National SARS-CoV-2 Wastewater Surveillance Programme

Week 42 2021 (17/10/2021—23/10/2021)

Report prepared on 28/10/2021

Background

People with COVID-19/SARS-CoV-2 infection can shed the virus in their stool, which can then be detected in wastewater, making environmental surveillance of wastewater a feasible means to monitor the circulation of SARS-CoV-2, the virus that causes COVID-19 disease, in the population.

The National SARS-CoV-2 Wastewater Surveillance Programme (NWSP) has been established through a partnership with Irish Water, the National Virus Reference Laboratory (NVRL), University College Dublin (UCD), the HSE Health Protection Surveillance Centre (HPSC) and Health Intelligence Unit (HIU). Samples from 68 wastewater catchment areas across Ireland are taken on a weekly basis and analysed for the presence of SARS-CoV-2. The wastewater catchment area of Ringsend in Dublin is sampled twice a week given the size of the population it captures. These 68 wastewater catchment areas (see Figure 2) cover 80% of the population connected to public wastewater treatment facilities.

The NWSP is an additional tool in Ireland's response to COVID-19/ SARS-CoV-2. The NWSP aims to complement our case-based surveillance systems (i.e. monitoring the number of people testing positive or presenting to a healthcare provider with symptoms) through acting as an early warning system for the circulation, or an increase in the circulation, of SARS-CoV-2 in a wastewater catchment area.

Please note that stool or wastewater are not recognised sources of transmission for SARS-CoV-2. Standard hygiene measures should be used after using the toilet. Guidance from the WHO for water and sanitation providers recommends standard best practices, including PPE for those working in proximity to wastewater, be followed.

Summary of results from week 42, 2021

In week 42[1], 2021 SARS-CoV-2 was detected in wastewater samples from the 67 wastewater catchment areas analysed (n=67). These results are in keeping with the high incidence rate of COVID-19 currently being seen throughout Ireland.

Please read 'Data uses' and 'Data limitations and uncertainties' in the technical notes prior to making any interpretation of the data.

[1] Dates of epidemiological weeks are available in the technical notes and at: https://www.hpsc.ie/notifiablediseases/resources/epidemiologicalweeks/

Overview of SARS-CoV-2 detection in wastewater in Ireland

Results are presented as the numerical value of the concentration of SARS-CoV-2 in the wastewater sample and as a descriptive category. The descriptive categories used are 'positive' when SARS-CoV-2 RNA was detected and could be quantified; 'weak positive' when SARS-CoV-2 RNA was detected but was below the quantification limit (BQL); 'undetected' when the numerical value was below the detection limit (BDL); and 'unavailable' if a result was not available because either a sample was not received or could not be fully analysed e.g. if flow data were not available. Please see the glossary and technical notes for further explanations.

In week 42[1], 2021, 68 samples were received and analysed for 67 wastewater catchment areas (Ringsend catchment area served by Ringsend wastewater treatment plant is sampled twice a week). SARS-CoV-2 RNA was detected in samples from all 67 wastewater catchment areas. A sample was not received from the Portarlington wastewater catchment area in week 42.

