sciensano

healthy all life long

WASTEWATER SURVEILLANCE OF COVID-19 AND FUTURE APPLICATION

Epidemiology of infectious diseases
Epidemiology and public health (Sciensano)

Sciensano symposium - December 2022

.be

Have you ever had COVID-19 ?

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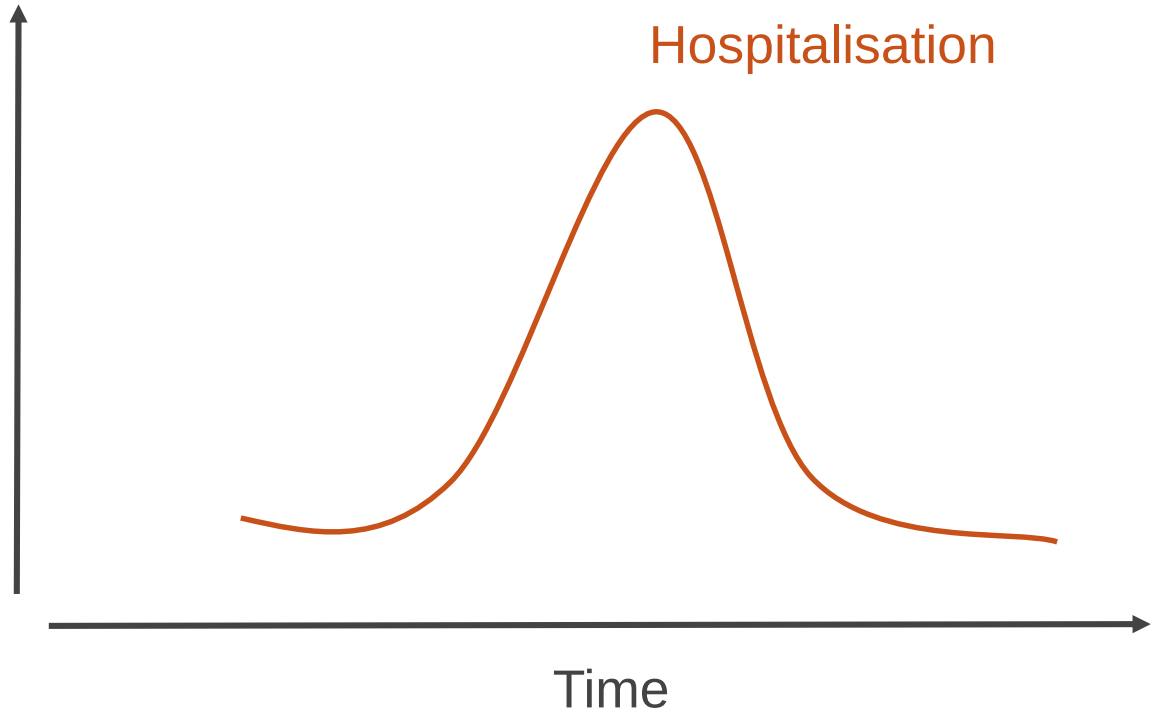
Did you use a toilet while being sick ?

How to alert hospitals ?



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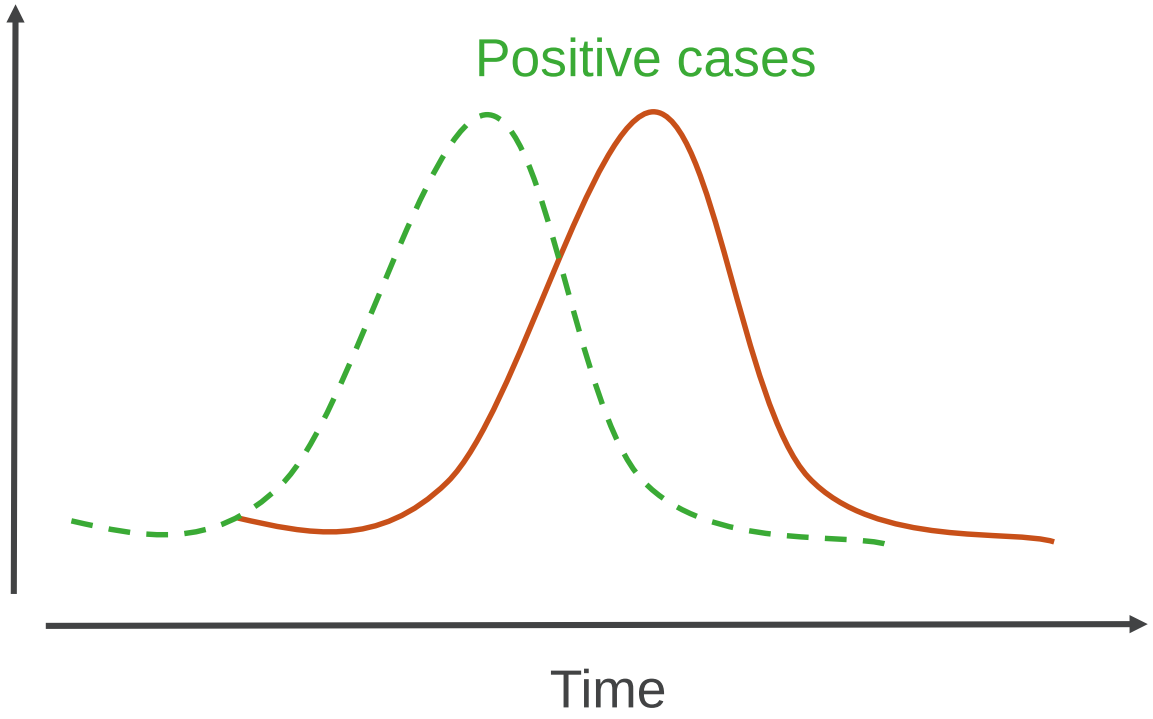

