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Ministry of Health, Welfare and Sport



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Long-term wastewater monitoring of SARS-CoV-2 viral loads and variants at the major international passenger hub Amsterdam Schiphol Airport

A valuable addition to COVID-19 surveillance

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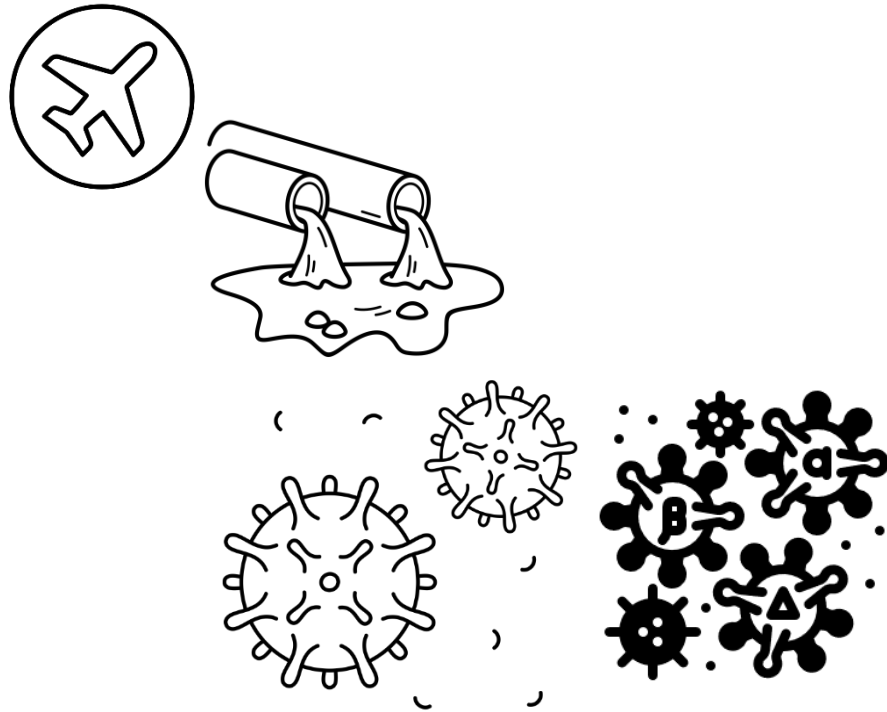
Why Amsterdam Schiphol Airport?

- > International passenger hub
 - World Top 3 busiest airports
 - ~ 100,000 daily arriving passengers
- > Wastewater Treatment Plant
 - Terminal, aircraft and 70 companies
- > Fluctuating population in size and composition
- > *What is the **potential** of long-term **wastewater** surveillance at a large **passenger hub** as an **additional tool** for public health surveillance?*





Approach

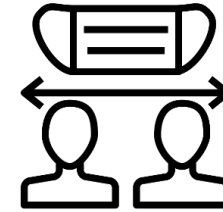


SARS-CoV-2 viral loads & variants

32 months (Feb 2020 – Sept 2022)