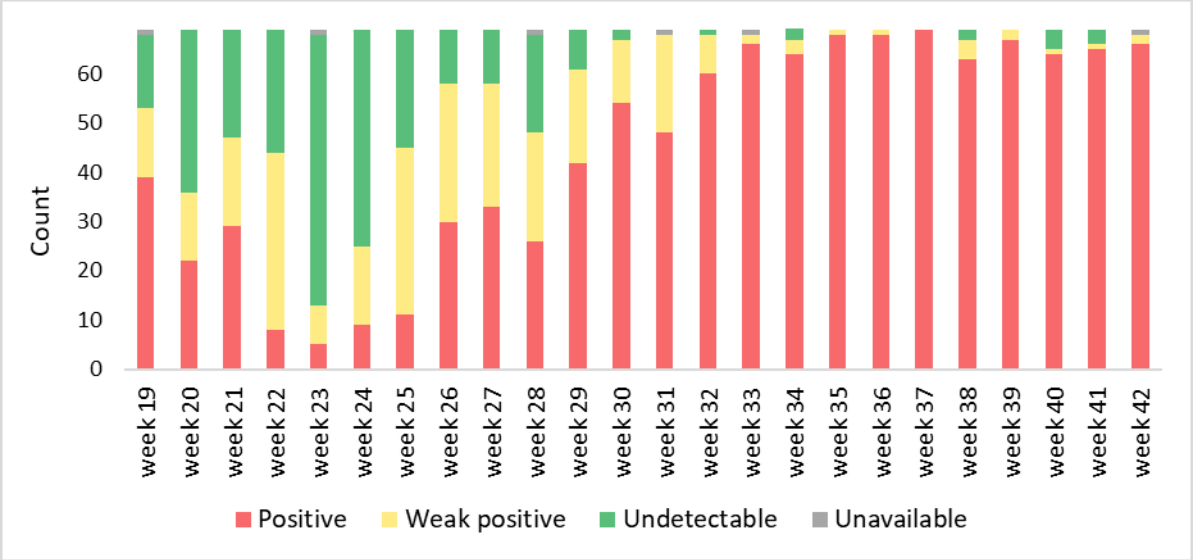

Figure 1. SARS-CoV-2 detection categories in Ireland by week, NWSP, weeks 19—42, 2021
**Samples with an undetected result may have SARS-CoV-2 present but the amount was too low to be detected by the test. It does not mean that SARS-CoV-2 is not circulating in the wastewater catchment area of the Wastewater treatment plant (WWTP).*

Table 1 and Figures 1 and 2 summarise the results from wastewater samples taken during week 42. Table 2a summarises the results by category for each wastewater catchment area during weeks 19—42, 2021 for all NWSP catchment areas except Ringsend. Results for the Ringsend catchment area is summarised separately in Table 2b as samples are taken at Ringsend biweekly.

Figure 3 summarises the SARS-CoV-2 RNA levels and 3 week moving average of those levels by wastewater catchment area each week since the start of the NWSP in week 19. Figure 4 focuses on data from the last 8 weeks.

Please note that wastewater data from different wastewater catchment areas should not be directly compared. All data are subject to ongoing validation.

Table 1. National Wastewater Surveillance Programme sampling results by wastewater catchment area, week 42, 2021

County	Wastewater catchment area	Sample type	Sample date	Result category^
Carlow	Carlow	Complete (Composite)	19/10/2021	Positive*
	Tullow	Complete (Composite)	19/10/2021	Positive*
Cavan	Cavan	Complete (Composite)	18/10/2021	Positive
	Virginia	Complete (Composite)	18/10/2021	Positive
Clare	Ennis North	Complete (Composite)	17/10/2021	Positive
	Shannon	Complete (Composite)	17/10/2021	Positive
Cork	Ballincollig	Complete (Composite)	18/10/2021	Positive
	Clonakilty	Complete (Composite)	18/10/2021	Positive
	Cork City	Complete (Composite)	18/10/2021	Positive
	Cork Lower Harbour	Complete (Composite)	18/10/2021	Positive
	Fermoy	Complete (Composite)	18/10/2021	Positive*
	Mallow	Complete (Composite)	18/10/2021	Positive
	Midleton	Complete (Composite)	18/10/2021	Weak positive
	Youghal	Complete (Composite)	17/10/2021	Weak positive
Donegal	Buncrana	Complete (Composite)	19/10/2021	Positive
	Letterkenny	Complete (Composite)	19/10/2021	Positive*
Dublin	Balbriggan	Complete (Composite)	18/10/2021	Positive
	Malahide	Grab	18/10/2021	Positive
	Portrane Donabate	Complete (Composite)	18/10/2021	Positive
	Ringsend	Complete (Composite)	17/10/2021	Positive*
	Ringsend	Complete (Composite)	20/10/2021	Positive*
	Shanganagh	Complete (Composite)	18/10/2021	Positive
	Swords	Grab	18/10/2021	Positive
Galway	Galway	Complete (Composite)	17/10/2021	Positive
	Tuam	Complete (Composite)	17/10/2021	Positive
Kerry	Killarney	Complete (Composite)	18/10/2021	Positive
	Tralee	Complete (Composite)	18/10/2021	Positive
Kildare	Athy	Complete (Composite)	19/10/2021	Positive
	Kildare	Complete (Composite)	19/10/2021	Positive
	Leixlip	Complete (Composite)	19/10/2021	Positive
	Osberstown	Complete (Composite)	19/10/2021	Positive
Kilkenny	Kilkenny	Complete (Composite)	17/10/2021	Positive
	Thomastown	Complete (Composite)	17/10/2021	Positive
Laois	Portarlington			No sample/not analysed
	Portlaoise	Complete (Composit)	17/10/2021	Positive
Leitrim	Carrick on Shannon	Complete (Composite)	19/10/2021	Positive
	Manorhamilton	Complete (Composite)	19/10/2021	Positive
Limerick	Castletroy	Complete (Composite)	18/10/2021	Positive
	Limerick City	Complete (Composite)	18/10/2021	Positive
Longford	Edgeworthstown	Complete (Composite)	19/10/2021	Positive*
	Longford	Incomplete (Composite)	18/10/2021	Positive
Louth	Drogheda	Complete (Composite)	18/10/2021	Positive
	Dundalk	Complete (Composite)	18/10/2021	Positive
Mayo	Ballina	Unknown	18/10/2021	Positive*
	Castlebar	Complete (Composite)	17/10/2021	Positive

