Key Outcomes
Hospitalized Patients

As of 11/15/2021, the statewide census was 452.

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

Region 7 is still above other regions. Other regions are slowly declining.

Source: https://public.tableau.com/profile/oregon.health.authority.covid.19#!/vizhome/OregonCOVID-19HospitalCapacity/BedAvailabilitybyRegion
Hospital Census in Pacific Division

Oregon, Washington, and California are all continuing slow declines in census.
Hospital Census by US Region

US Regions are mostly flat with slight increases or decreases.

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

Belgium and Austria are showing increases above the other countries in Europe (with similar vaccination levels to the US).

There is no indications of increased breakthrough infections driving the increase. The increase is likely attributable to lower total immunity levels and increased indoor activity.

As of 11/16, 17% of occupied ICU beds are filled with COVID patients.
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 35th 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 (11/6/21-11/12/2021) had a test positivity of 6.2%.

Total Tests

Testing dropped in last week.

There were some server issues at the state that may be related to this.

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/
Behavior by Immunity Type: Mask

Mask wearing rates are distinctly different for people vaccinated or not, whether or not they have been infected.

Behavior by Immunity Type: Work/School (indoors)

The vaccinated have lower rates of going to work or school outside their home.

Behavior by Immunity Type: Store (indoors)

All immunity types go to stores at similar rates.

Behavior by Immunity Type: Bar/Restaurant (indoors)

Vaccinated are about 25% less likely to indicate going to a bar or restaurant indoors.

Time with others indoors is higher for those previously infected.

Vaccinated individuals go to fewer large events (indoors) than other immunity types.

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/
As of week ending 11/16, the mask wearing rate is 80%.

Note:
Estimated percentage of people who wore a mask for most or all of the time while in public in the past 7 days; those not in public in the past 7 days are not counted.

Source: https://covidcast.cmu.edu/
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
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
Census Forecast-Primary Scenario

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
Census Forecast-Alternative Scenarios

The Scenarios for combinations of waning and policy/behavior assumptions are shown.

The primary specification is Fatigue w/o Fear with Standard Waning.
Previous Forecasts

The last 15 weeks of forecasts are shown.

Source: Primary scenario for each week is used
As of 11/16, the estimated population proportions are:
- Susceptible: 20%
- Vaccinated: 44%
- Vaccinated & Infected: 11%
- Infected: 25%

Source: OHSU COVID Forecast Model
Local Forecasts
Regional Forecasts

Model: The OHSU close hospital census forecast is an SIR model that includes traditional assumptions about first transmission (7/15/2020), doubling rate (5-4 days), days from exposure to admission (10-12), length of stay (7 days), 13 days for ICU, and recovery period (14 days). It has an innovative feature which is it itself 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.
Regional Herd Charts

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

12% 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
Thanksgiving Plans

According to a recent survey conducted by The Vacationer, in the Pacific Northwest, 26% of people indicate planning to attend a gathering of 10 people or more as compared to 32% across the US.

Also, last year 22% of people indicated planning to attend a gathering of people outside their home (according to NY Times). This year, 47% of people are indicating going to a friend or family’s house this year. And this may underestimate multi-household gatherings as the person who hosts may be considered as staying home.

The pediatric census level in Oregon for confirmed positive patients under age 18 is 6 as of 11/15.

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 5.0 COVID hospitalizations per death from COVID.

Source: OHSU COVID Forecast Model, OHA
In Oregon, there have been small numbers of positive influenza tests but the second chart shows that is typical for the beginning of the flu season.
Influenza Trends

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.

Figure from EW43, Nov 9.

Possible Factors of Current Case Levels

The high case count states (top 10 states in US) have generally lower mask wearing rates and have colder fall temperatures.

Appendix
CDC forecasts flat number of admissions over the next 4 weeks.

As of 11/4, 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 adopt 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.

This model shows the percent of Oregon to have ever been infected is 39% as of 11/4.

As described in its methods, the model relies on a relationship between deaths and infections. By observing deaths it can make estimates on total number of infections that would have led to them.

Source: https://covidestim.org/us/OR, Methods at: https://www.medrxiv.org/content/10.1101/2020.06.17.20133983v2
In September, the combined seroprevalence levels (infection or vaccine) are higher in the Northwest Oregon/WA area than in Central or Western Oregon.

Source: https://covid.cdc.gov/covid-data-tracker/#nationwide-blood-donor-seroprevalence
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