- 277 samples analyzed with RT-qPCR
- 177 samples sequenced

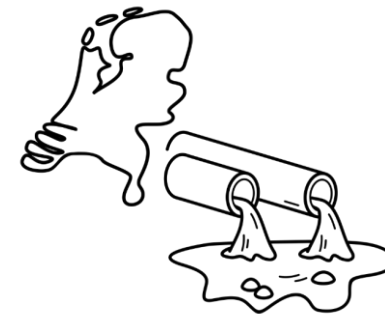
➤ **Control measures**



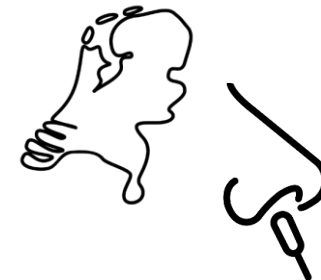
➤ **Passenger counts**



➤ **National COVID-19 wastewater surveillance**



➤ **National COVID-19 human variant surveillance**



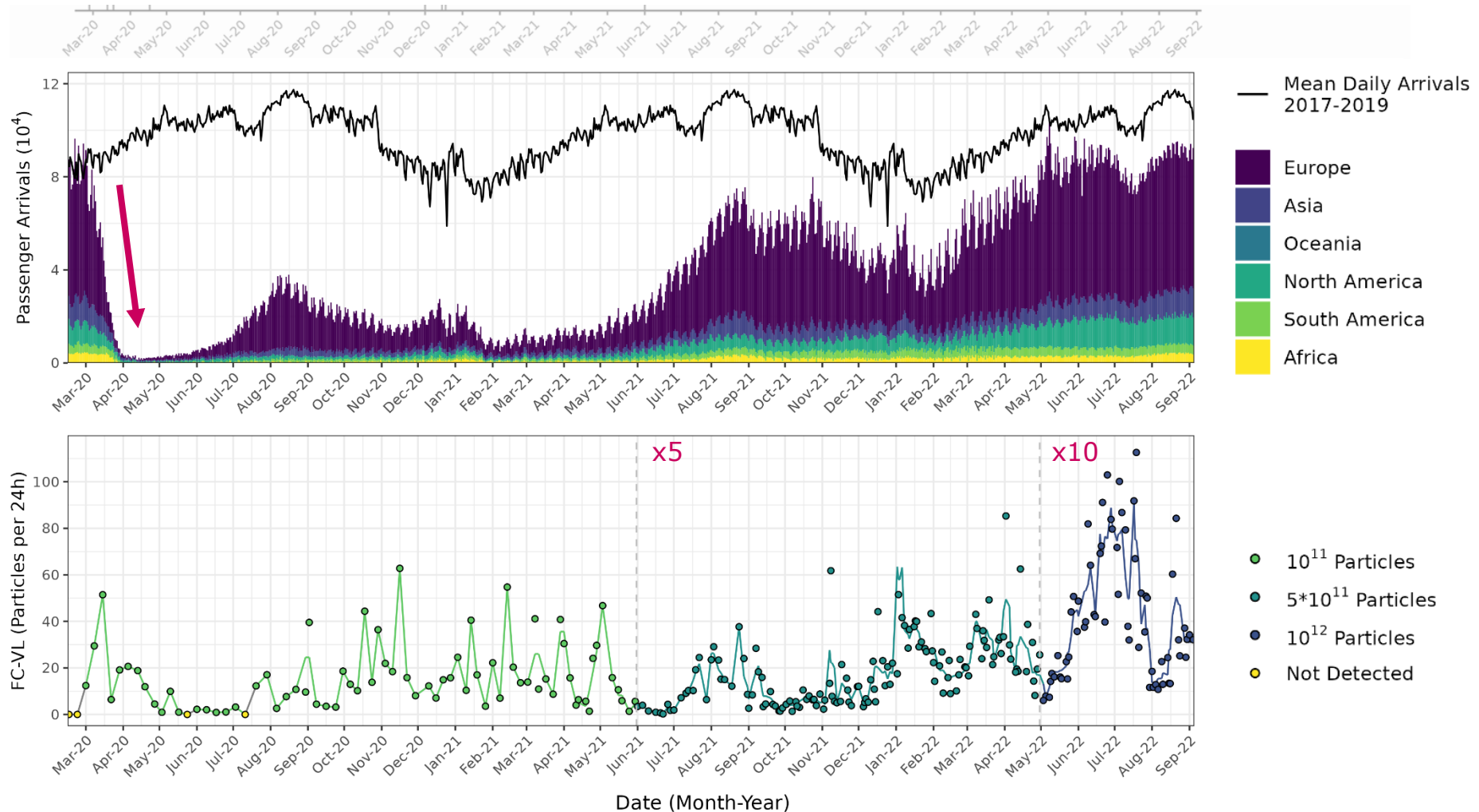
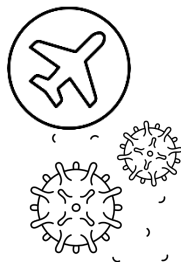


