



Results from the national surveillance of SARS-CoV-2 in wastewater

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Information about the national wastewater surveillance of SARS-CoV-2

Below is a short description of the wastewater surveillance of SARS-CoV-2 in Denmark. A detailed description of the wastewater surveillance can be found on SSI's website ([link to detailed description](#)).

Where do we measure wastewater concentrations of SARS-CoV-2?

In the national wastewater surveillance of SARS-CoV-2, 29 wastewater samples are taken from 28 treatment plants across Denmark.

How do we measure wastewater concentrations of SARS-CoV-2?

Genetic material (RNA) of the SARS-CoV-2 virus are excreted in the feces of approximately half of the infected individuals and can therefore be measured in wastewater. Wastewater samples are transported to SSI's laboratory, where they are preprocessed and analyzed using PCR tests (RT-qPCR). This provides an estimate of the number of RNA copies of SARS-CoV-2 per liter of wastewater. The PCR analysis also includes the naturally occurring virus PMMoV, that is excreted in the feces. The laboratory results are analyzed by the Infectious Disease Epidemiology & Prevention department at SSI.

How are the results of wastewater measurements presented?

There are two main categories of wastewater results: A weekly weighted average of the SARS-CoV-2 concentration in wastewater, and a growth rate that describes the change in the national concentration (increasing, stable, or decreasing) based on the three most recent weeks of wastewater data.

The weekly weighted average for the last 15 months is presented nationally and for each region. For each sampling site, the weekly weighted average is shown after April 1, 2023. The results are presented first for Denmark and then for each region in alphabetical order.

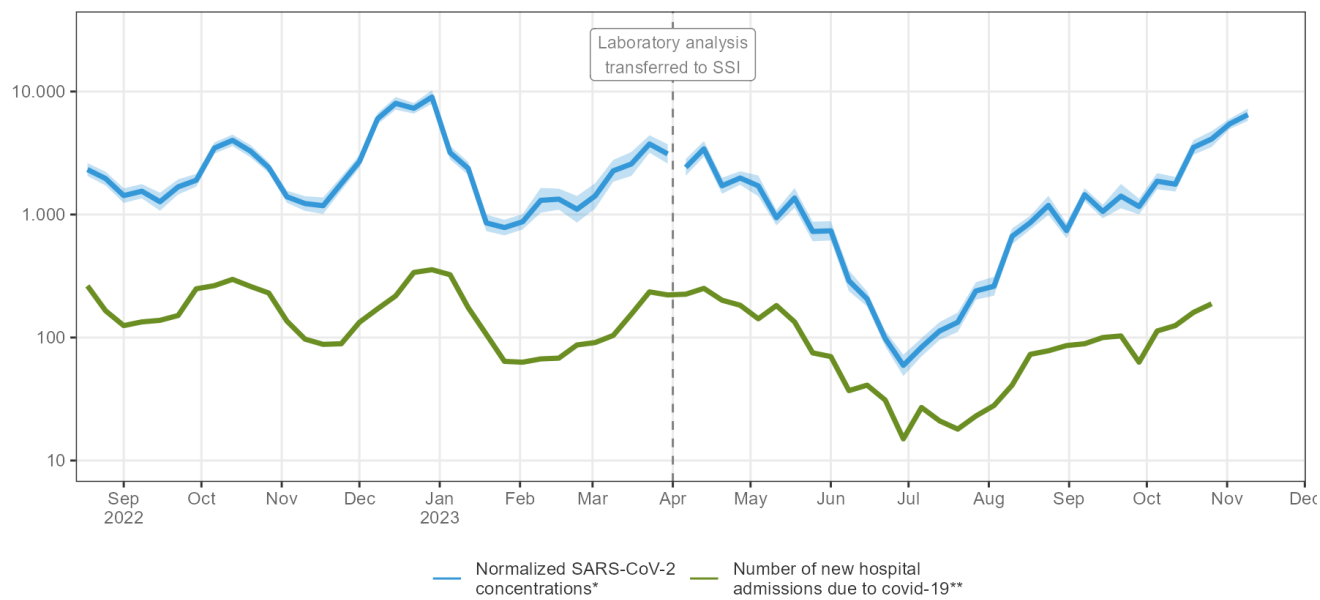


Surveillance of wastewater concentrations of SARS-CoV-2, week 45

Denmark

The figure below shows the concentration of SARS-CoV-2 in the wastewater, aggregated for all the sampling sites in Denmark. The figure also shows the national number of new hospital admissions due to SARS-CoV-2.

Wastewater concentration of SARS-CoV-2



*Results before and after April 1, 23, are not directly comparable
 **Calculated as a weekly total. Assessed with a delay

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The figure below shows a classification of the SARS-CoV-2 concentration in the wastewater samples. There are two thresholds: LoD (Limits of Detection) and LoQ (Limit of Quantification). Samples classified as < LoD have a concentration of SARS-CoV-2 that is lower than the detection limit of the method. Samples classified as < LoQ have a concentration of SARS-CoV-2 that is high enough to be detected with 95 % certainty, but too low to be quantified. The quantified samples are those that have a concentration of SARS-CoV-2 that is high enough to quantify and the missing samples are those that for various reasons are not included in the analysis.

In more than two of the past three weeks, more than 2/3 of the wastewater samples were classified as "Quantified". Hence, the concentration of SARS-CoV-2 in the wastewater is at a level that is high enough for growth rates to be calculated and published.

Categorization of quantifiability

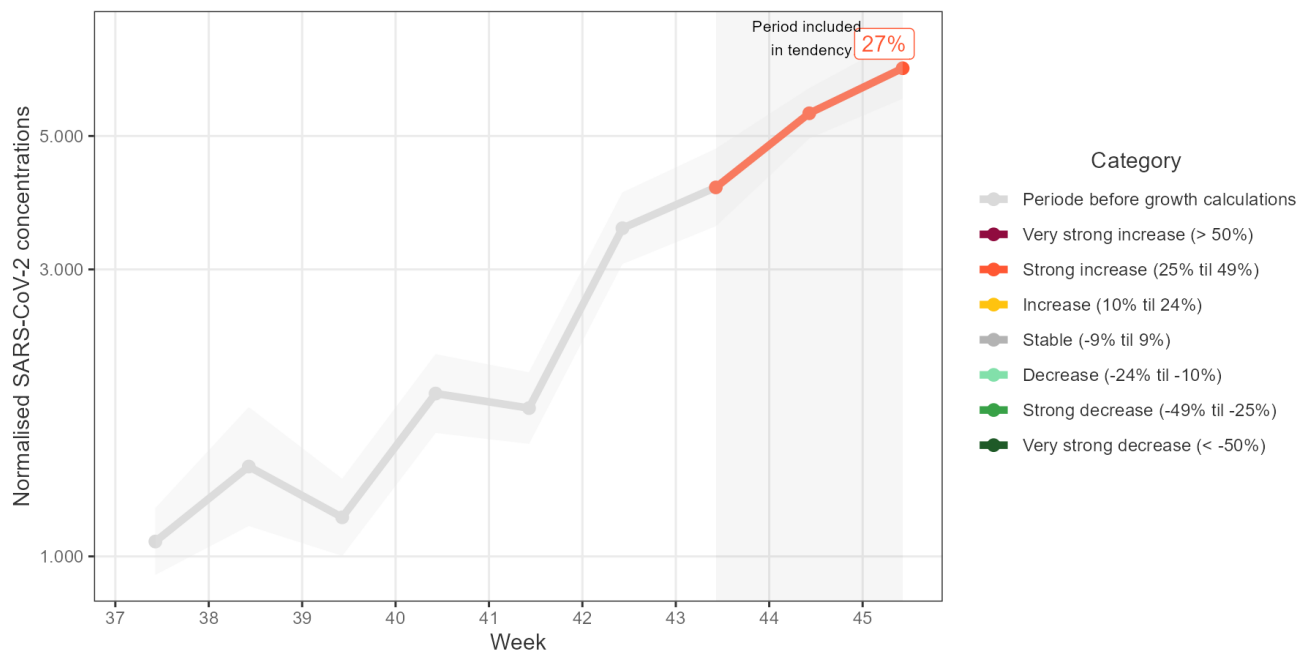


< LoD: Samples below the method's limit of detection
< LoQ: Samples below the method's limit of quantification

The average weekly growth rate in Denmark, based on observations from the past three weeks, is shown below.

