives. About 90% or more of Washington residents with COVID-19 in November 2020 were determined to reside in the same region as the hospital.

This metric is calculated using the following steps:

1. Calculate the 14-day hospital admission rate for the most recent period and the 14-day case rate for the preceding period:

$$\frac{\text{Number of hospital admissions with an admission date in the 14-day period}}{\text{Region population}} \times 100,000$$

2. Calculate the percent change between the hospital admission rates:

$$\frac{\text{14-day hospital admission rate for most recent period} - \text{14-day hospital admission rate for preceding period}}{\text{14-day hospital admission rate for preceding period}} \times 100$$

3. Round to the nearest whole number

4. Assign the rounded percent change to the appropriate threshold category as specified below to determine the direction of the trend (i.e., whether the trend is decreasing, flat, or increasing). The thresholds for this metric are:
   - Decrease: -10% or more
   - Flat: between 0% to less than -10%
   - Increase: More than 0%

Data from WA HEALTH are used for this metric. Metrics are calculated using the most recent complete data for two Sunday–Saturday weeks.

Percent ICU occupancy

The *Percent ICU occupancy* metric refers to the average 7-day percent occupancy of ICU staffed beds. This metric describes the capacity of the healthcare system to respond to the pandemic by indicating how many beds are currently occupied by critically ill patients and thus not available to treat additional patients who may need critical care. ICU occupancy is defined as the number of staffed adult ICU beds occupied in acute care hospitals. ICU occupancy includes all patients in the ICU, not only patients with COVID-19. ICU occupancy includes patients in airborne infection isolation rooms (AIIR) and non-AIIR rooms.

This metric is calculated using the following steps:

1. Calculate the daily percent occupancy of ICU staffed beds for each day in the recent 7-day period:

$$\frac{\text{Number of staffed adult ICU beds occupied}}{\text{Total number of staffed adult ICU beds available}} \times 100$$

2. Calculate the average percent of occupied staffed adult ICU beds over the 7-day period:

$$\frac{\text{Percent occupancy for Day 1} + \text{Percent occupancy for Day 2} + \cdots + \text{Percent occupancy for Day 7}}{7}$$

3. Round to the nearest whole number

4. Assign the rounded 7-day average percent occupancy of ICU staffed beds to the appropriate threshold category for this metric:
   - Low: Less than 90%
   - High: 90% or more

Data from WA HEALTH are used for this metric. Metrics are calculated using the most recent complete data for a single Sunday–Saturday week.

Percent positivity

The *Percent positivity* metric refers to the 7-day percent positive of COVID-19 tests. This metric describes how widespread infections are and if sufficient testing is occurring. A test is defined as a molecular test, including PCR, performed on an individual who has not previously tested positive for COVID-19 by molecular testing. Tests are assigned to the specimen collection date. Antigen and antibody tests are not included in this metric.

This metric is calculated using the following steps:

1. Calculate the 7-day percent positivity:

$$\frac{\text{Number of positive molecular tests during the 7-day period}}{\text{Total number of molecular tests performed during the 7-day period}} \times 100$$

2. Round to the nearest whole number

3. Assign the rounded 7-day percent positivity to the appropriate threshold category for this metric:
   - Low: Less than 10%
   - High: 10% or more

Data from WDRS and the DOH negative lab dataset are used for this metric. Metrics are calculated using the most recent complete data for a single Sunday–Saturday week.