1. Wastewater monitoring is feasible throughout study period

27 Feb: First confirmed clinical case

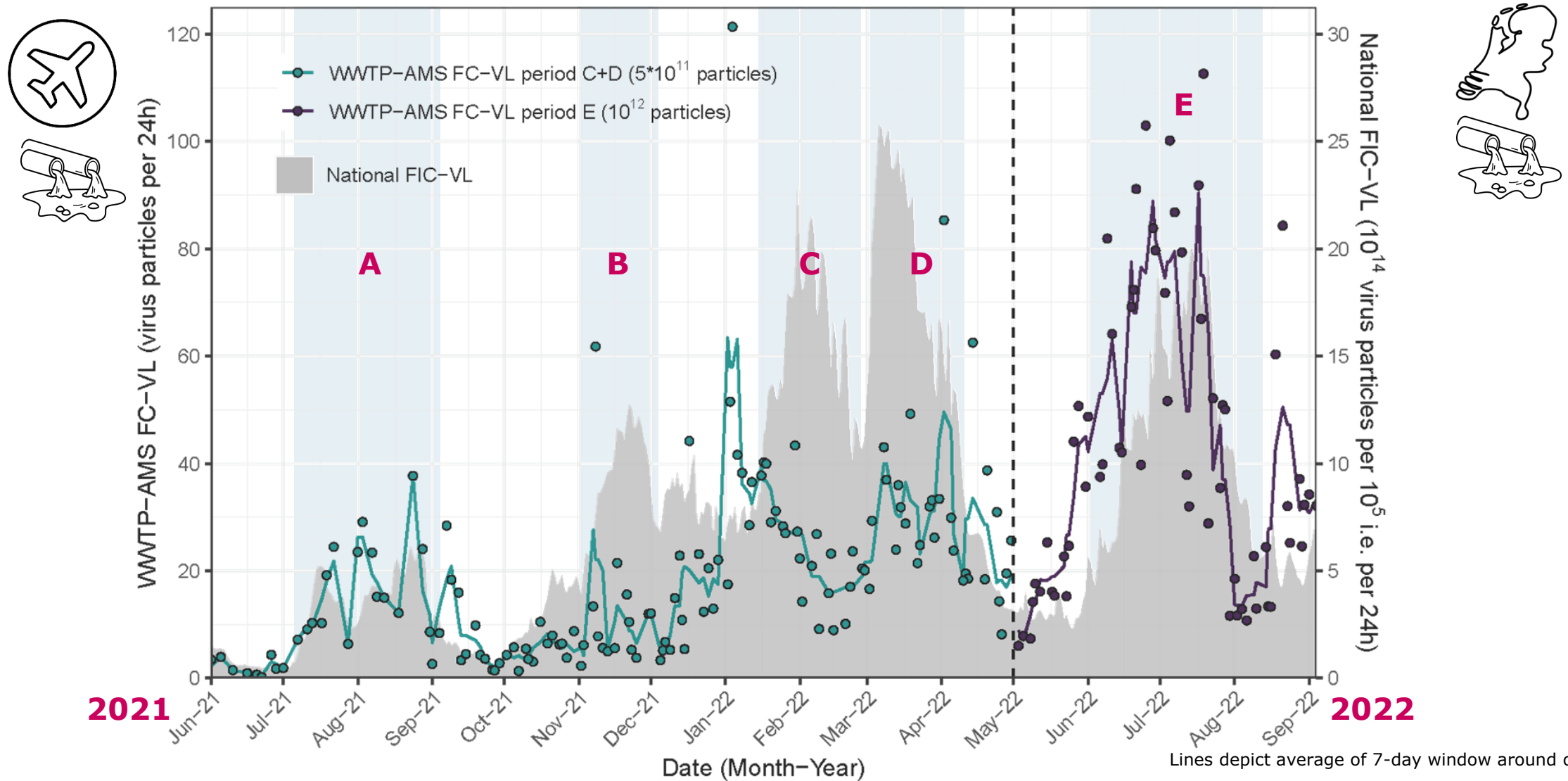
13 March: Cancellation flights high-risk areas