Week 45: Tendency in wastewater surveillance

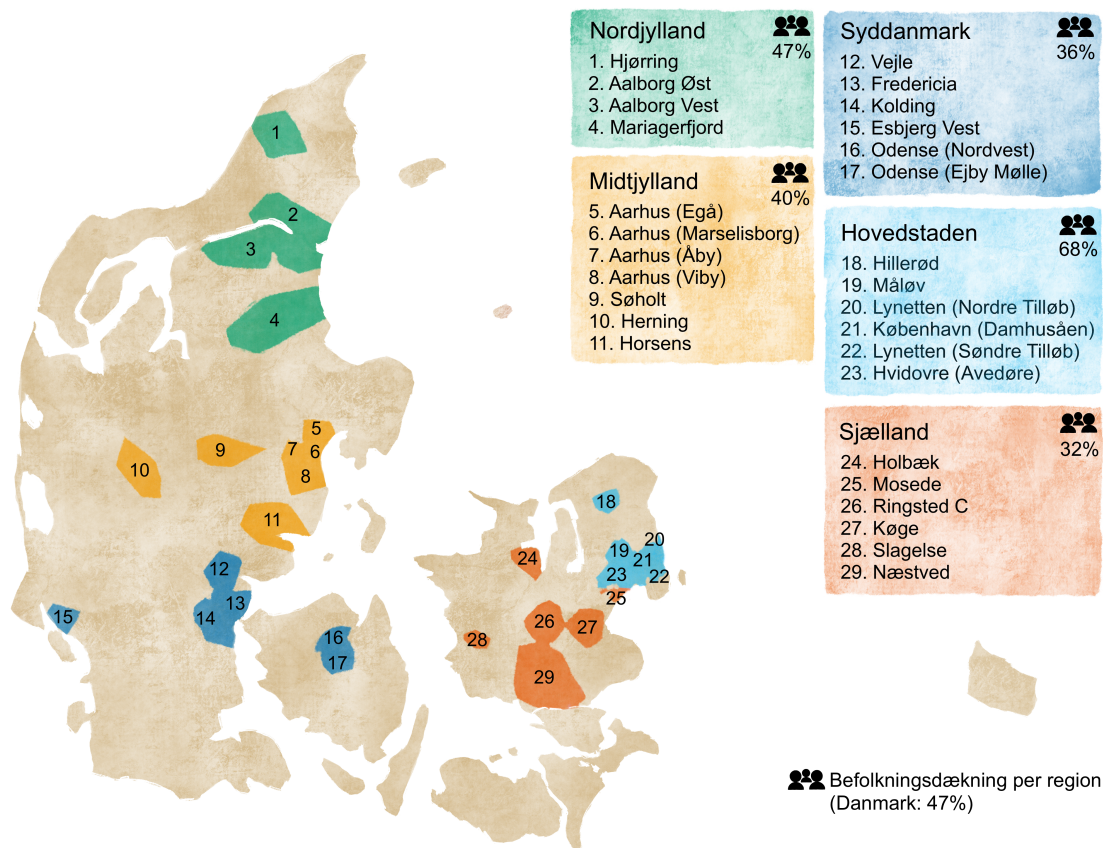
Percentwise change based on the measurements from the last three weeks



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A map of the cathment areas of the included wastewater treatment plants is seen below.

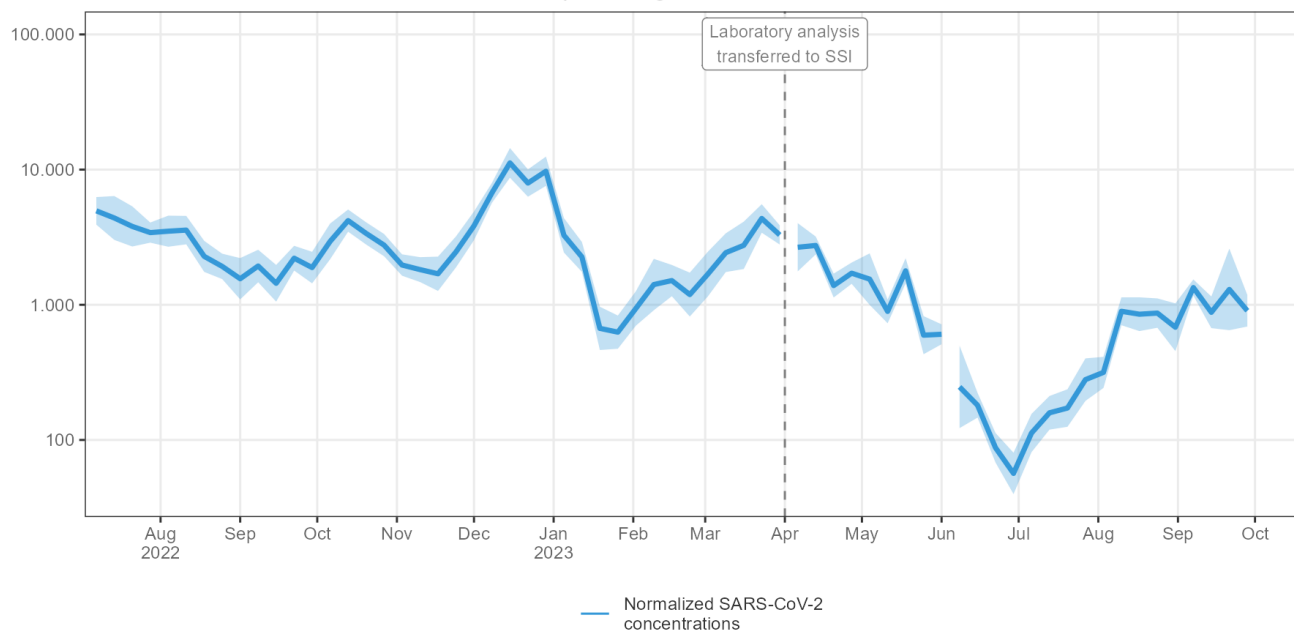




Capital Region of Denmark

The wastewater concentration of SARS-CoV-2 in the Capital Region of Denmark, aggregated and for each sampling site, is shown below.

Wastewater concentration of SARS-CoV-2, Capital Region



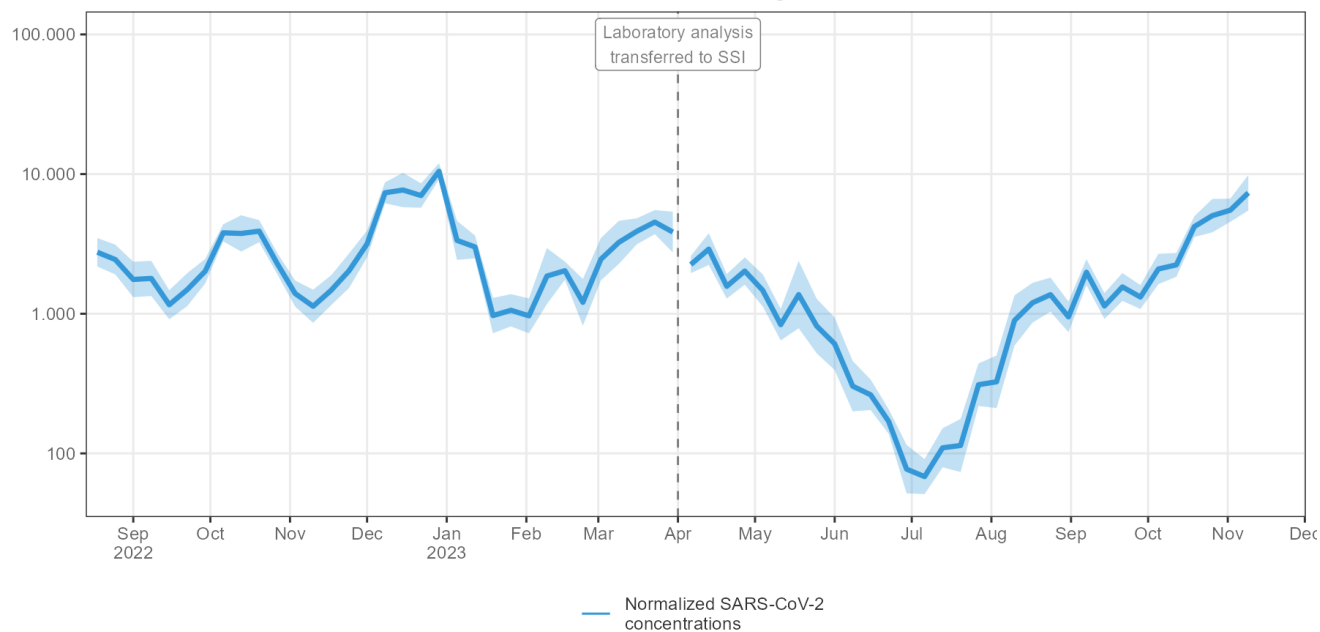
**Results before and after the dashed lines are not directly comparable*



Central Denmark Region

The wastewater concentration of SARS-CoV-2 in the Central Denmark Region, aggregated and for each sampling site, is shown below.