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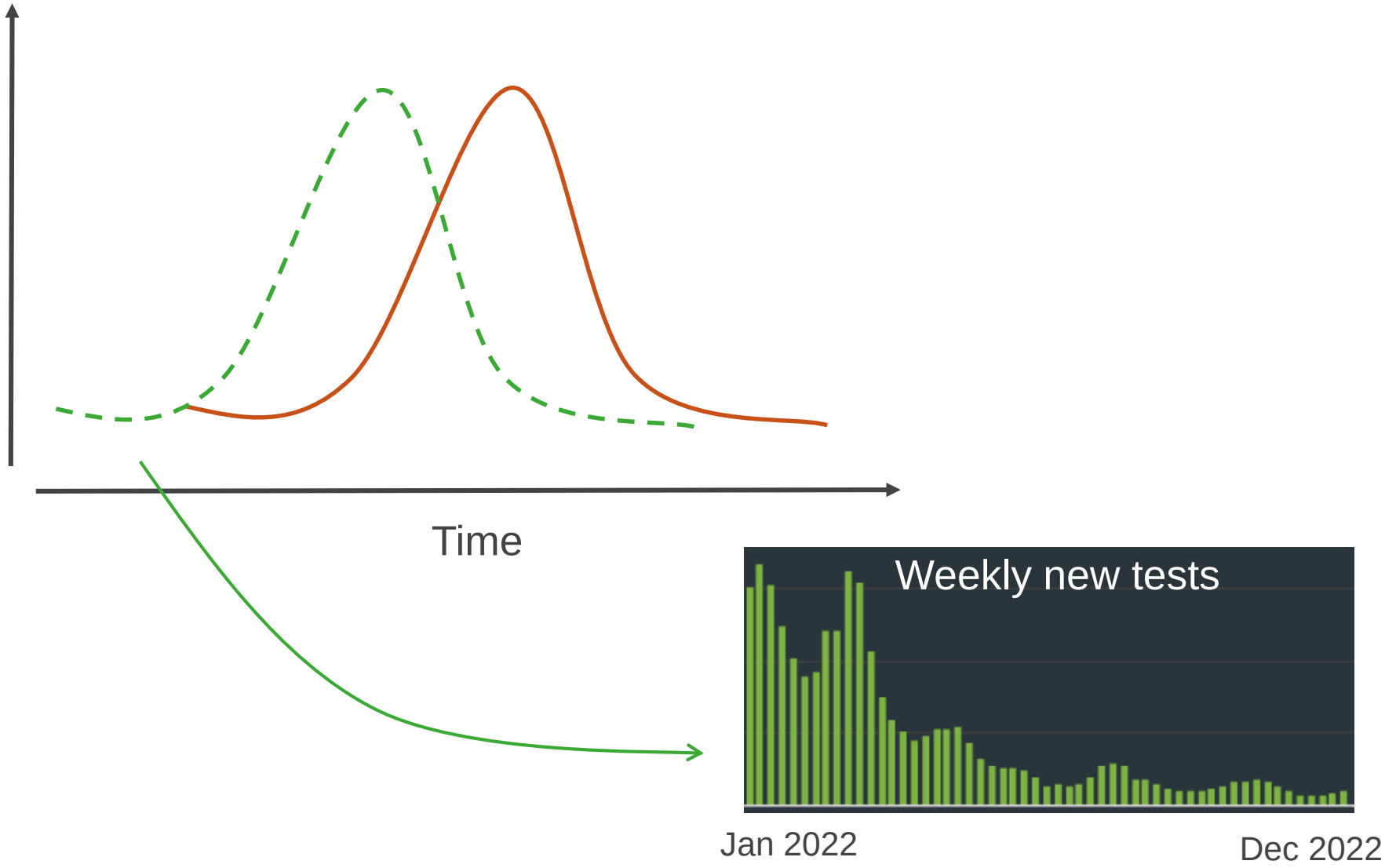

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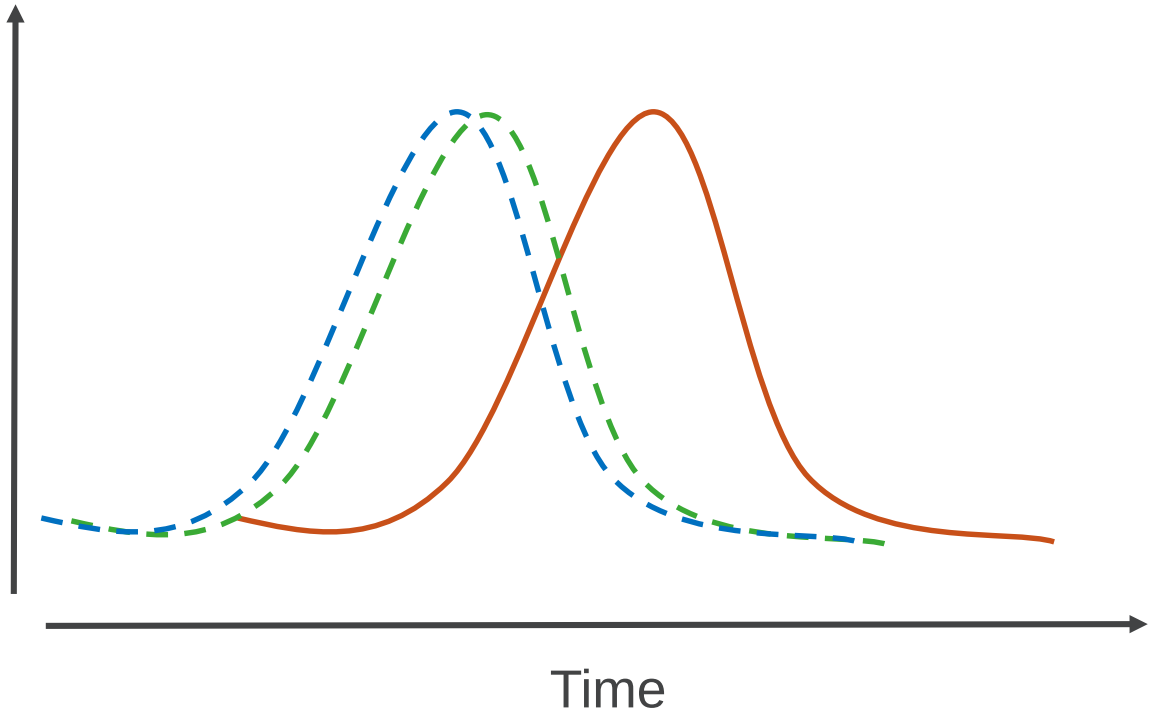

