Key Outcomes
Census levels have remained constant over the past week.

As of 3/15/2021, the census has declined to 118.

Source: https://public.tableau.com/profile/oregon.health.authority.covid.19#!/vizhome/OregonCOVID-19HospitalCapacitySummaryTables_15965754787060/HospitalizationbySeveritySummaryTable
Census levels are generally constant across all regions.

Source: https://public.tableau.com/profile/oregon.health.authority.covid.19#!/vizhome/OregonCOVID-19HospitalCapacity/BedAvailabilitybyRegion
As of 3/16, of the 496 occupied ICU beds, 23 (5%) are filled with COVID patients.

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

Cases increased slightly in the last week.

Oregon has the 2\textsuperscript{nd} lowest current rate of cases in the US and the 4\textsuperscript{th} lowest cumulative count of cases (behind HI, VT, ME).

Source: http://91-divoc.com/pages/covid-visualization/
Deaths per capita have declined in all regions around the world including the US.

Several regions have seen their declines flatten as new waves begin.

Source: http://91-divoc.com/pages/covid-visualization/
Hospitalization Rate

For the most recent week of complete data, hospitalization rate is 5.5%.

So far the hospitalization rate (as measured per number of cases) has not come down due to vaccinations.

This rate is expected to come down as vaccinations remove persons of high risk from pool of infected.

Test positivity decline has flattened out. The rate is now at 2.7% for week beginning 3/14.

Total Tests

Testing volume declined in recent full period.

Statewide Forecast
Vaccine Rates by Age

Older age groups are starting to have disproportionately higher vaccination rates.

As of week of 3/9, over 73% of people age 80 and over 60% for people age 70 to 80 have received a first dose. Over 30% of patients age 60-69 have received a first dose.

A new “Fast” scenario has been developed which reaches a higher per week vaccination rate based on expected increases in supply.

The “Slow” scenario reflects a slower administration of available vaccine.
This chart shows the assumption used about how quickly the variant would spread in Oregon.

The B117 variant is assumed to be 32% more transmissible than the main strain. That increases the R from 3.08 to 4.02.

The most recent estimate is that the faster spreading variant makes up 11% of all cases. This is roughly in line with both the fast and slow growth assumptions.

The next couple weeks will determine the path.

Source: Projections by OHSU, Actuals from NextStrain. https://nextstrain.org/groups/spheres/ncov/oregon?c=pangolin_lineage&f_division=Oregon
A decline in effectiveness is apparent in recent data. This is expected to continue as restrictions loosen. Leading indicators are consistent with increased spread of virus and the projected fatigue cycle.

Note: The effectiveness needed to maintain R=1 is not adjusted for vaccine. This will be incorporated next week.
Scenarios:
Variant
a) Fast (ie. UK)
b) Slow (ie. Germany)
Fatigue:
a) Fatigue w/RLF- Maintain Risk Levels Framework
b) Fatigue cycle w/o RLF – Allow for relaxation of RLF policies
Vaccine:
a) Fast (136k per week by June 1)
b) Slow (94k per week by June 1)
Long Term Model-Census Forecast

This scenario reflects

- Fast variant (now faster!)
- Fatigue cycle (w/Risk Level Framework (RLF))
- Fast vaccine

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 (8 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

Source: OHSU COVID Forecast Model
Currently, 24% of the population is estimated to be non-susceptible to the virus (due to prior infection or vaccine).

Source: OHSU COVID Forecast Model
While census levels are not expected to spike as high due to the vaccination of high risk individuals, the number of cases is expected to approach 1k per day.

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 (8 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.
Review of Leading Indicators
Leading indicators continue to be at pre-fall surge levels.

It is unclear how much of this movement is due to vaccinated people as opposed to potentially susceptible population.

Source: MEI from https://www.dallasfed.org/research/mei.aspx, DEX from https://github.com/COVIDExposureIndices/, SDI from https://data.covid.umd.edu/ (Details in slide notes)
COVID Symptoms

Some additional decline in symptoms evident.

Source: https://covidcast.cmu.edu/
Screening calls for COVID remain low.

Source: OHSU COVID Connected Care Center Data, Screening calls make up ~50% of total calls at the center.
Policy Issues
Oregon is in the >=90% category along with 12 other states.

Some states have recently shown less progress at administering all first doses.

Oregon has provided first dose to 21.5% of population as of 3/17. Oregon ranks 36th in the US by this metric.

Source: https://covid.cdc.gov/covid-data-tracker/#vaccinations
Oregon Risk Levels

From 2/27 to 3/6, 9 counties moved to less restrictive levels and one moved into a more restrictive level.

The average risk level moved up slightly for the week ending 3/13

Movement:
Moderate to High (2)
High to Moderate (4)

Note: because score is population weighted, score can go up with more counties going down depending on their size.

Risk Level Forecast

This chart shows the case forecast (which is inferred from the model calibrated to census) in terms of new cases per week per 100k. This metric is used by the state to assess the risk level of the county.

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 (8 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

The B.1.1.7 strain is increasing quickly across the US. As of 3/14, it now represents almost 40 percent of tested samples.

This represents extremely fast growth.

Variants in OR

Multiple sources of information about variant prevalence.
1) 11 percent via Next Strain
2) ~0.3-3.8 percent via CDC
3) 0 samples via Helix (certain states may be under/over represented)

Oregon has also had 1 sample of a new P.1 variant.

Appendix
Previous Forecasts

Source: OHSU COVID Forecast Model
Long Term Model: Population w/First Dose

This is the schedule used by the model for the percent of population w/first dose by week and age group.

Source: OHSU COVID Forecast Model
Long Term Model-Specs

Key Assumptions
1) Vaccine schedule follow “slow” schedule with prioritized age groups
2) Vaccine acceptance rate (75%)
3) Lagged affect on protection (2 weeks until vaccinated have protection)
4) Efficacy of vaccine (54% at first dose, 95% after second dose at 24 days)
5) Fear and Fatigue cycle of intervention effectiveness estimated with sinusoidal function (approx. 12 weeks due to severity of fall surge)
6) Ascertainment rate- True infected are estimated to be 3.5 times larger than cases.
7) Variant is 32% more transmissible and follows “fast” virus share schedule

Source: OHSU COVID Forecast Model