Wastewater concentration of SARS-CoV-2, Central Denmark Region

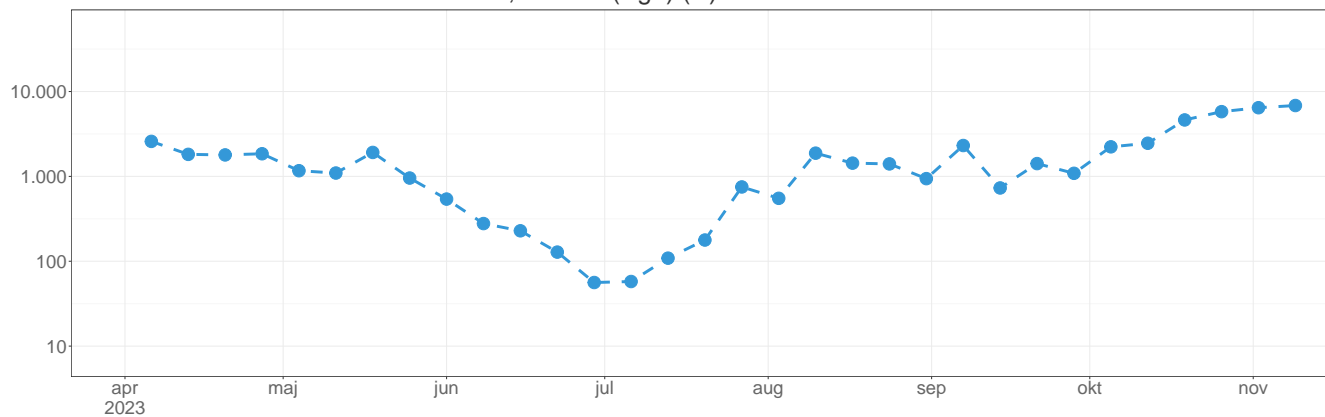


**Results before and after the dashed line are not directly comparable*

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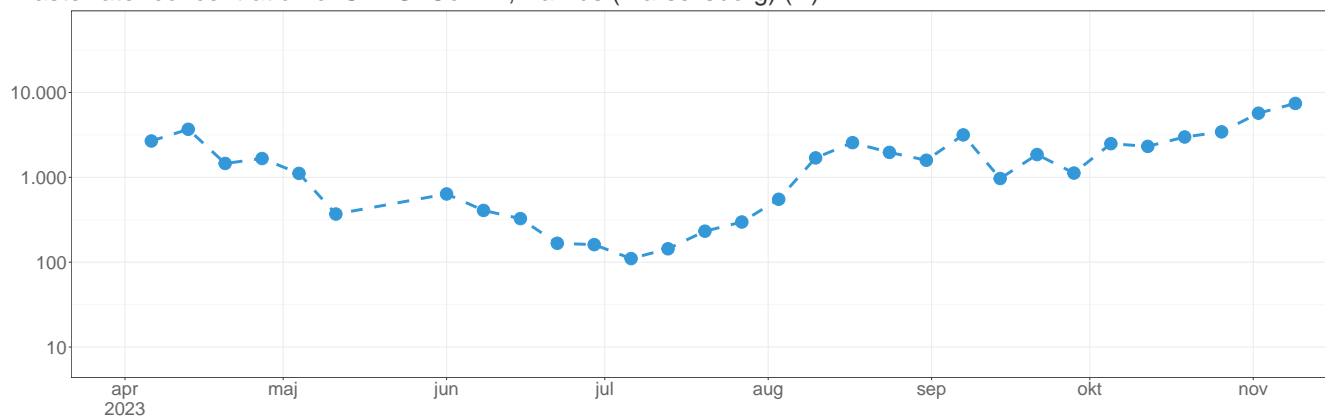


Wastewater concentration of SARS-CoV-2, Aarhus (Egå) (R)



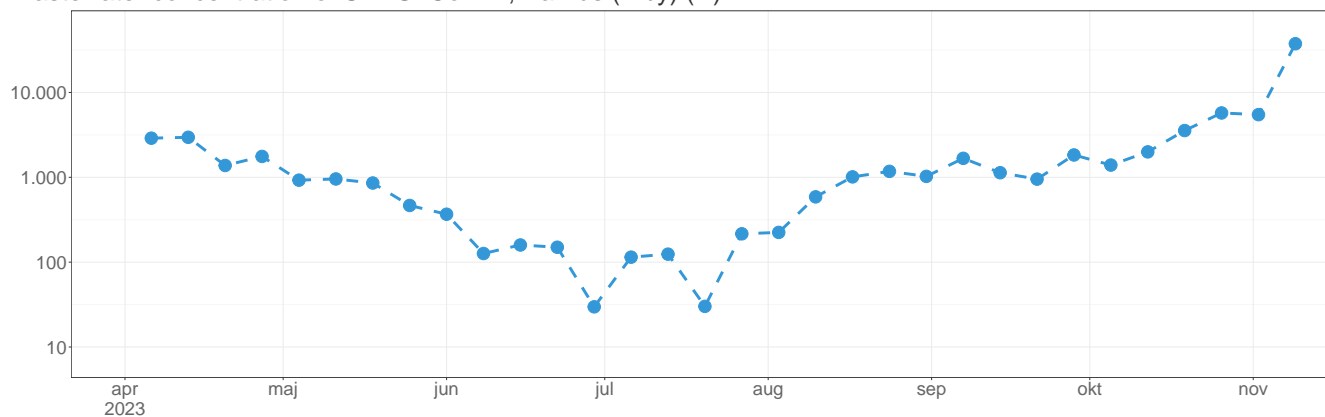
Number of inhabitants: 90.213

Wastewater concentration of SARS-CoV-2, Aarhus (Marselisborg) (R)



Number of inhabitants: 128.616

Wastewater concentration of SARS-CoV-2, Aarhus (Viby) (R)

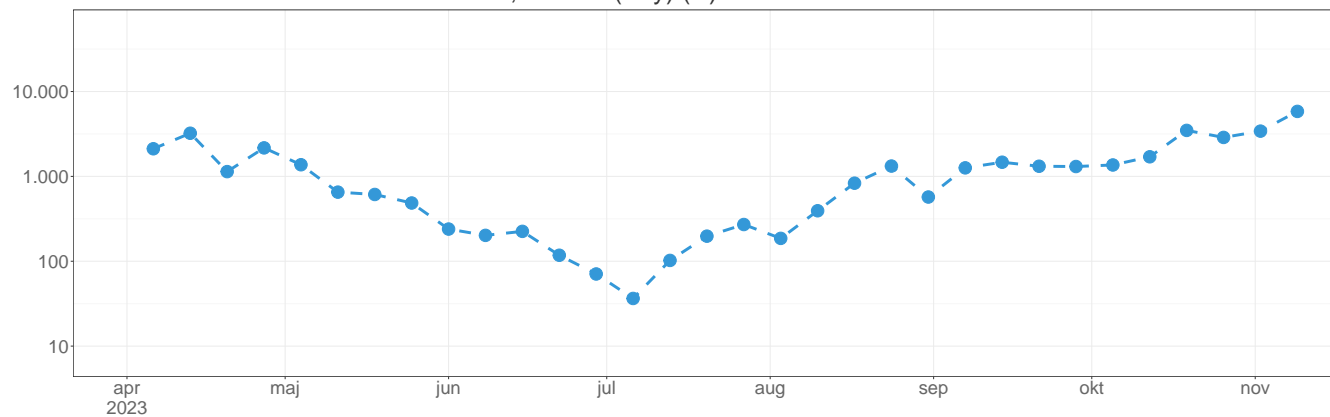


Number of inhabitants: 79.697

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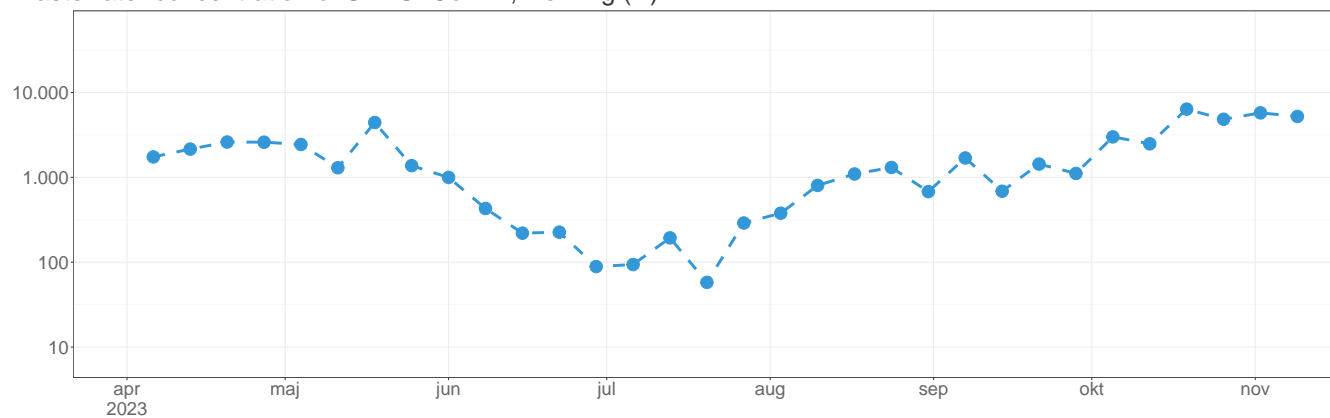