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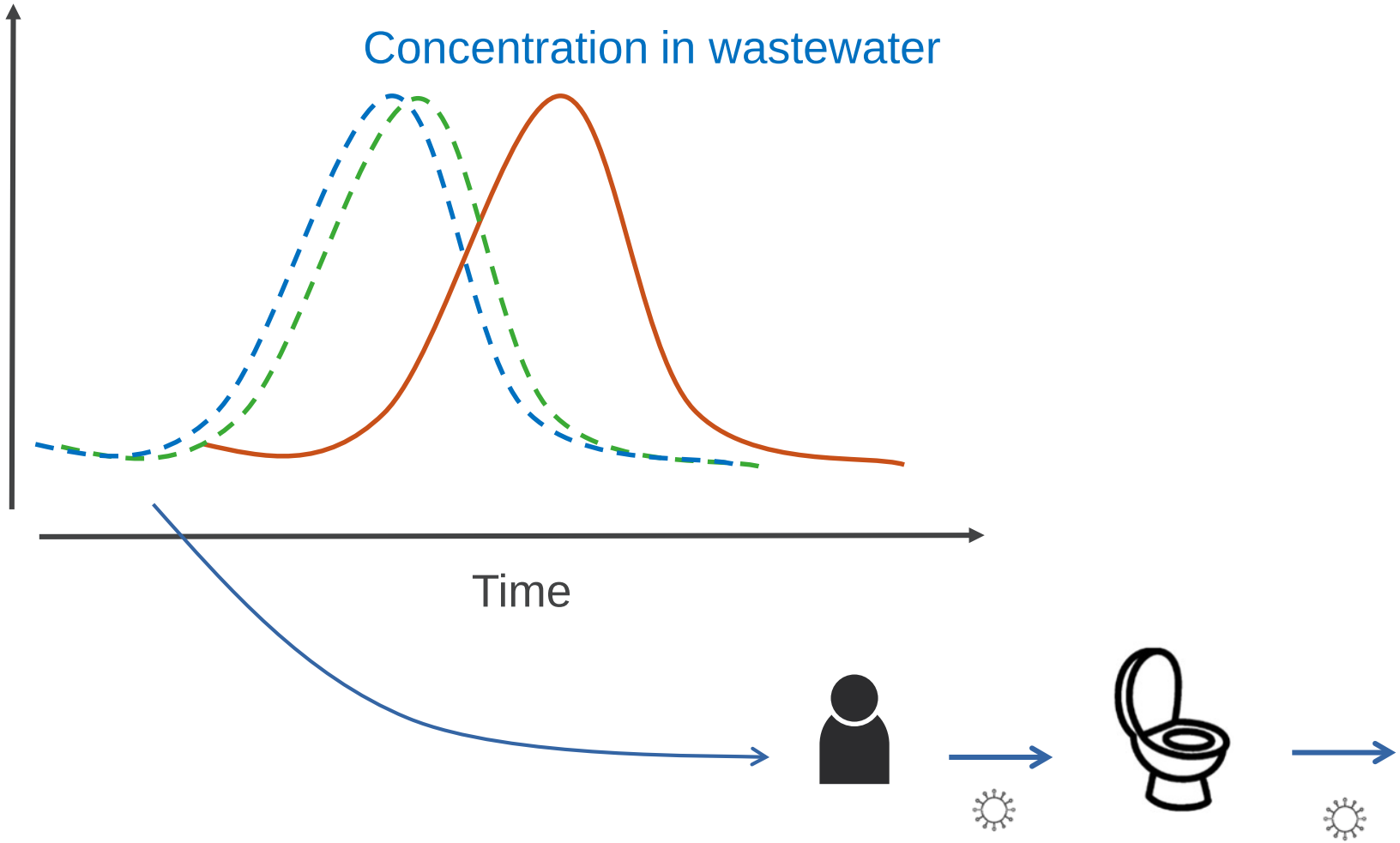
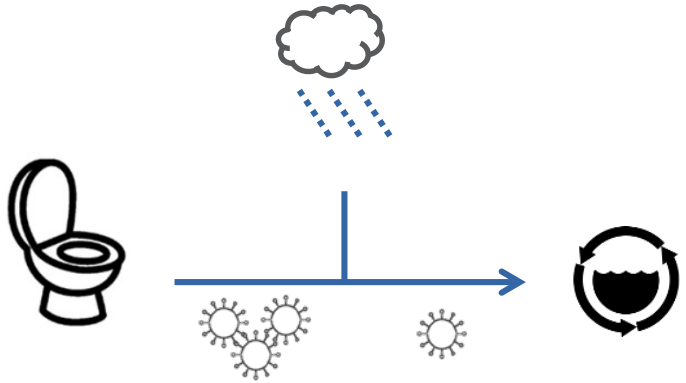


Wastewater surveillance



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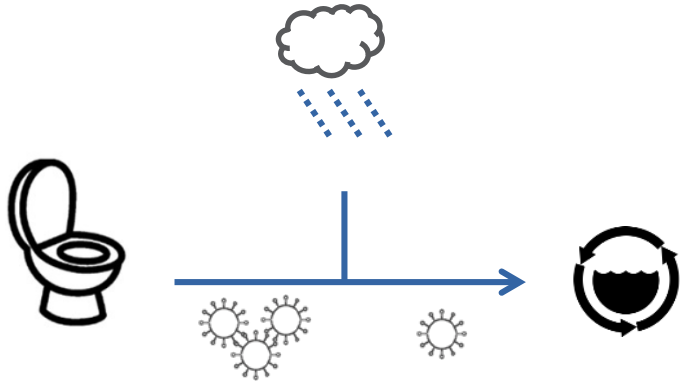
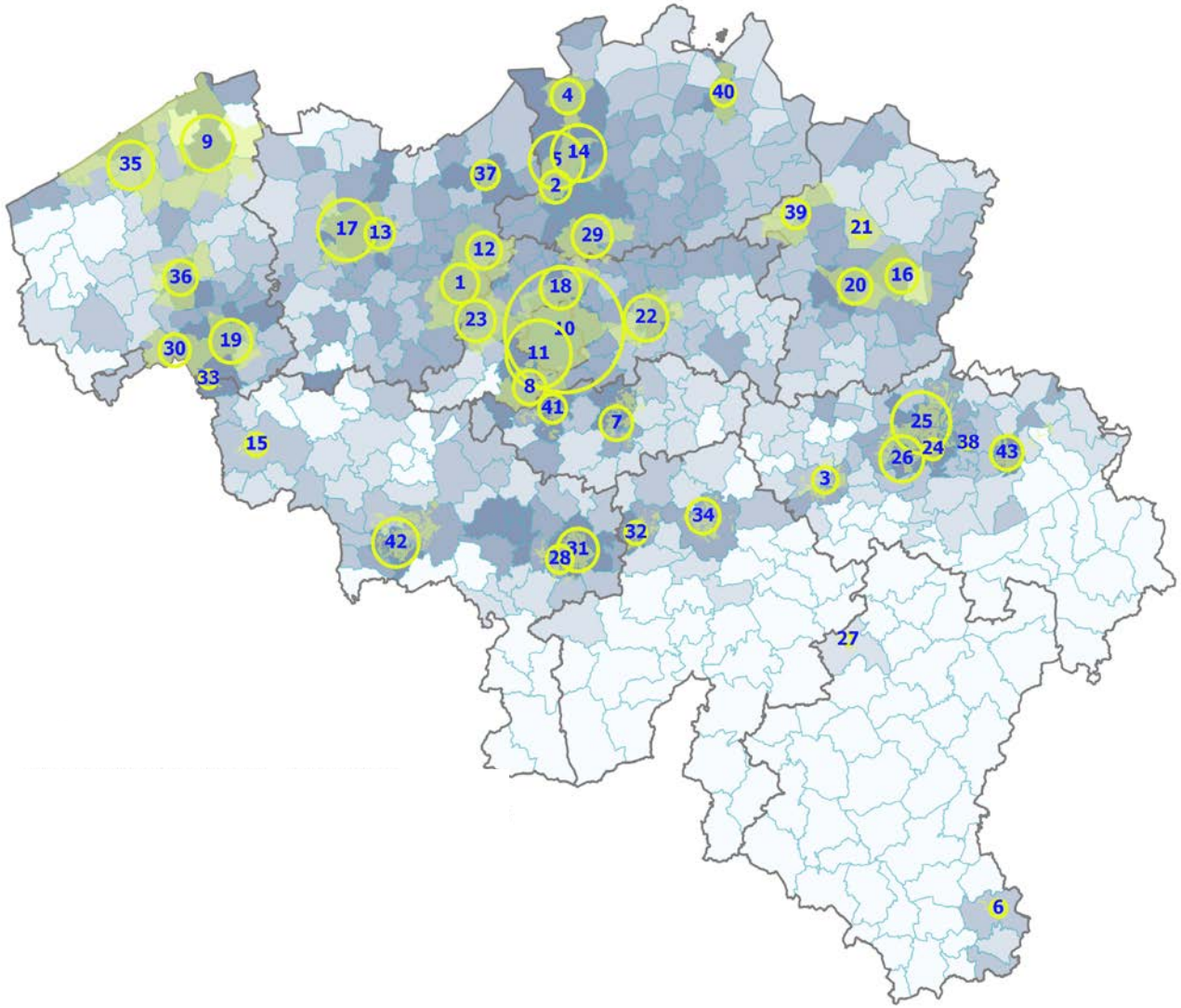
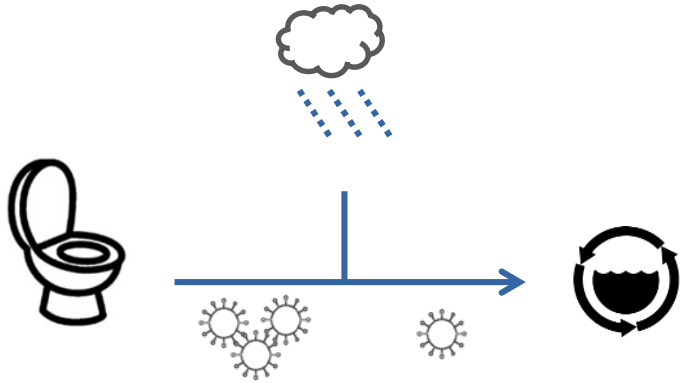