Table 1(continued). National Wastewater Surveillance Programme sampling results by wastewater catchment area, week 42, 2021

County	Wastewater catchment area	Sample type	Sample date	Result category^
Meath	Navan	Grab	18/10/2021	Positive
	Trim	Complete (Composite)	19/10/2021	Positive*
Monaghan	Carrickmacross	Complete (Composite)	18/10/2021	Positive
	Monaghan	Complete (Composite)	18/10/2021	Positive
Offaly	Birr	Complete (Composite)	17/10/2021	Positive
	Tullamore	Complete (Composite)	17/10/2021	Positive*
Roscommon	Monksland	Complete (Composite)	18/10/2021	Positive*
	Roscommon	Complete (Composite)	18/10/2021	Positive
Sligo	Enniscrone	Unknown	17/10/2021	Positive
	Sligo	Unknown	19/10/2021	Positive
Tipperary	Clonmel	Unknown	18/10/2021	Positive*
	Nenagh	Unknown	18/10/2021	Positive
	Roscrea	Complete (Composite)	18/10/2021	Positive
	Thurles	Unknown	18/10/2021	Positive
Waterford	Dungarvan	Complete (Composite)	17/10/2021	Positive
	Tramore	Complete (Composite)	17/10/2021	Positive
	Waterford	Complete (Composite)	17/10/2021	Positive*
Westmeath	Athlone	Complete (Composite)	17/10/2021	Positive
	Mullingar	Complete (Composite)	19/10/2021	Positive
Wexford	Courtown Gorey	Complete (Composite)	19/10/2021	Positive
	Enniscorthy	Complete (Composite)	17/10/2021	Positive
	Wexford	Complete (Composite)	17/10/2021	Positive
Wicklow	Greystones	Complete (Composite)	19/10/2021	Positive
	Wicklow	Complete (Composite)	19/10/2021	Positive

^ Samples with an 'undetectable' result may have SARS-CoV-2 present but the amount was too low to be detected by the test. It does not mean that SARS-CoV-2 is not circulating in the wastewater catchment area.

* Flow rate was not available at time of reporting, the average 2020 flow rate for the wastewater plant is used to calculate result.

Table 2a. SARS-CoV-2 detections in wastewater samples by wastewater catchment area and week, NWSP, week 19 to week 42, 2021

Positive | Weak positive | Undetected* | Unavailable

Dots indicate the result was obtained using average flow data.