Wastewater concentration of SARS-CoV-2, Aarhus (Åby) (R)



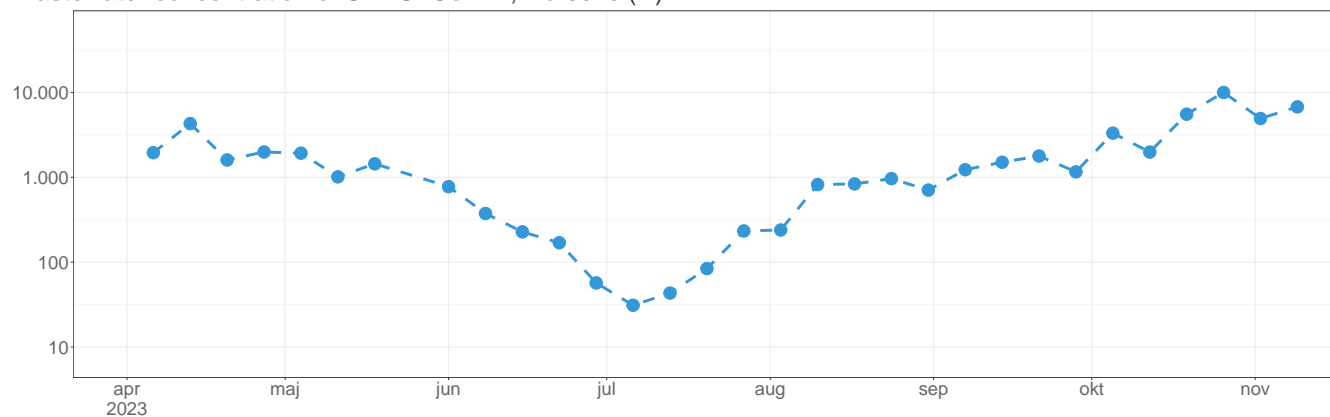
Number of inhabitants: 60.557

Wastewater concentration of SARS-CoV-2, Herning (R)



Number of inhabitants: 56.043

Wastewater concentration of SARS-CoV-2, Horsens (R)

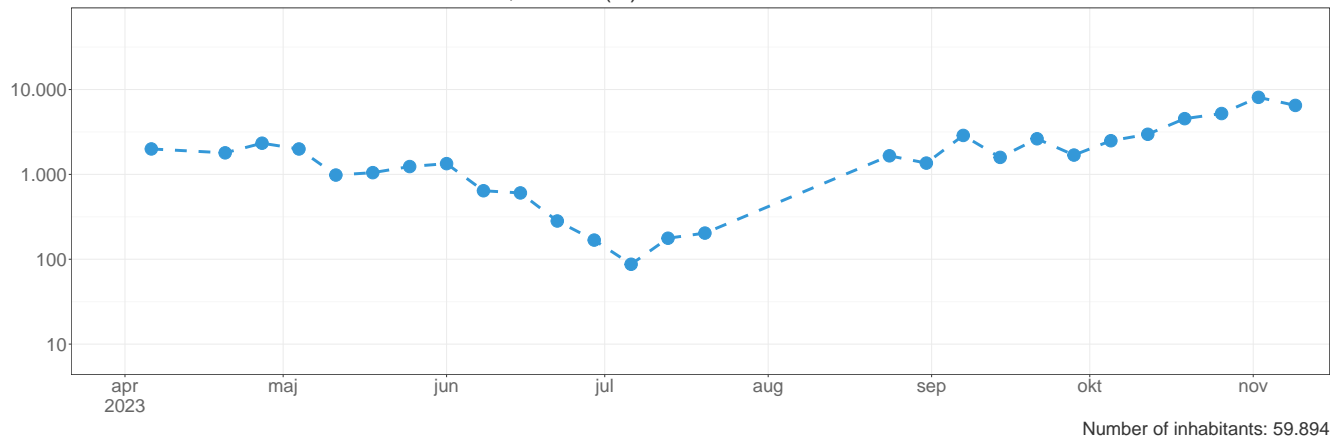


Number of inhabitants: 81.133

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Wastewater concentration of SARS-CoV-2, Søholt (R)

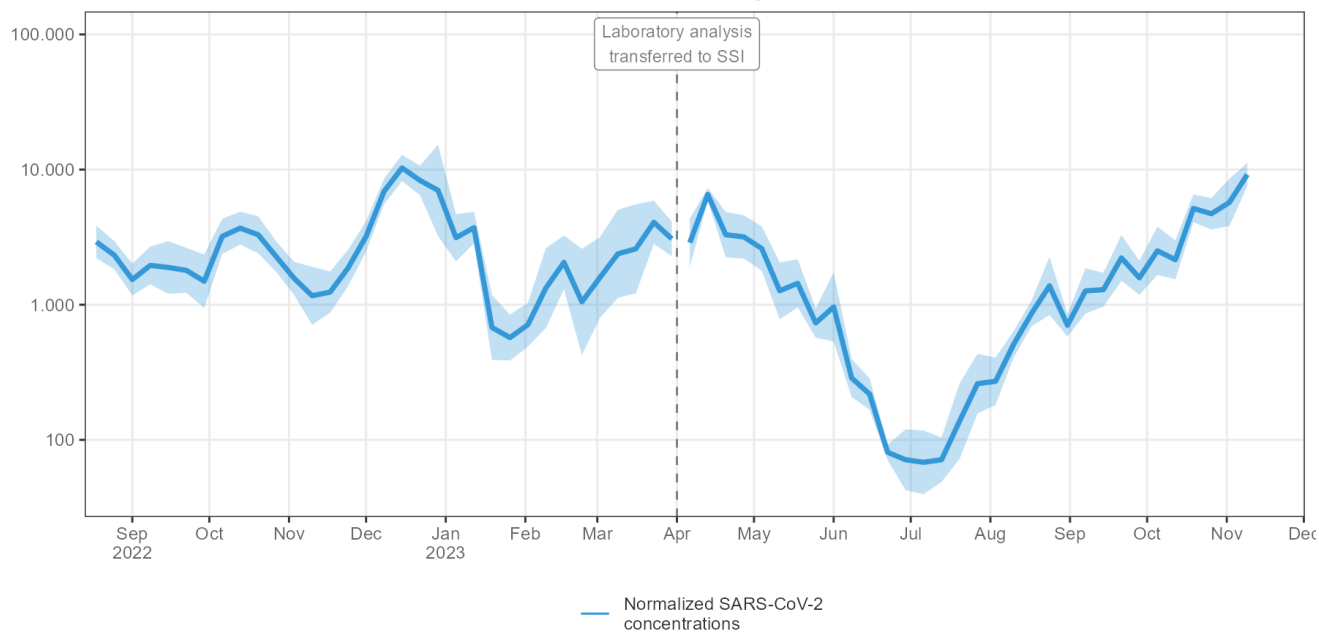




North Denmark Region

The wastewater concentration of SARS-CoV-2 in the North Denmark Region, aggregated and for each sampling site, is shown below.

