Key Outcomes
As of 11/24/2021, the statewide census was 391.

Source: https://public.tableau.com/profile/oregon.health.authority.covid.19#!/vizhome/OregonCOVID-19HospitalCapacitySummaryTables_15965754787060/HospitalizationbySeveritySummaryTable
Regional Hospital Census

All regions are flat or declining.

Source: https://public.tableau.com/profile/oregon.health.authority.covid.19#!/vizhome/OregonCOVID-19HospitalCapacity/BedAvailabilitybyRegion
Hospital Census by US Region

The Midwest and Northeast are experiencing modest increases. The West and South are decreasing or flat.

Source: https://carlsonschool.umn.edu/mili-misrc-covid19-tracking-project
Hospitalizations in Europe

The hospitalization rate across Western European countries is up. The list of countries includes: France, Spain, Italy, Belgium, Portugal, Austria, Netherlands, Sweden, Ireland, Finland, Denmark, Norway, Luxembourg, Iceland.

While this is concerning and closely watched for implications in Oregon, it appears to be a delayed Delta surge, similar to the Midwest states. The initial surge in Europe does not appear to have been high enough to achieve the natural immunity levels Oregon obtained during the Delta wave.

Oregon Hospital Capacity

As of 11/22, 14% of occupied ICU beds are filled with COVID patients.

Source: https://public.tableau.com/profile/oregon.health.authority.covid.19#!/vizhome/OregonCOVID-19HospitalCapacitySummaryTables_15965754787060/HospitalizationbySeveritySummaryTable
Oregon Hospital Capacity

These data are based on HOSCAP reports of individuals infected with COVID.

Source: https://public.tableau.com/profile/oregon.health.authority.covid.19#!/vizhome/OregonCOVID-19HospitalCapacitySummaryTables_15965754787060/HospitalizationbySeveritySummaryTable
New Cases per Capita

Case rates continue to decline but at slower rate.

Oregon is 40th highest in the US in the number of new cases per day.

Source: http://91-divoc.com/pages/covid-visualization/
Cases by Vaccination Status

Cases increased modestly for unvaccinated in recent week. The rate for vaccinated continued to decline.

Observed case-based vaccine effectiveness remains flat.

Note: Observed Vaccine efficacy is calculated as $1 - \frac{\text{CasesVac}}{\text{CaseUnvac}} \times \frac{\text{PctUnvac}}{\text{PctVac}}$
Test Positivity

The most recent complete week (11/13/21-11/19/2021) had a test positivity of 6.0%.

Total Tests

Testing returned to recent levels.

Review of Leading Indicators
Higher Risk Behaviors

Behavior metrics remain at near pre-surge levels.

Note:
- Estimated percentage of respondents who went to an “indoor market, grocery store, or pharmacy” in the past 24 hours.
- Estimated percentage of respondents who went to an indoor “bar, restaurant, or cafe” in the past 24 hours.
- Estimated percentage of respondents who “spent time indoors with someone who isn’t currently staying with you” in the past 24 hours.
- Estimated percentage of respondents who “attended an indoor event with more than 10 people” in the past 24 hours.

Source: https://covidcast.cmu.edu/
Masking by State Case Level

Mask wearing in Oregon is higher than other states. While the masking rate in high and mid level case states is flat, the level for low level states is decreasing, though still at a higher level.

Google Mobility Metrics

Several metrics of activity continue to decrease in a pattern not too different from last fall.

Source: Google mobility reports from https://www.google.com/covid19/mobility/
Symptoms levels increased this week.

It is possible for other viruses to be the driver of the increase.

Note: “Symptoms” refer to community reports of COVID-like symptoms through Facebook surveys.

Source: https://covidcast.cmu.edu/
Statewide Forecast
Model Assumption-Waning Immunity

In order for the model to account for waning immunity of previous infection or vaccine, certain assumptions are needed. This model uses a basic structure which indicates:

1) Wane Starts: How many months after infection/vaccine waning begins.
2) Wane Duration: How long until waning is complete.
3) Wane Share: Percent of people who will not get boosters to prevent waning.

Model Assumption-Vaccine Volume

An increase in first doses is expected as age 5-11 become eligible.

Note: previous versions of this parameter estimated the date of first dose using total doses and counts of people vaccinated. The source of data now provides historical counts of when first doses occurred and should be more accurate.

Model Assumption-Virus Spread Rate

With no new variants measured in Oregon, the transmission rate is driven by the estimated transmission rate of the Delta variant.

The “Fast” scenario assumes delta variant has an R0 of 8.0.

The “Slow” scenario assume R0=6.5

Source: Actuals from https://outbreak.info/location-reports?loc=USA_US-OR, Projections by Simulation by OHSU
The most recent week shows better effect though it is not expected to continue. Four scenarios are constructed to show possible paths.

1) Fear and Fatigue: this is a full cycling through forecast period.
2) Fatigue without Fear: this shows what happens if no new fear cycle begins
3) Full Fatigue: This shows what happens if fatigue continues
4) No Fatigue: maintains recent effect level

Source: OHSU COVID Forecast Model
The forecast shows a flatter period before further declines in census.