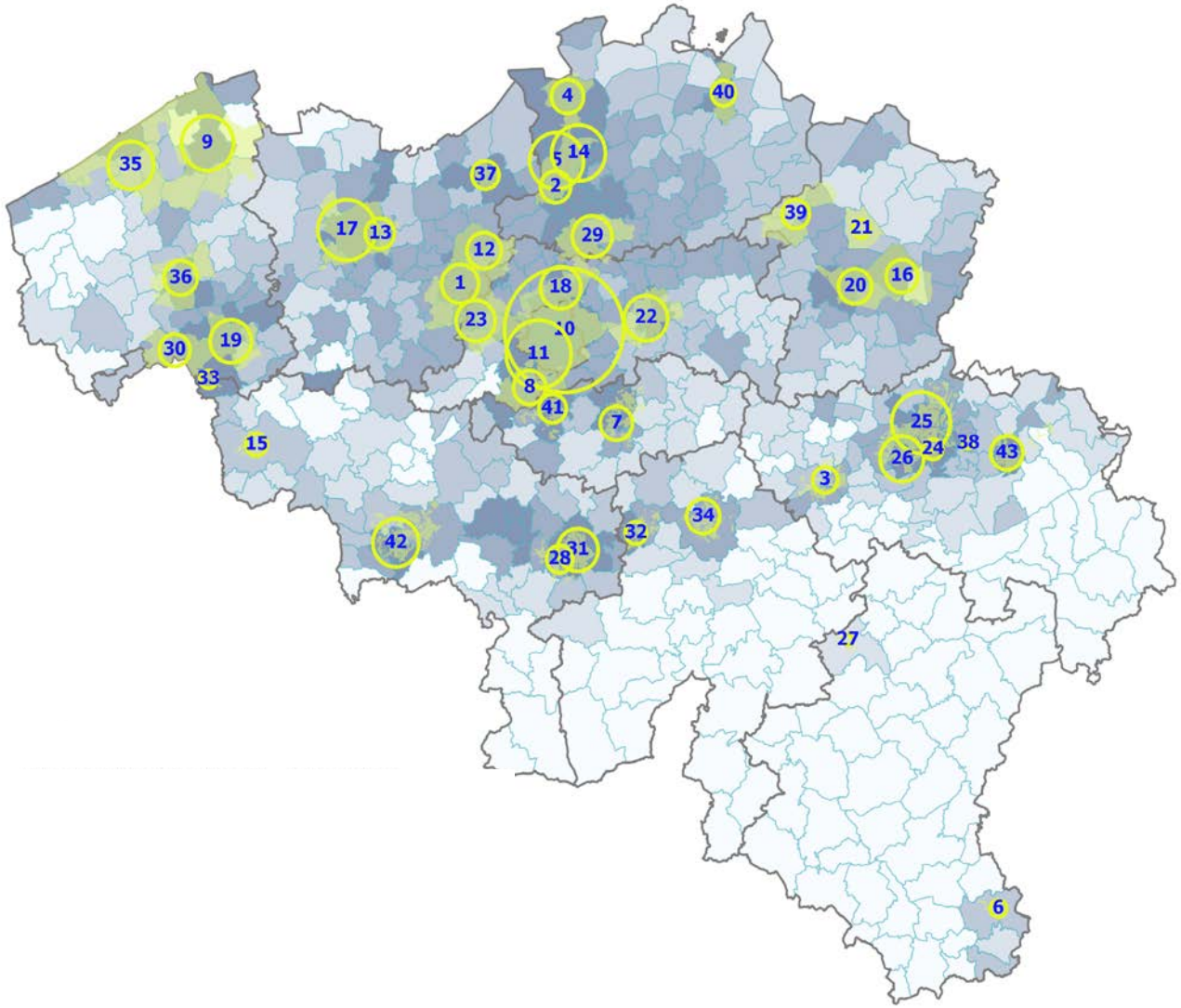
- 42 treatment plants in highly populated areas
- Covering ≈ 40% population



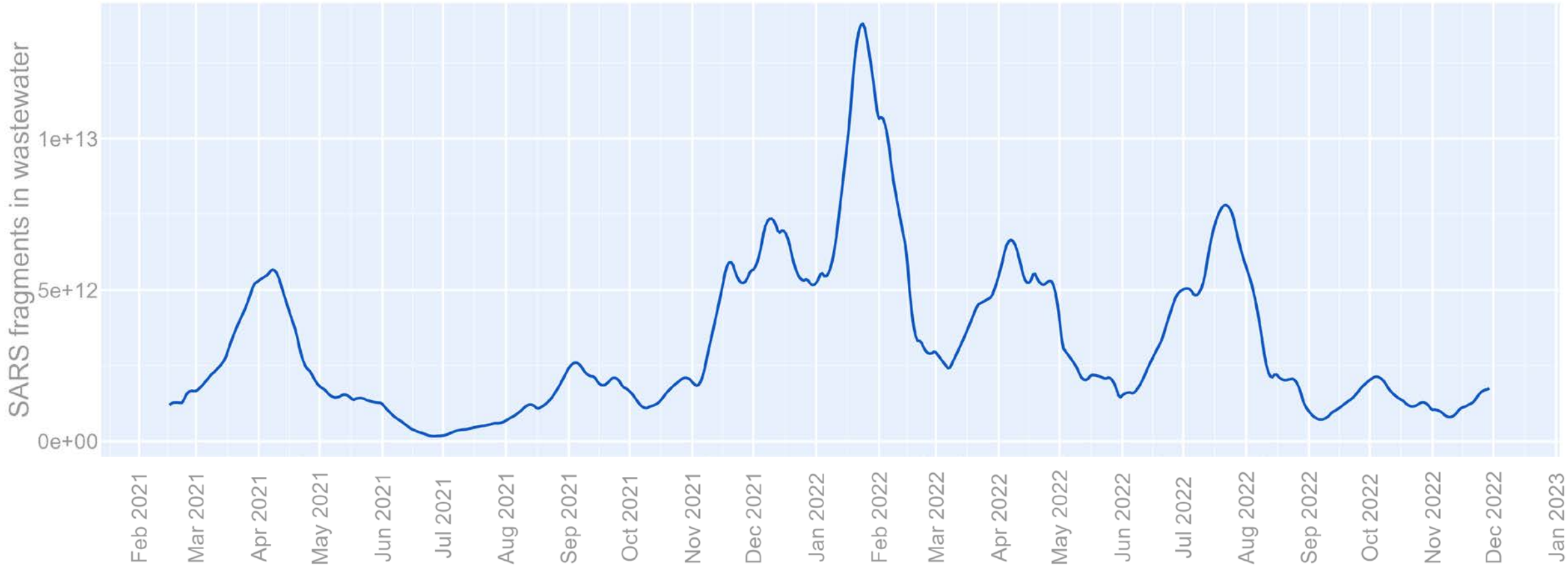
Wastewater surveillance



- 42 treatment plants in highly populated areas
- Covering ≈ 40% population
- Started in September 2020
- Sampled twice per week
- More than 8 700 samples analyzed
- Cc. corrected for the dilution impact