Wastewater concentration of SARS-CoV-2, North Denmark Region

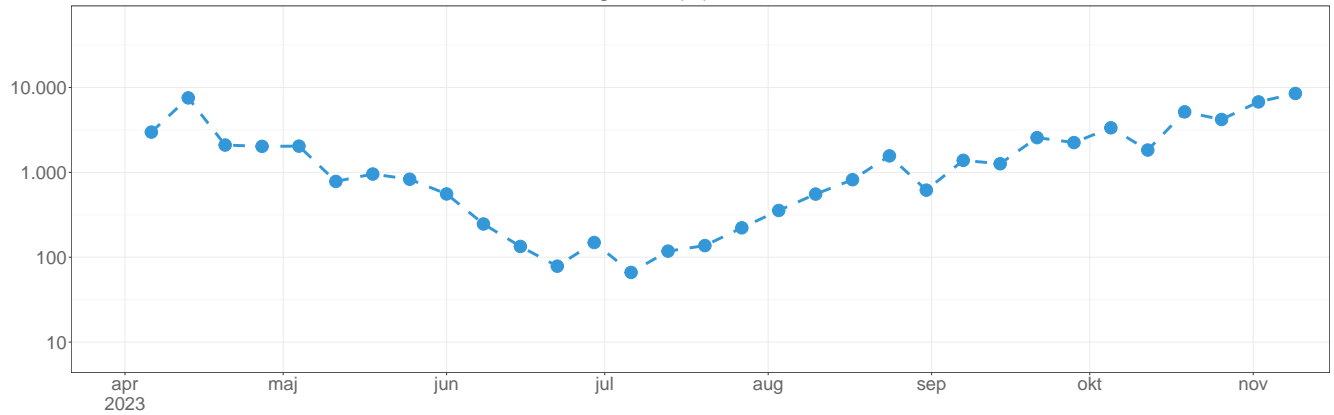


**Results before and after the dashed line are not directly comparable*



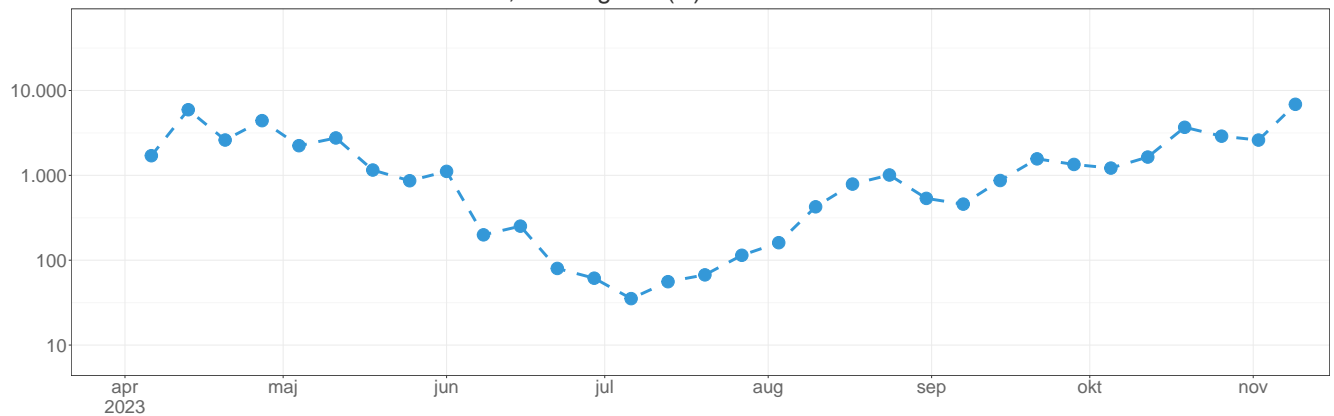
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Wastewater concentration of SARS-CoV-2, Aalborg Vest (R)



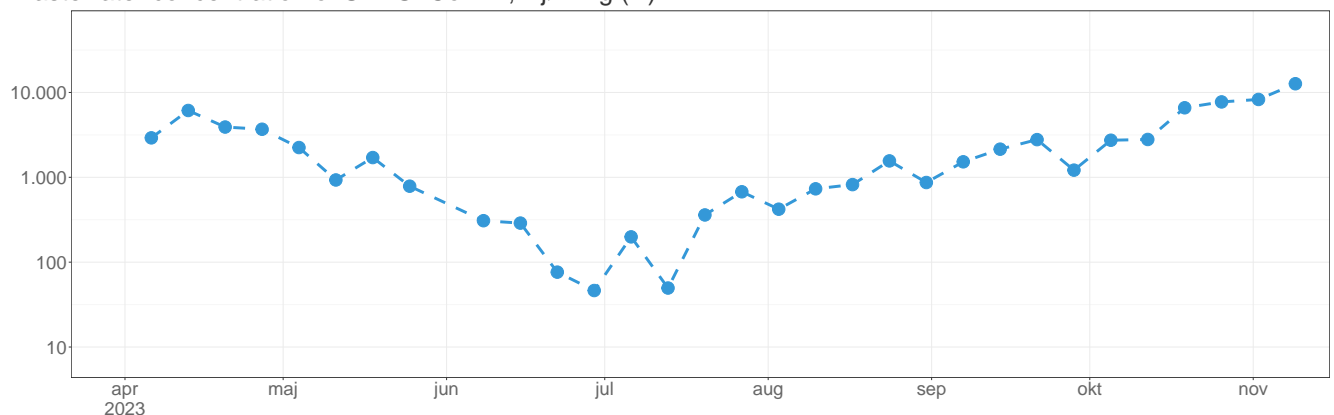
Number of inhabitants: 143.271

Wastewater concentration of SARS-CoV-2, Aalborg Øst (R)



Number of inhabitants: 68.921

Wastewater concentration of SARS-CoV-2, Hjørring (R)

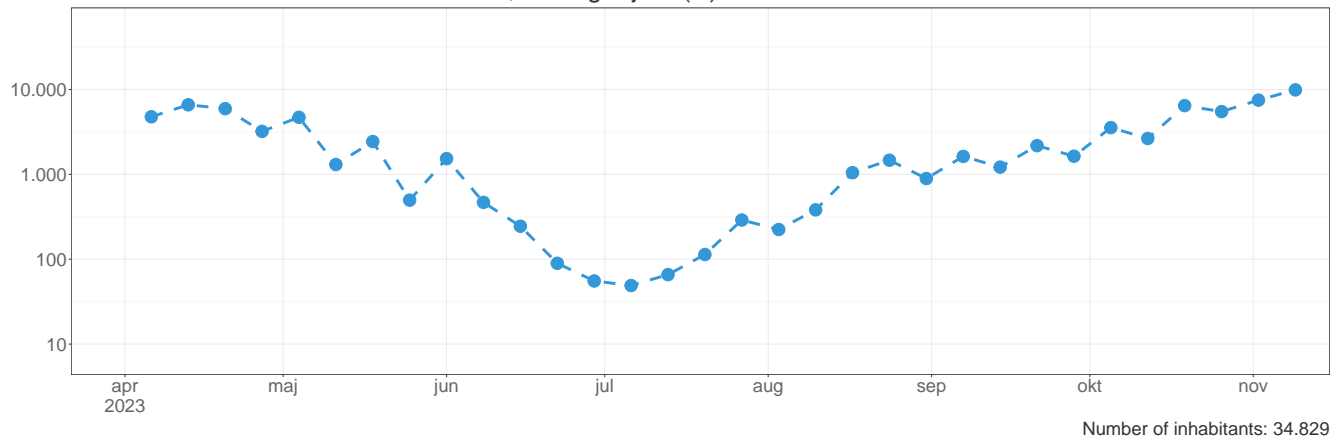


Number of inhabitants: 34.064

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Wastewater concentration of SARS-CoV-2, Mariagerfjord (R)

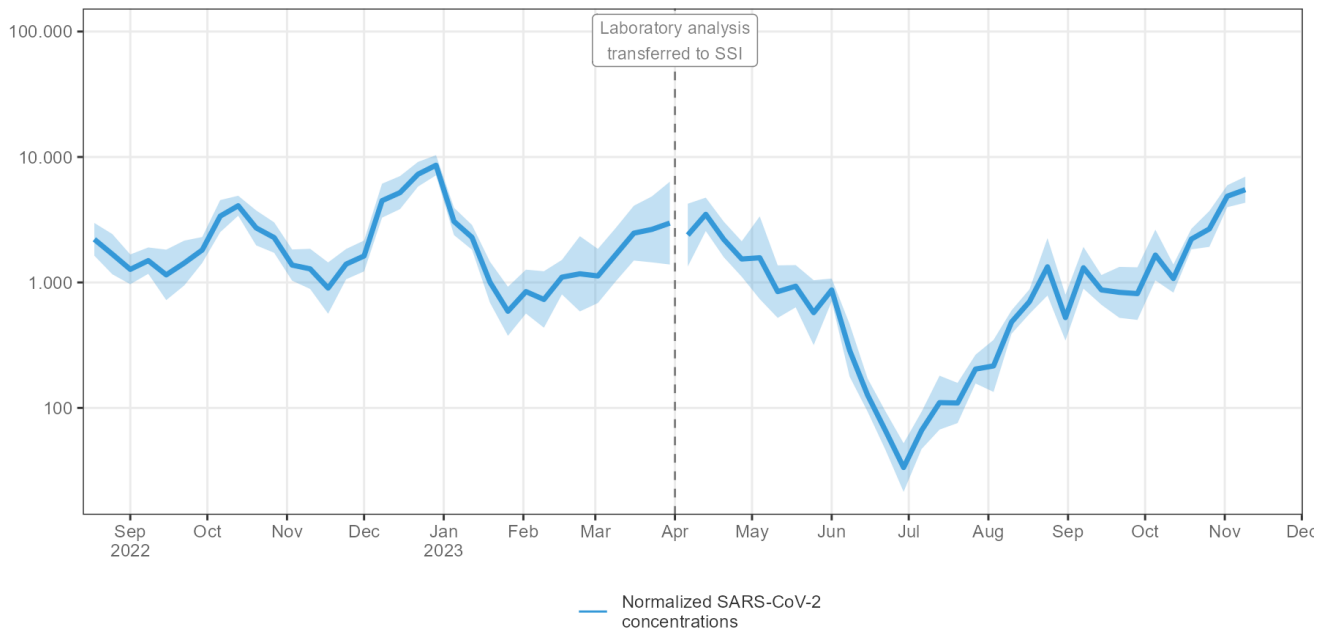




Region Zealand

The wastewater concentration of SARS-CoV-2 in Region Zealand, aggregated and for each sampling site, is shown below.