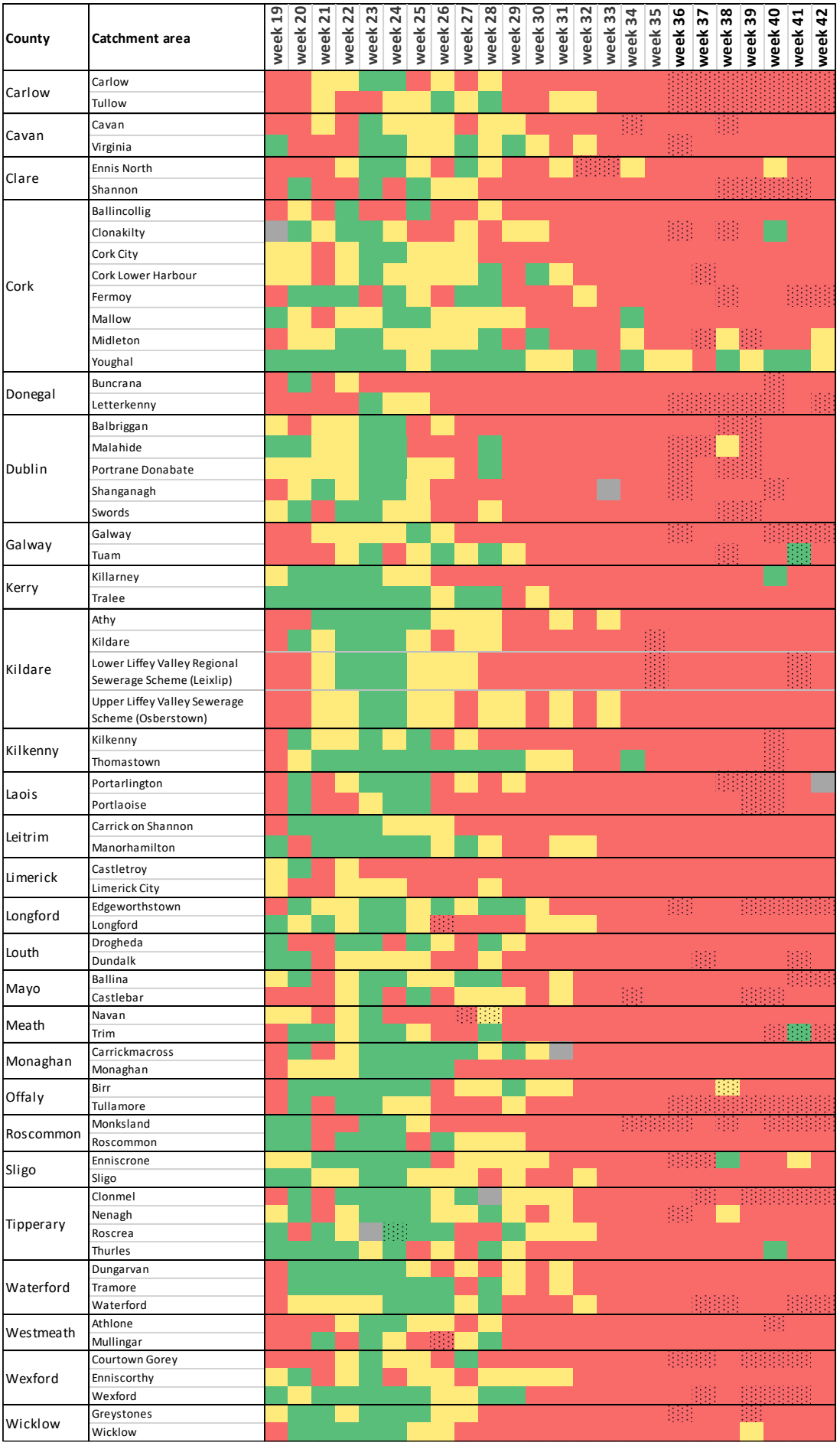

Table 2b. Biweekly results for SARS-CoV-2 detections in the Ringsend WWTP, week 19 to week 42, 2021

Week	Specimen date	Result category	Result category
19	09/05/2021		Positive
	12/05/2021		Positive
20	16/05/2021		Positive
	19/05/2021		Positive
21	23/05/2021		Weak positive
	26/05/2021		Undetectable
22	30/05/2021		Weak positive
	02/06/2021		Weak positive
23	07/06/2021		Weak positive
	09/06/2021		Undetectable
24	13/06/2021		Undetectable
	16/06/2021		Undetectable
25	20/06/2021		Weak positive
	23/06/2021		Weak positive
26	27/06/2021		Positive
	30/06/2021		Positive
27	04/07/2021		Positive
	07/07/2021		Positive
28	11/07/2021		Positive
	14/07/2021		Weak positive
29	18/07/2021		Positive
	21/07/2021		Weak positive
30	25/07/2021		Positive
	28/07/2021		Positive
31	01/08/2021		Weak positive
	04/08/2021		Weak positive
32	08/08/2021		Positive
	11/08/2021		Positive
33	15/08/2021		Positive
	18/08/2021		Positive
34	22/08/2021		Positive
	25/08/2021		Positive
35	29/08/2021		Positive
	01/09/2021		Positive
36	05/09/2021		Positive*
	08/09/2021		Positive*
37	12/09/2021		Positive*
	15/09/2021		Positive*
38	19/09/2021		Positive*
	22/09/2021		Positive*
39	26/09/2021		Positive*
	29/09/2021		Positive*
40	03/10/2021		Positive*
	06/10/2021		Positive*
41	10/10/2021		Positive*
	13/10/2021		Positive*
42	17/10/2021		Positive*
	20/10/2021		Positive*

^Samples with an 'undetectable' result may have SARS-CoV-2 present but the amount was too low to be detected by the test. It does not mean that SARS-CoV-2 is not circulating in the wastewater catchment area.