More info on https://epistat.sciensano.be/covid/covid-19.html


SARS fragments in wastewater
1e+13
5e+12
0e+00
Feb 2021
Mar 2021
Apr 2021
May 2021
Jun 2021
Jul 2021
Aug 2021
Sep 2021
Oct 2021
Nov 2021
Dec 2021
Jan 2022
Feb 2022
Mar 2022
Apr 2022
May 2022
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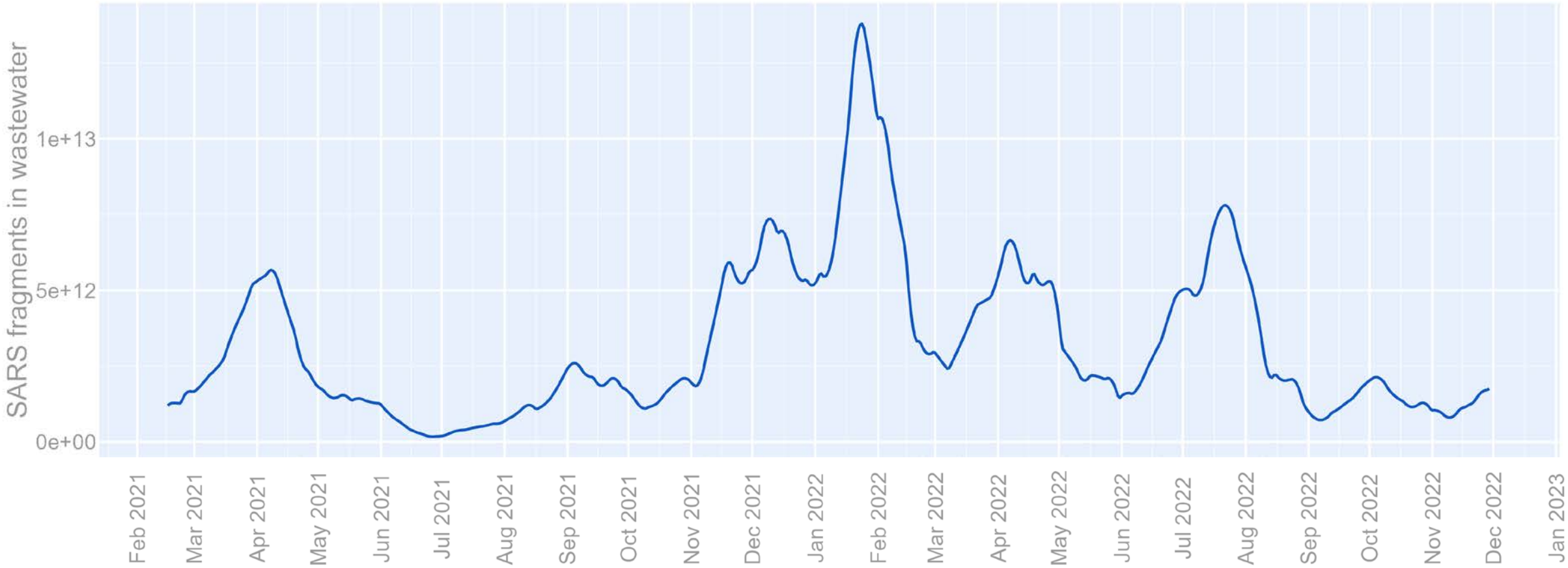
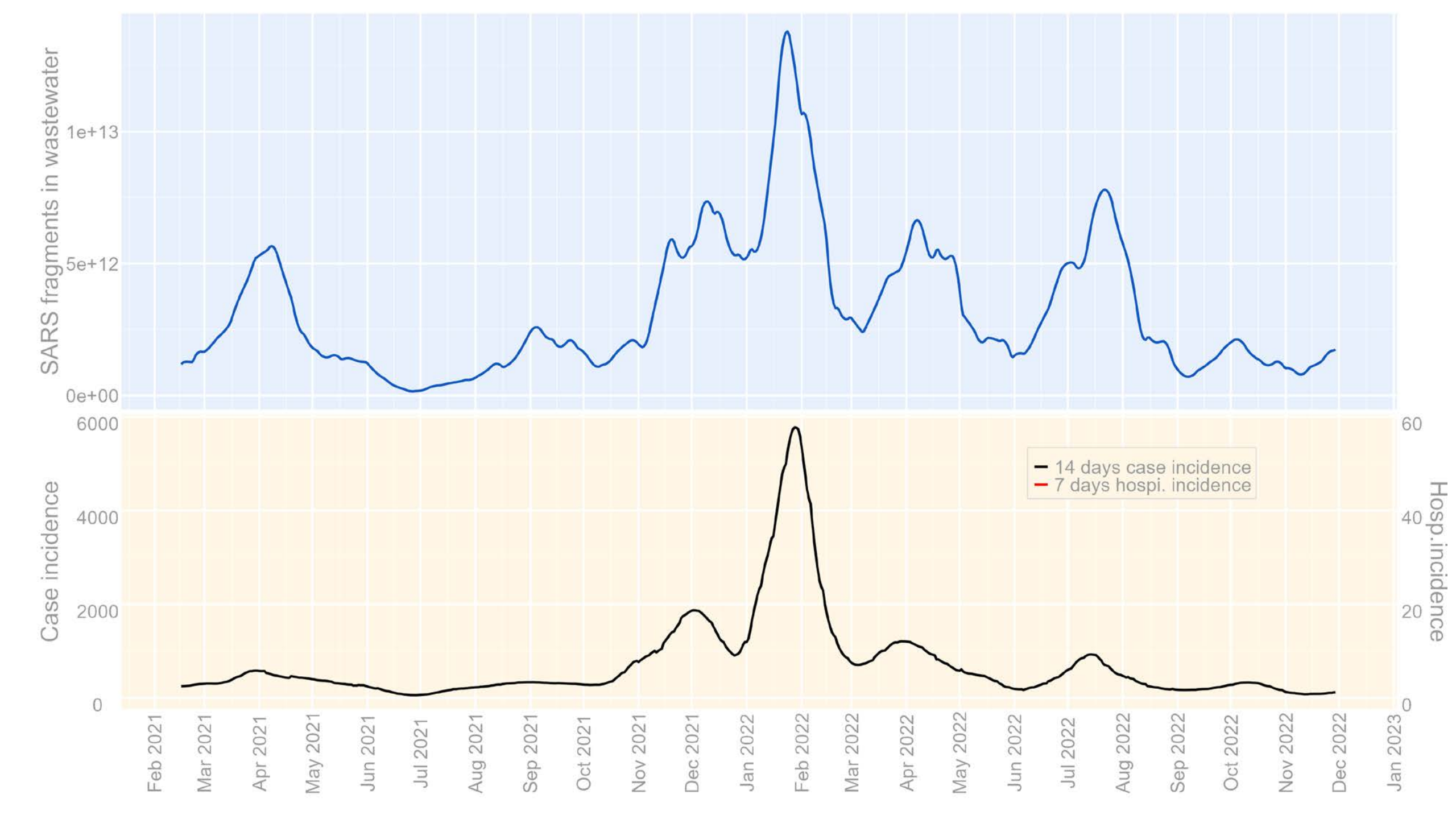