Wastewater concentration of SARS-CoV-2, Region Zealand

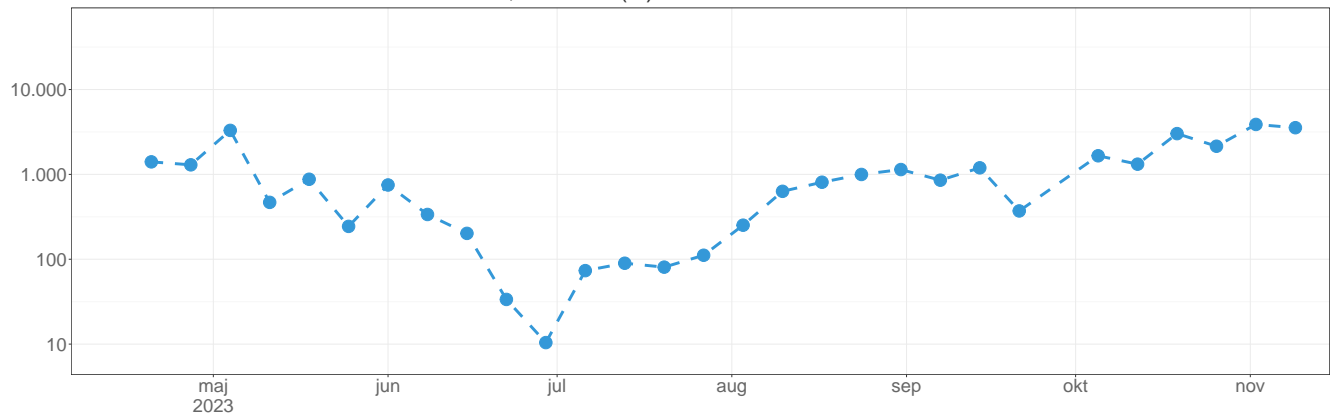


**Results before and after the dashed line are not directly comparable*

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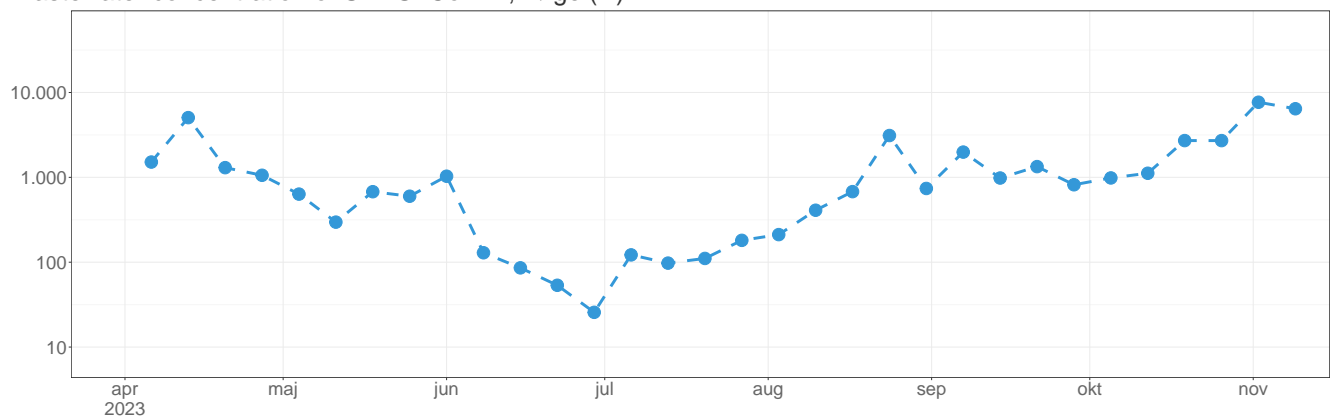


Wastewater concentration of SARS-CoV-2, Holbæk (R)



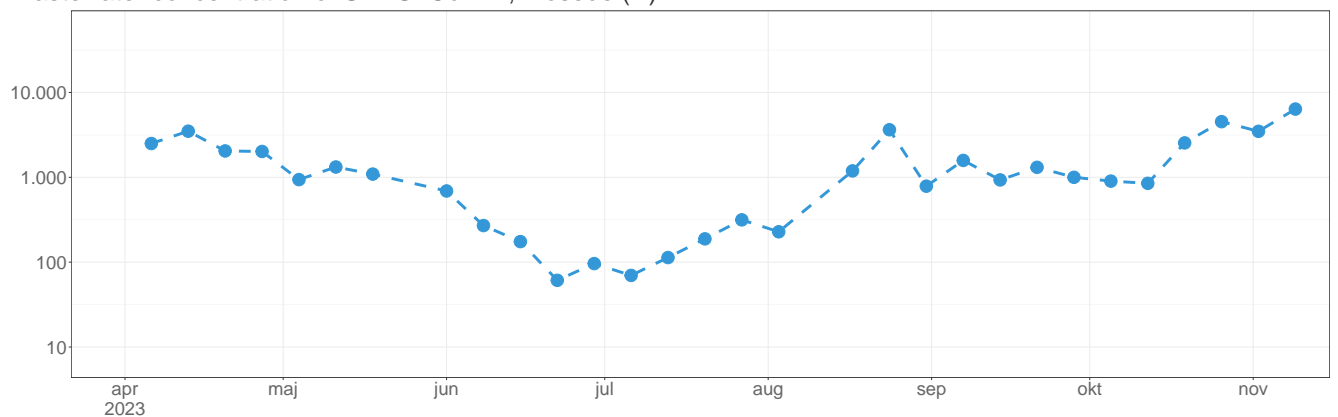
Number of inhabitants: 37.035

Wastewater concentration of SARS-CoV-2, Køge (R)



Number of inhabitants: 54.239

Wastewater concentration of SARS-CoV-2, Mosede (R)

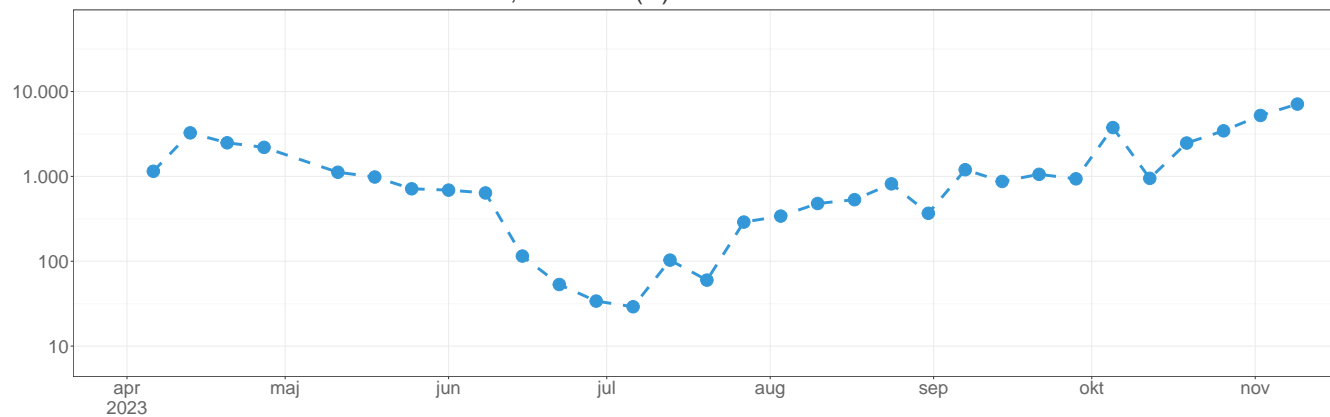


Number of inhabitants: 48.490

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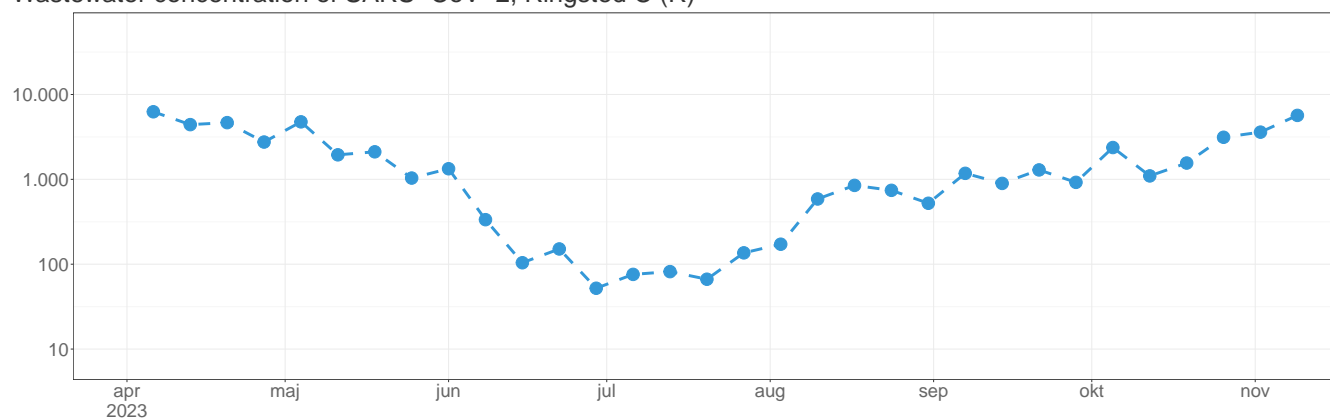