The primary scenario is
- “Fear w/o Fatigue” intervention effect
- Slow Variant (Delta $R_0=6.5$)
- High hospitalization rate for Delta (2X original)
- Vaccine efficacy=90%
- Waning immunity follows standard assumptions

Source: OHSU COVID Forecast Model
The Scenarios for combinations of waning and policy/behavior assumptions are shown.

The primary specification is Fatigue w/o Fear with Standard Waning.
The last 16 weeks of forecasts are shown.

Source: Primary scenario for each week is used.
As of 11/23, the estimated population proportions are:
Susceptible: 19%
Vaccinated: 44%
Vaccinated & Infected: 12%
Infected: 25%

Source: OHSU COVID Forecast Model
Local Forecasts
Regional Forecasts

Source: OHSU COVID Forecast Model, OHA
Regional Herd Charts

Source: OHSU COVID Forecast Model, OHA
Policy Issues
Vaccination Rates

14.7% of the total population has received an extra dose (sometimes called a “booster”)

Source: https://public.tableau.com/app/profile/oregon.health.authority.covid.19/viz/OregonCOVID-19VaccineEffortMetrics/StatewideProgress
High Case States

To help understand the high case states (AK, MI, MN, NH, NM, ND, PA, VT, WI, WY) relative to low case or mid level, various metrics are compared.

This week the “Delta Delay Days” metric is added which is the days after the first state (Arkansas) hit 30 cases per day per 100k (on 7/13/2021) until the state hit 30 cases per day per 100k. More days mean longer delay until Delta surge hit.

Deaths Per Capita

Oregon deaths per capita are 6th lowest in the US. In comparison to European countries, Oregon is most similar to Germany at around 120 deaths per 100k population. Oregon and Germany also have identical vaccination rates at 71% of population which indicate similar natural infection. However, the rate of infected who are also vaccinated may be different.

Source: https://91-divoc.com/pages/covid-visualization/
Pediatric Census in Oregon

The pediatric census level in Oregon for confirmed positive patients under age 18 is 3 as of 11/23.

Source: https://healthdata.gov/Hospital/COVID-19-Reported-Patient-Impact-and-Hospital-Capa/g62h-syeh/data
Death Forecast

The recent week of data by date of death showed an increase. This is expected to decrease and follow the hospitalization pattern.

Assumptions to project deaths from infections/hospitalizations:

1) Deaths lag infections by an average of 21 days.
2) There are 4.0 COVID hospitalizations per death from COVID.

Source: OHSU COVID Forecast Model, OHA
Influenza in Oregon

The most recent week had 14 positive tests for influenza.

Across the globe the amount of influenza has been low when measured against previous seasons where as many as 30k infections per week were detected.

Appendix
CDC forecasts flat number of admissions over the next 3 weeks.

As of 11/18, IHME shows the hospital flat and then increasing after new year.

### Projections and scenarios

We produce three scenarios when projecting COVID-19. The **reference scenario** is our forecast of what we think is most likely to happen:

- Vaccines are distributed at the expected pace. Brand- and variant-specific vaccine efficacy is updated using the latest available information from peer-reviewed publications and other reports.
- Future mask use is the mean of mask use over the last 7 days.
- Mobility increases as vaccine coverage increases.
- Governments adapt their response by re-imposing social distancing mandates for 6 weeks whenever daily deaths reach 8 per million, unless a location has already spent at least 7 of the last 14 days with daily deaths above this rate, and not yet re-imposed social distancing mandates. In this case, the reference scenario assumes that mandates are re-imposed when daily deaths reach 15 per million.
- Variants Alpha, Beta, Gamma, and Delta continue to spread regionally and globally from locations with sufficient transmission.

The **worse scenario** modifies the reference scenario assumption in four ways:

- 100% of vaccinated individuals stop using masks.
- Mobility increases in all locations to 25% above the pre-pandemic winter baseline, irrespective of vaccine coverage.
- Governments are more reluctant to re-impose social distancing mandates, waiting until the daily death rate reaches 15 per million, unless a location has already spent at least 7 of the last 14 days with daily deaths above this rate, and not yet re-imposed social distancing mandates. In this case, the reference scenario assumes that mandates are re-imposed when daily deaths reach 38 per million. In either case, we assume social distancing mandates remain in effect for 6 weeks.
- Variants Alpha, Beta, Gamma, and Delta spread between locations twice as fast when compared with our reference scenario.

The **universal masks scenario** makes all the same assumptions as the reference scenario but assumes all locations reach 95% mask use within 7 days.

Effective R Estimate

Note: the effective R was calculated incorrectly in recent weeks and has been updated here.

Model: The OHSU state hospital census forecast is an SIR model that includes traditional assumptions about first transmission (2/1/2020), doubling rate (5 days), days from exposure to admissions (12 days), length of stay (7 days, 13 days for ICU), and recovery period (14 days). It has an innovative feature which is that it includes a factor that moderates transmission rates which is called policy effectiveness. The factor is estimated historically for key policy dates and/or weekly intervals. It also allows future policies to be projected.

Source: OHSU COVID Forecast Model
Vaccine Projections

Younger age groups are expected to increase but reaching levels lower than adults. (50% for <9 and 55% for 10-19).

Source: OHSU COVID Forecast Model
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