If you used a toilet while being infected by COVID-19,

there is 40% chance you contributed


SARS fragments in wastewater
1e+13
5e+12
0e+00
Case incidence
6000
4000
2000
0
Hosp.incidence
60
40
20
0
14 days case incidence
7 days hospi. incidence
Feb 2021
Mar 2021
Apr 2021
May 2021
Jun 2021
Jul 2021
Aug 2021
Sep 2021
Oct 2021
Nov 2021
Dec 2021
Jan 2022
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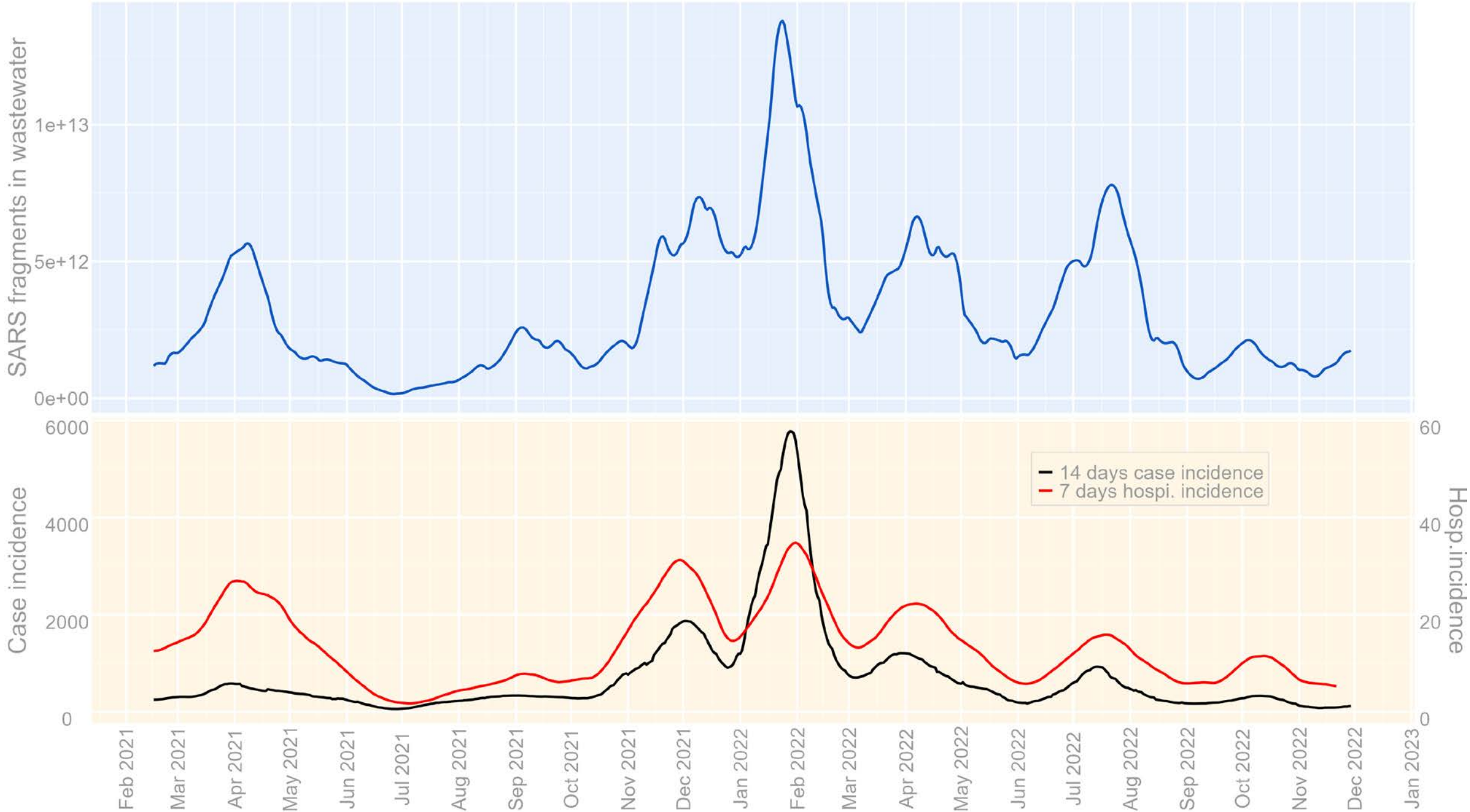
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Case incidence
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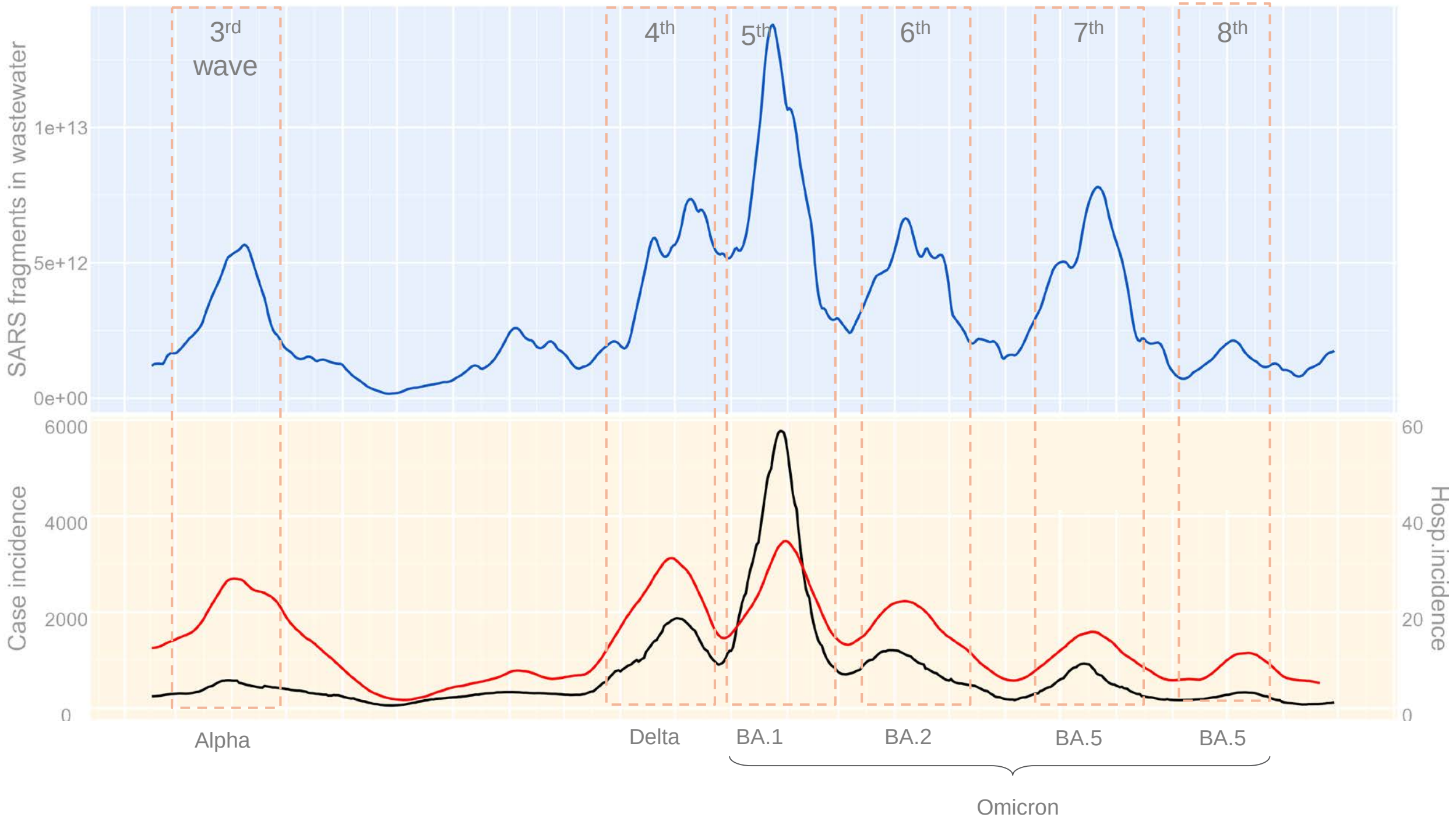
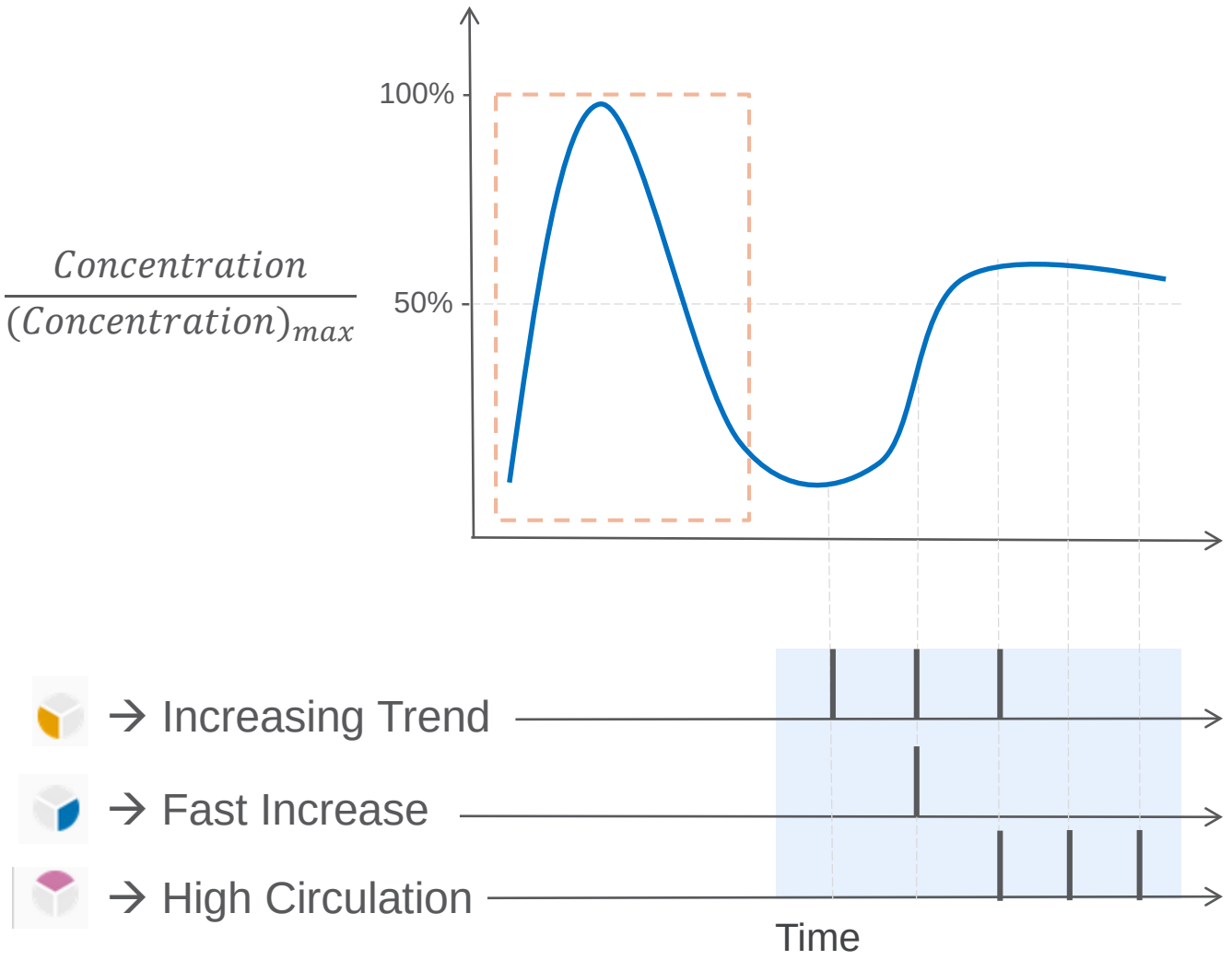

