Daily report on SARS-CoV2 Waste Water monitoring

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Covid19 levels non-UConn

Nov 23 The CDC has updated their guidance for both wastewater monitoring and interpreting that data.

UConn is pioneering a research method that allows us to regularly test waste water around campus to make an early determination on the presence of COVID-19. We are using two different measurements for COVID 19 in wastewater: E and N1 genes. We monitor 2 genes to increase the odds that we will be able to detect SARS-CoV2 even if there are strains that have mutated a mismatch of our probes. The graph below is a visual representation of the two different measurements we are using to test for COVID 19 in wastewater. A black mark indicates that a sample was taken and tested. A red or blue dot above it indicates the presence of COVID in the sample, as measured by E and N1 genes. The Y axis shows the relative concentration of the E and N1 genes (indicators of the COVID 19 virus) in the sample. A dot that is at or just above zero on the Y axis indicates that it is present but barely detectable. A black mark with no colored dot above it means that the sample had below detectable levels of COVID 19 indicators.

While there is no widely accepted threshold for what is a tolerable level of the virus in a given sample versus what indicates a possible outbreak. Finding low levels of the virus within samples is neither surprising nor cause for alarm given the presence of the virus in the state. Individuals recovering from COVID-19 will continue to 'shed' a non-infectious form of the virus for weeks or even months after initial infection.

While there may be a very small amount of viable virus in wastewater, the majority of the viral RNA that we are detecting is non-infectious "viral bits". Standard biosafety precautions that are used for working with wastewater should be sufficient even if COVID-19 is detected in a sample.

Commentary:

Mar 4 & 8: Levels in both North and South were low last week. Both have increased slightly this week.

Mar 1: Covid levels in South continue dropping after last week's high. Levels in North increased.

Feb 22: Covid levels were low in both North and South. However, I view these with suspicion because I saw low levels in all viruses measured including the process control that we add to the samples. We saw this in a lot os samples Monday which I think may be due to either dilution from rain/snow melt or interference from salt mixed with the rain/snow melt.

Feb 17 - 19: Continued increases in South throughout the week. North holds steady.

Feb 16: South has another increase while North holds steady.

Feb 12: North continues to be very low. South increased again.

Feb 8 & 11: North increased Monday but dropped back down Thursday. South was low Monday and increased Thursday.

Feb 4: Another increase in North, South is holding steady.

Feb 2: Covid levels are remaining steady. Slight increase in North but still within baseline.

Jan 29: Covid levels are holding steady.

Jan 25: Covid levels in both North and South have decreased.

Jan 21: Covid levels in both North and South increased. South is nearly as high as North.

Jan 19: Levels continue dropping in North and holding steady in South.

Jan 14: Covid levels in North continue drop. North is still substantially higher than South.

Jan 11: North is still high but not as high as last week. South has increased.

Jan 7: Large increase in covid levels in North while south holds steady.

Jan 4: Covid levels remain steady in both north and south.

Dec 28 & 30: Some increase in South while North holds steady.

Dec 22 & 23: Both North and South decreased the 22nd and increased the 23rd.

Dec 21: North decreased while South increased, but overall holding steady.

Dec 18: North continues to increase while South decreases.

Dec 14: Generally both North and South held steady. North increased very slightly while South decreased very slightly, I think both these changes were just a bit of a shift around the baseline.

Dec 10: Both North and South increased, but South increased more significantly.

Dec 7: Covid levels in North dropped significantly while South decreased slightly. It is still early days in establishing a baseline trend.

Dec 3: Covid levels in both North and South increased, North increased more significantly.

Nov 30: Covid levels dropped in both north and south again over last week's levels.