Wastewater concentration of SARS-CoV-2, Næstved (R)



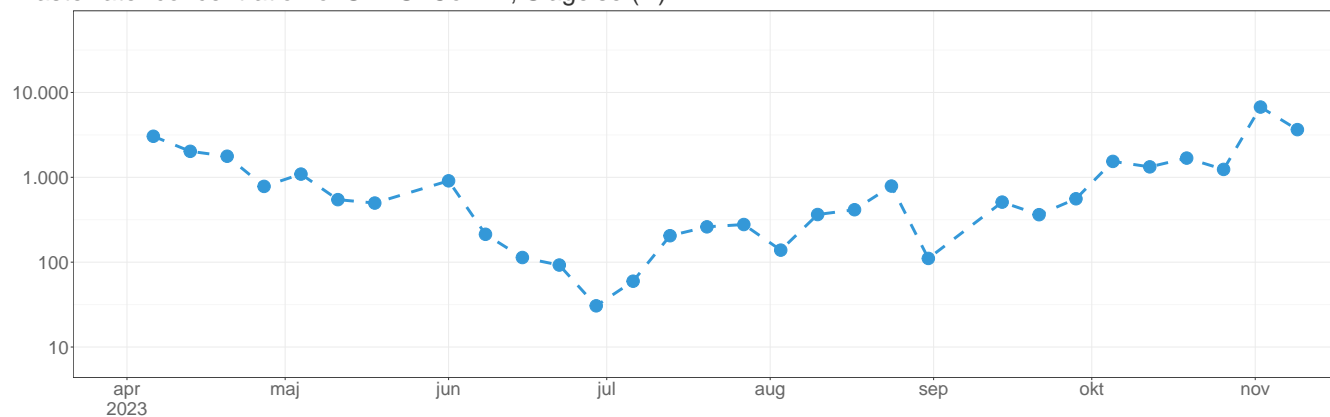
Number of inhabitants: 69.797

Wastewater concentration of SARS-CoV-2, Ringsted C (R)



Number of inhabitants: 32.853

Wastewater concentration of SARS-CoV-2, Slagelse (R)



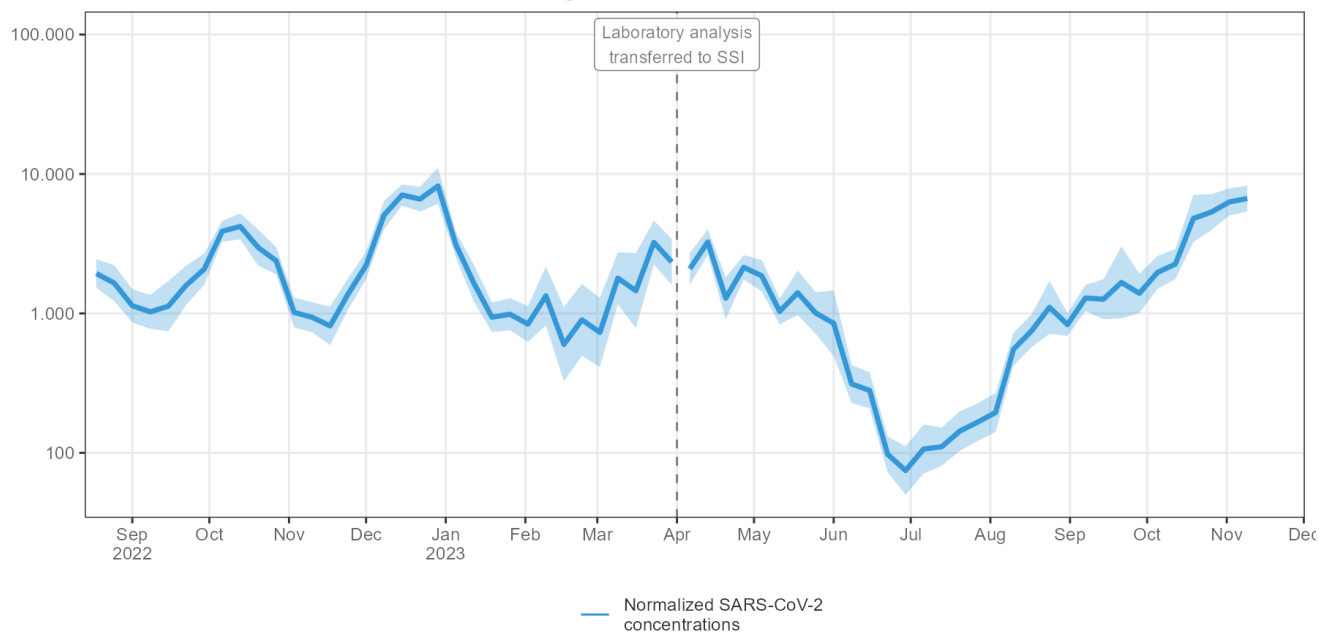
Number of inhabitants: 36.075



Region of Southern Denmark

The wastewater concentration of SARS-CoV-2 in the Region of Southern Denmark, aggregated and for each sampling site, is shown below.

Wastewater concentration of SARS-CoV-2, Region of Southern Denmark

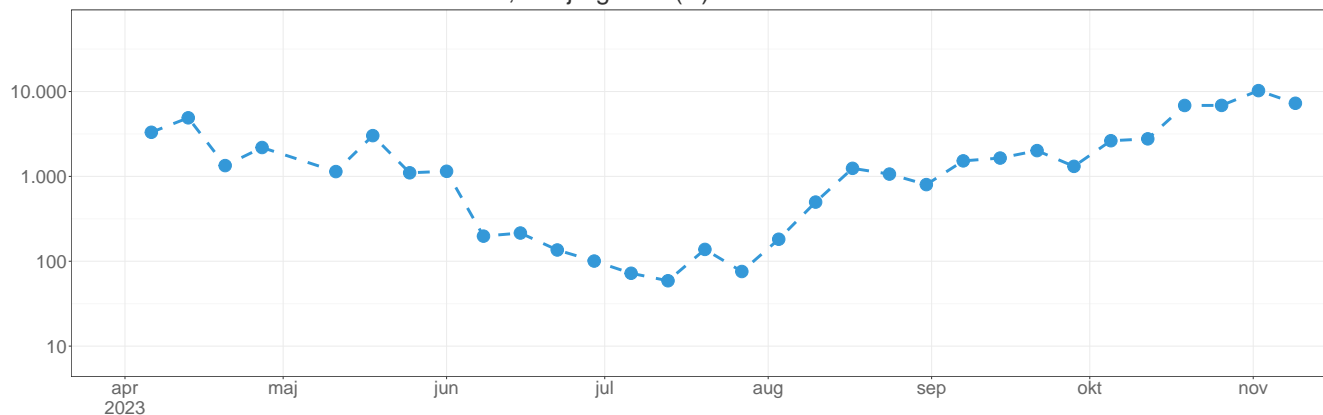


**Results before and after the dashed line are not directly comparable*

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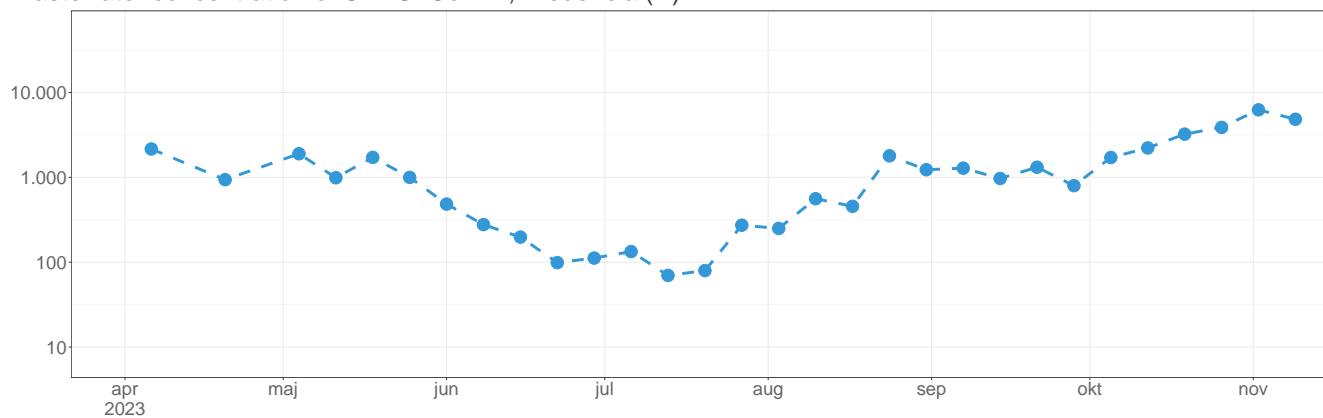