* Flow rate was not available at time of reporting, the average 2020 flow rate for the wastewater plant is used to calculate result

Figure 2. Map showing the approximate location of wastewater catchment areas and results for SARS-CoV-2 detections during week 42. Results are shown as percentage change in SARS-CoV-2 RNA (GC/day) between week 41 and week 42, and whether this change is increasing or decreasing.

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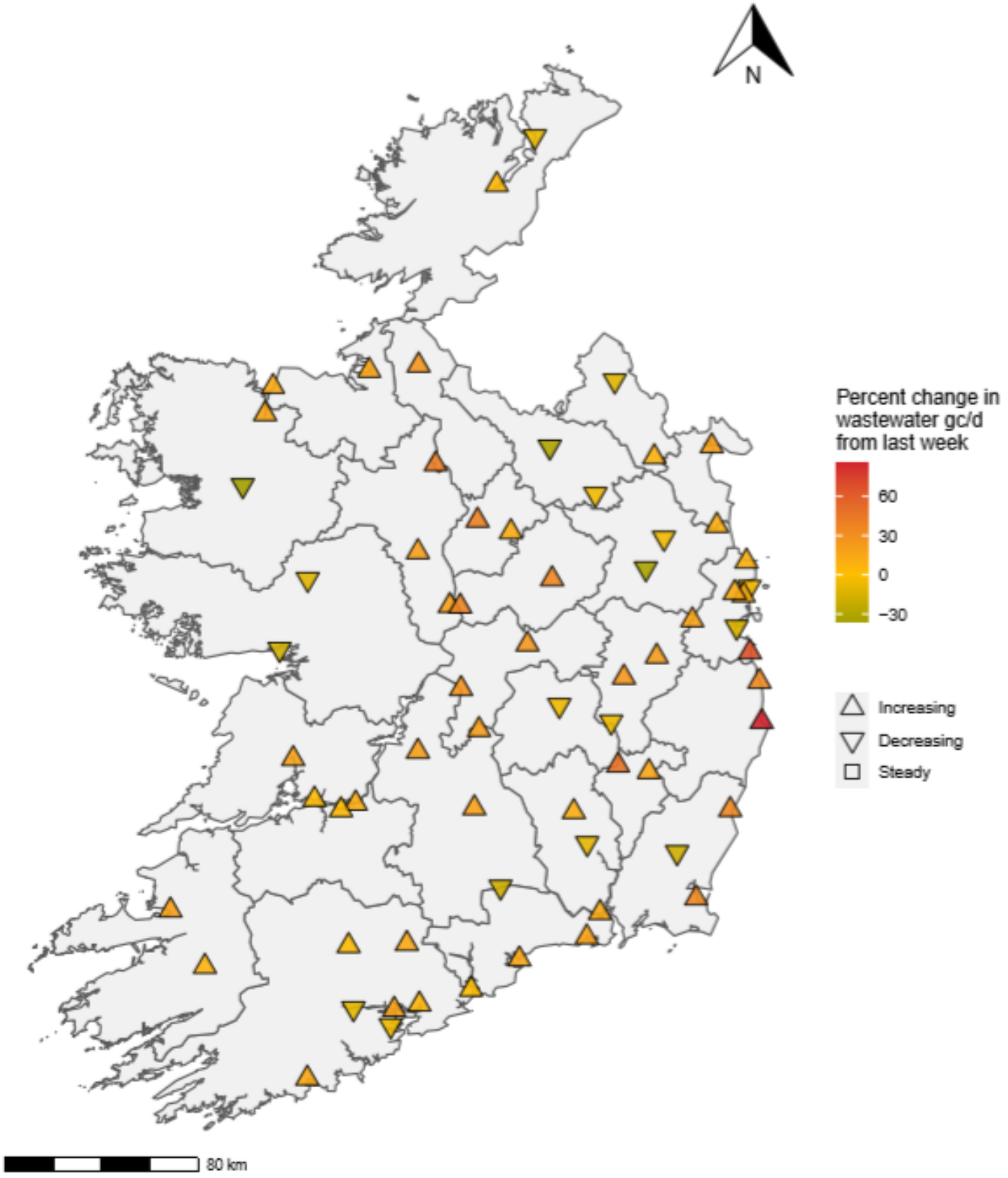