3rd wave
4th
5th
6th
7th
8th
SARS fragments in wastewater
1e+13
5e+12
0e+00
Case incidence
6000
4000
2000
0
Hosp.incidence
60
40
20
0
Alpha
Delta
BA.1
BA.2
BA.5
BA.5
Omicron

Covid-19 surveillance

- Wastewater indicators



Covid-19 surveillance

- Wastewater indicators

Weekly report accessible on https://covid-19.sciensano.be/nl/covid-19-epidemiologische-situatie

Covid-19 surveillance

- Decision procedure of measures

Existing surveillances

- General practitioner
- Case-based
- Nursing home
- Hospitalization
- Mortality
- Vaccination
- Wastewater

Risk Assessment Group

gives advice

→

Risk Management Group

takes the decision

Achievements

- Cover a stable population
- Cover a large population
- Analytical method is stable
- Resurgences were detected
- Peaks were detected

Challenges

- Contact tracing not possible
- Definition of alert levels
- Recent surveillance (R&D)

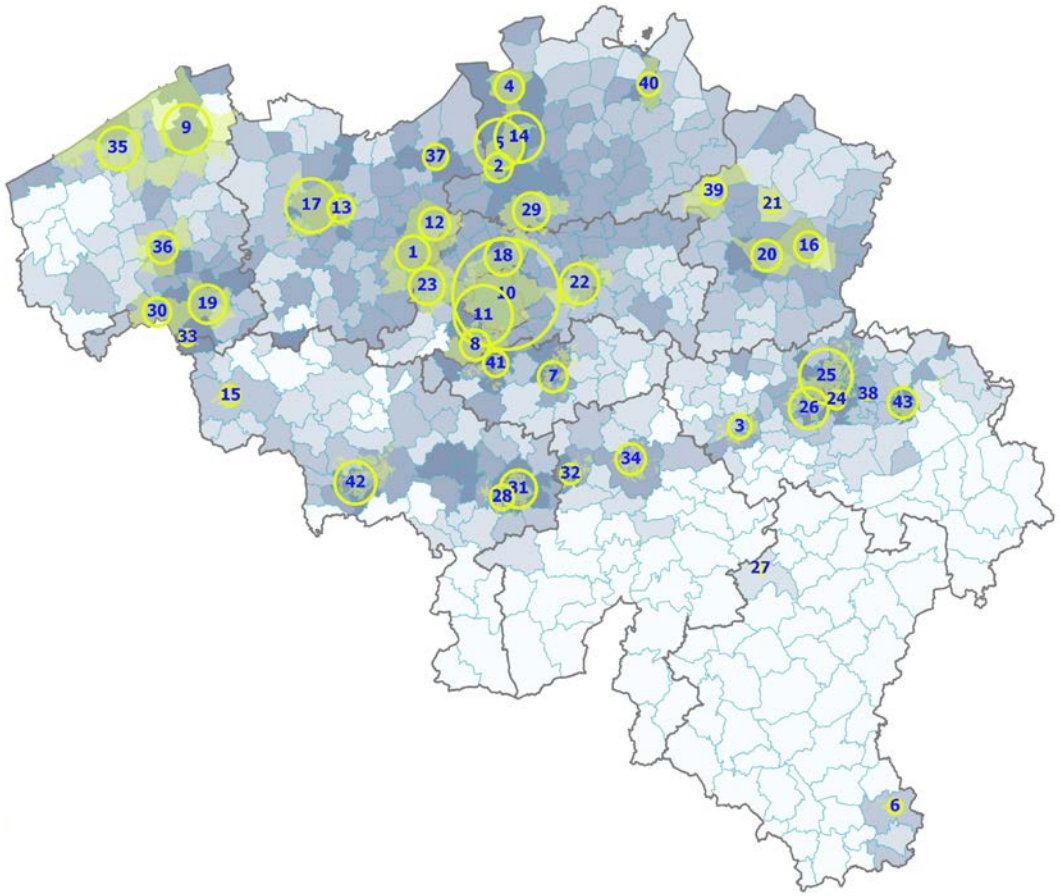
We showed that wastewater-based epidemiology works for COVID-19

It can now be extended to

- Polio
- Antimicrobial resistance (AMR)

Also possible to

- Klebsiella bacteria
- Obesity markers



Contact

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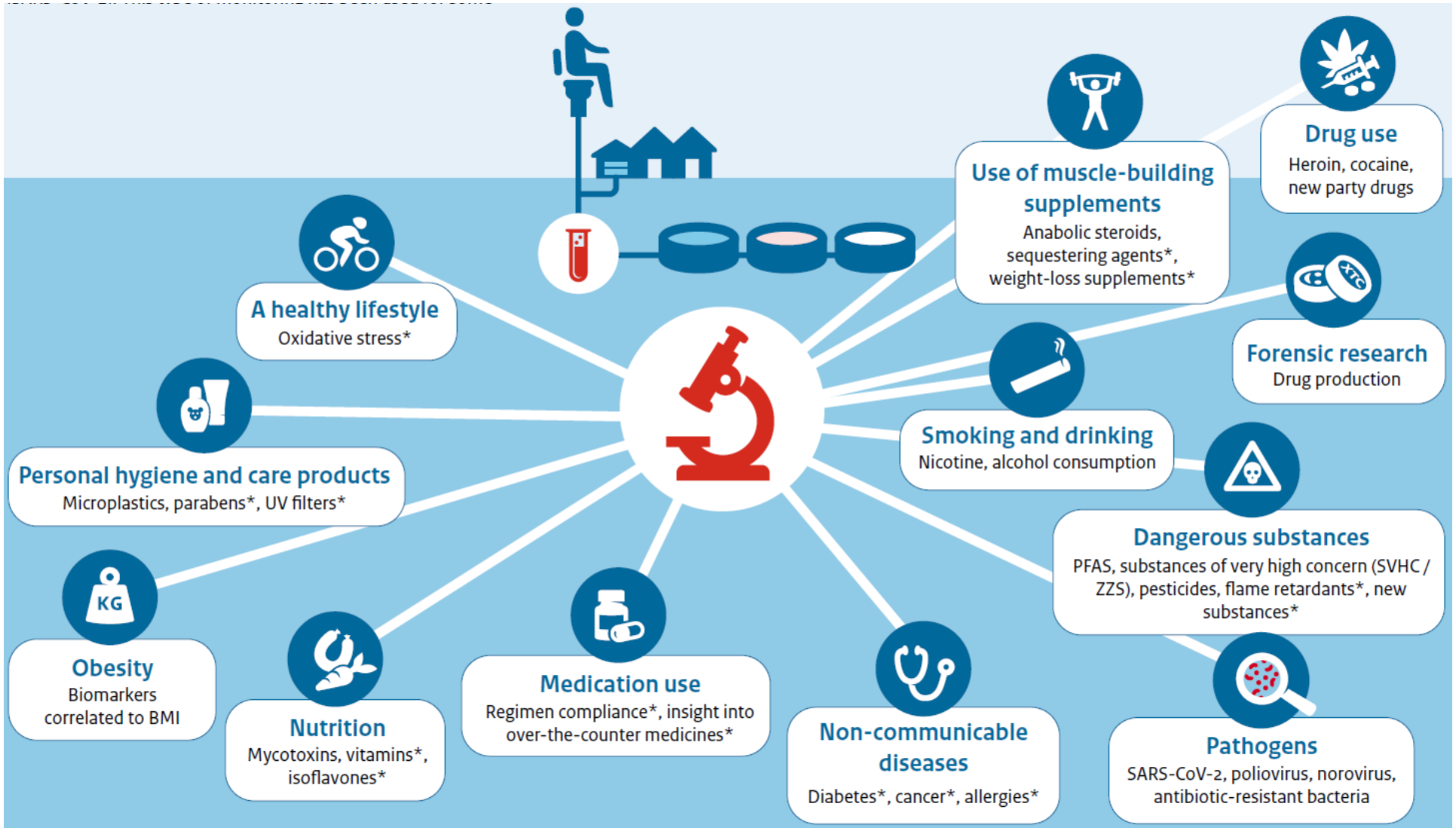
Perspectives



Reprinted from RIVM, Netherlands

Achievements	Challenges	Future developments
- Stable population covered - Large population covered - Stable analytical method - Detection of resurgence - Detection of waves	- Contact tracing not possible - Definition of alert levels - Recent surveillance (R&D)	- Impact study of mobility - Extention to other public treats