18 March: EU ban on non-essential travel



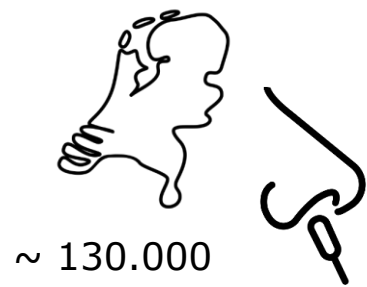


2. Airport viral loads parallel and sometimes precede Dutch national wastewater trend



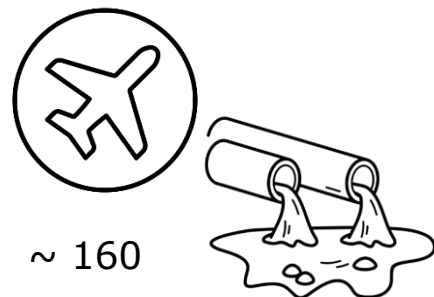


3. Variant emergence mirrors and sometimes precedes clinical reporting



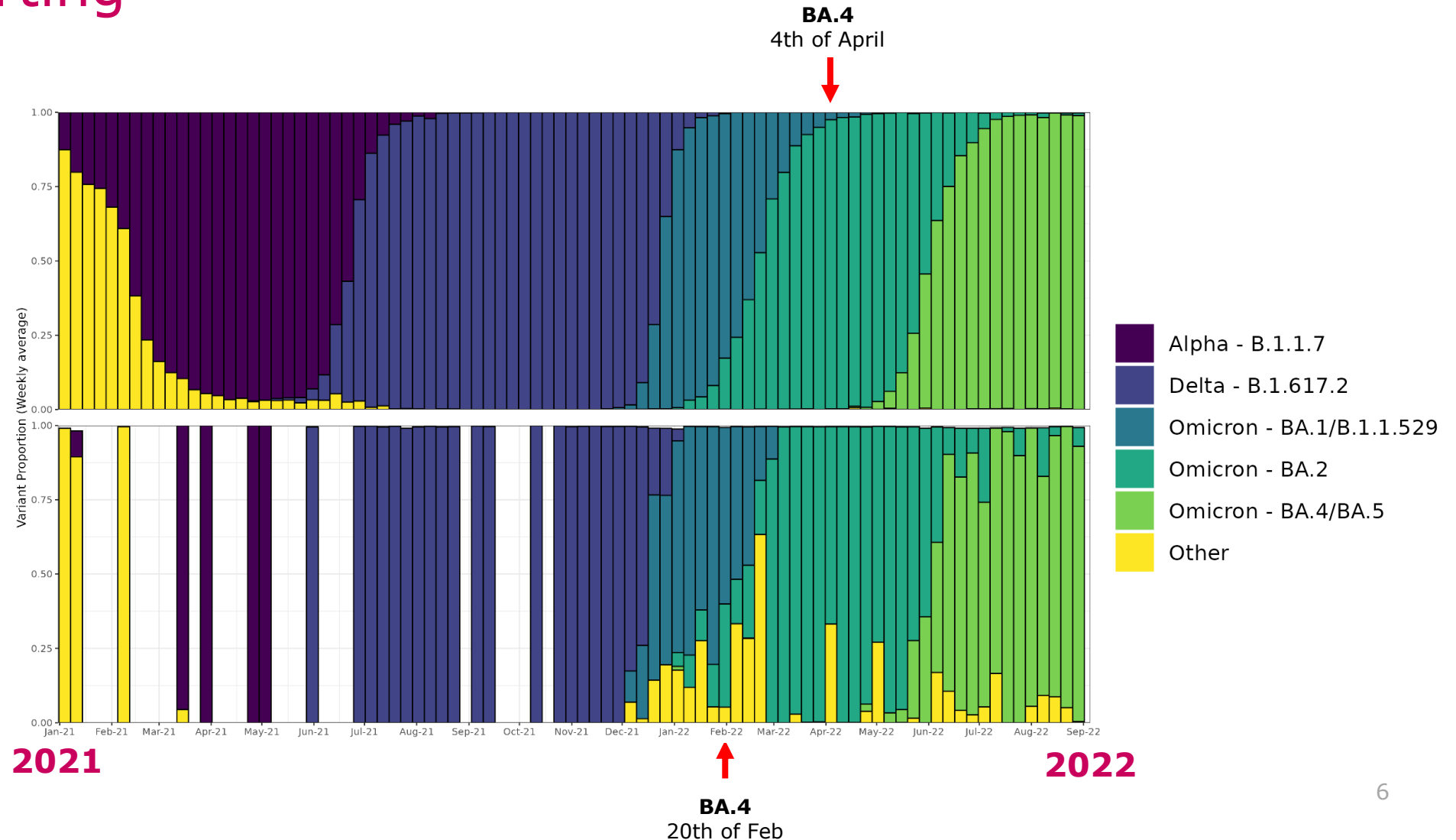
~ 130.000

National human variant surveillance



~ 160

Airport wastewater





Summary

- › Continuous detection possible despite measures taken
- › Trend in airport wastewater coincides with, and sometimes precedes national trend
- › Variant proportions in wastewater mirror and sometimes precede data from clinical reporting



Take home messages

- > Developed expertise can be applied in **pandemic preparedness** plans for other (re)emerging pathogens
- > In an **international framework**, timely detection of waves and emerging variants in wastewater can be used to monitor circulation **worldwide**
- > Data **sharing**
- > **Ethical** considerations



QR code generated with the *segno* python package

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