Figure 3. SARS-CoV-2 concentration by wastewater catchment area by week (grey connected line), and 3 week moving average (maroon line), NWSP, weeks 19—42, 2021

Figure 3 (continued). **SARS-CoV-2 concentration by wastewater catchment area by week (grey connected line), and 3 week moving average (maroon line), NWSP, weeks 19—42, 2021**

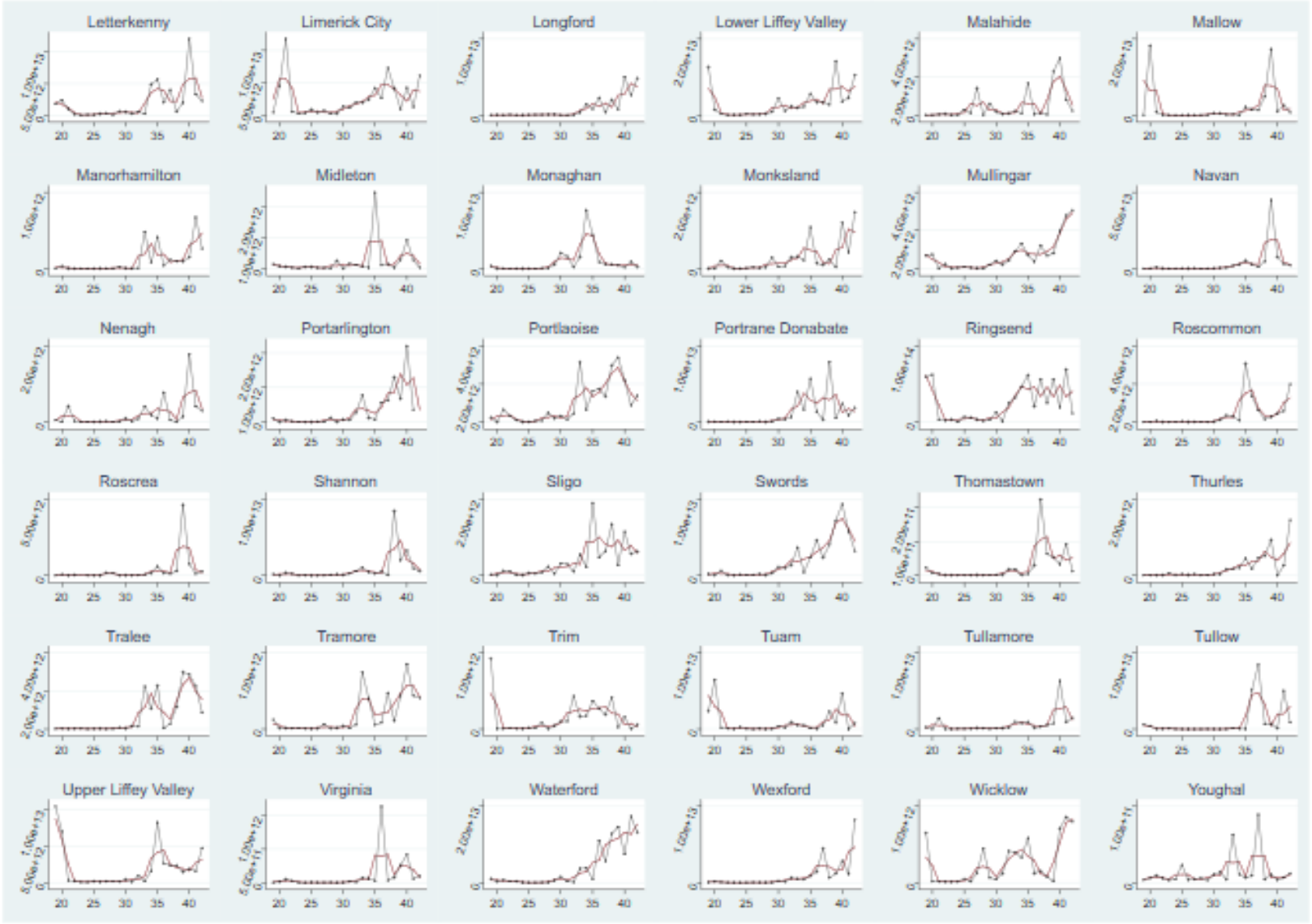

Figure 4. SARS-CoV-2 concentration by wastewater catchment area by week (grey connected line), and 3 week moving average (maroon line), NWSP, weeks 35—42, 2021