Wastewater concentration of SARS-CoV-2, Esbjerg Vest (R)



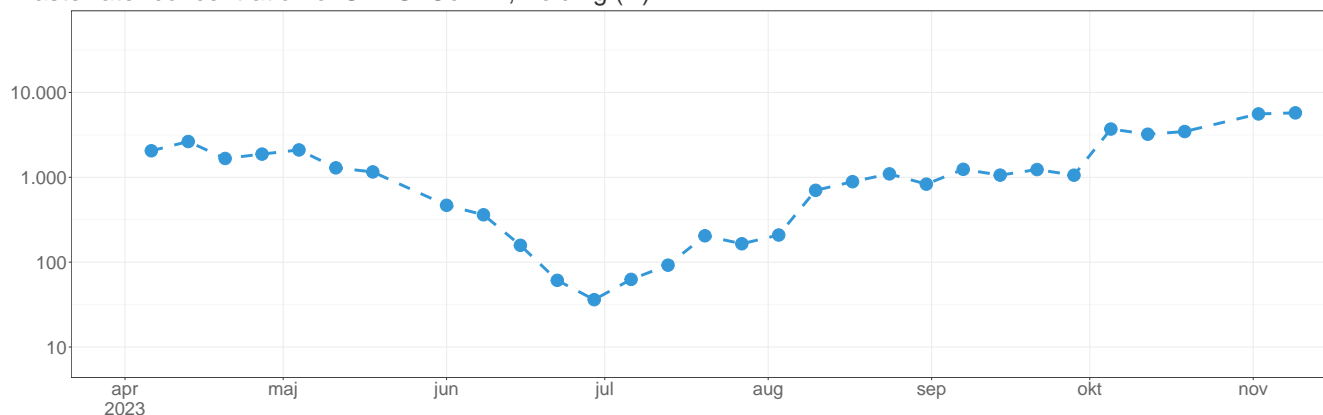
Number of inhabitants: 62.093

Wastewater concentration of SARS-CoV-2, Fredericia (R)



Number of inhabitants: 52.227

Wastewater concentration of SARS-CoV-2, Kolding (R)

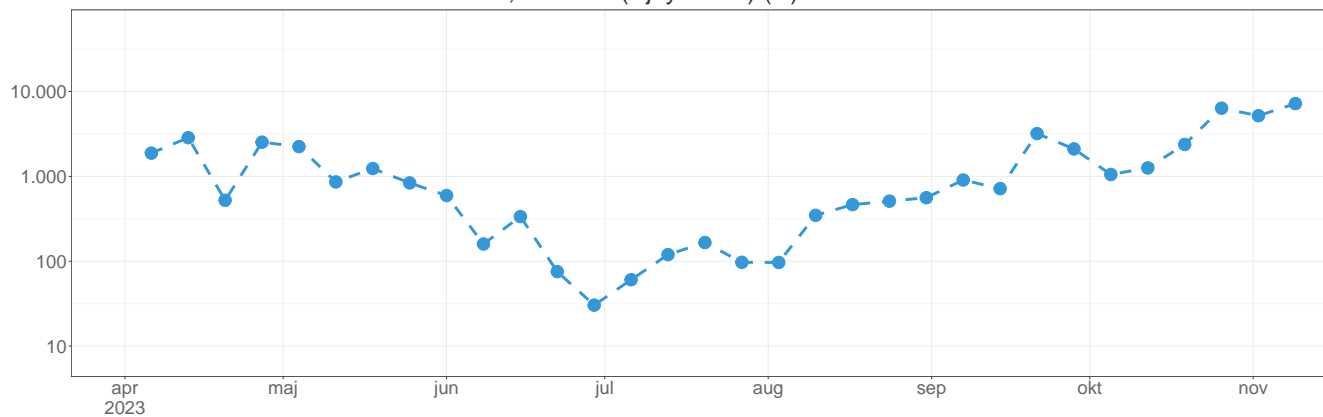


Number of inhabitants: 73.731

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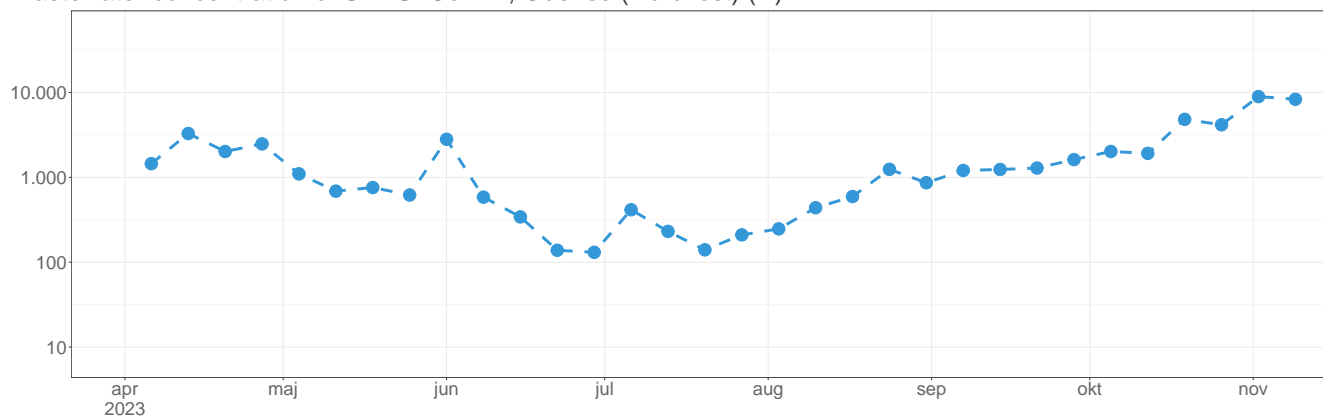


Wastewater concentration of SARS-CoV-2, Odense (Ejby Mølle) (R)



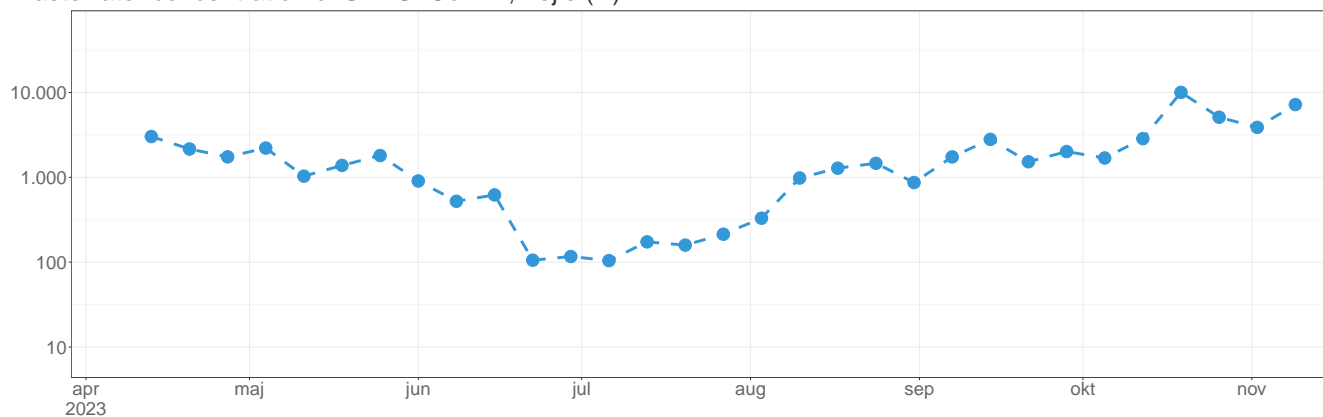
Number of inhabitants: 134.114

Wastewater concentration of SARS-CoV-2, Odense (Nordvest) (R)



Number of inhabitants: 52.444

Wastewater concentration of SARS-CoV-2, Vejle (R)



Number of inhabitants: 72.439