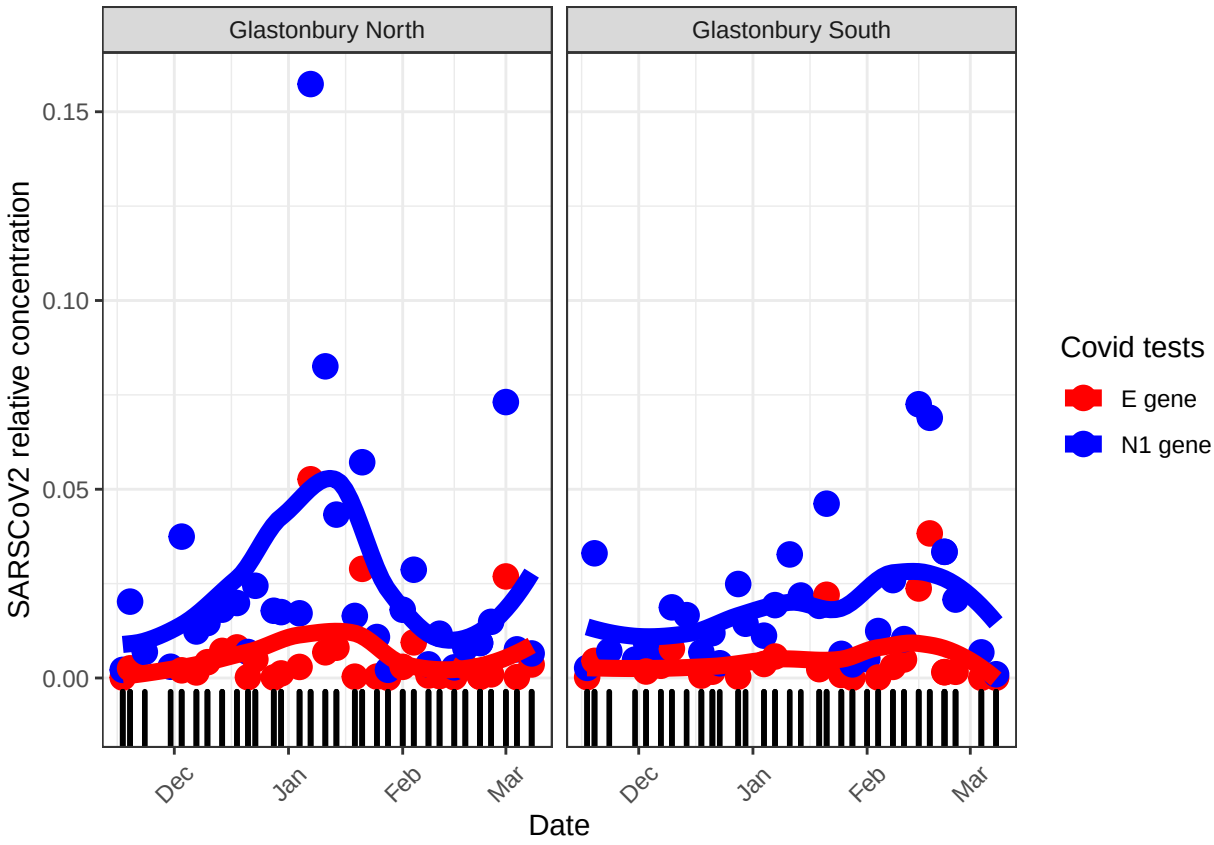
Nov 23: The covid level in both north and south Glastonbury have decreased over Friday.

Nov 16 & 19: Rather than one composite sample for the whole town, individual North and South samples were collected this week. The level of relative covid is increasing in both north and south. I've added a graph for the raw gene copies / L, this hasn't increased this week which could indicate a dilution effect or some variability in the fecal indicator virus.

Nov 12: Covid level has dropped back to the level we saw last week. More data will help us know what sort of range to expect for Glastonbury.

Nov 10: The relative Covid level increased in Glastonbury but is still low (compared to what I'm seeing elsewhere). Only one of the 2 genes was detectable in today's sample. Researchers are still trying to understand what it means when the covid genes are not detected at similar levels-a couple possibilities are breaking down virus particles, different strains could have small mutations that effect its detection.

Nov 5: Relative Covid levels in Glastonbury are quantifiable but low. ### add bargraph.


Glastonbury North
Glastonbury South
SARSCoV2 relative concentration
0.15
0.10
0.05
0.00
Dec
Jan
Feb
Mar
Date
Covid tests
E gene
N1 gene

Raw Covid19 concentrations

While I think the relativized data is the most informative because it allows us to normalize the data by the amount of fecal matter in the sample, many groups are reporting Covid19 genome copies per liter of wastewater. Here are plots of the raw Covid19 concentration. Note, I changed the y-axis on Dec 3 to linear rather than log.