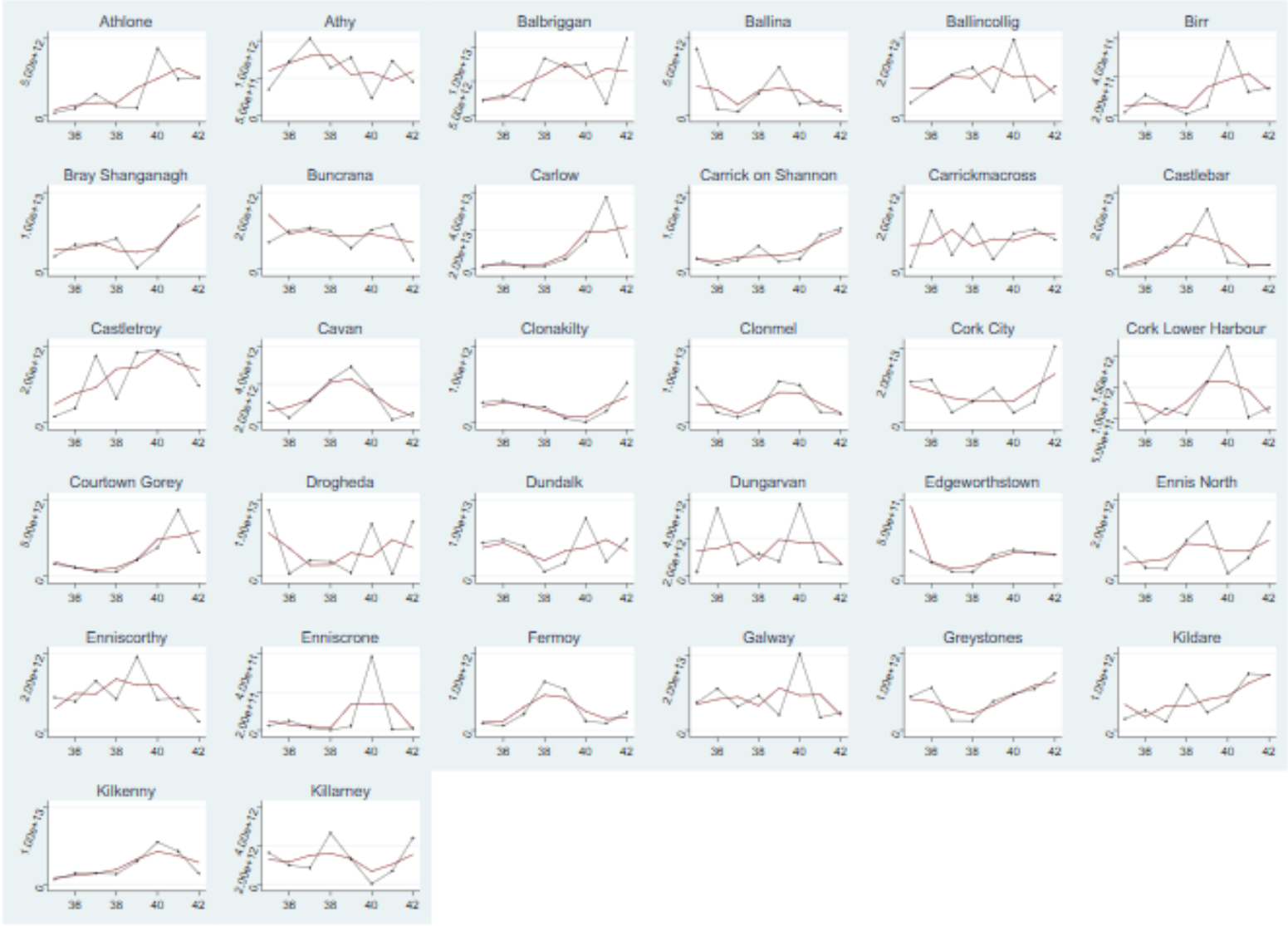

Figure 4 (continued). **SARS-CoV-2 concentration by wastewater catchment area by week (grey connected line), and 3 week moving average (maroon line), NWSP, weeks 35—42, 2021**