

Respiratory Viruses in Luxembourg (ReViLux)

Report – Sentinel Week 46 and Sequencing Update

Summary

At the end of week (2025/46), the sentinel network reported baseline epidemic activity, with **2.3%** of consultations being associated with influenza-like illness. The LNS received 39 samples from sentinel doctors for respiratory virus testing, covering all age-groups.

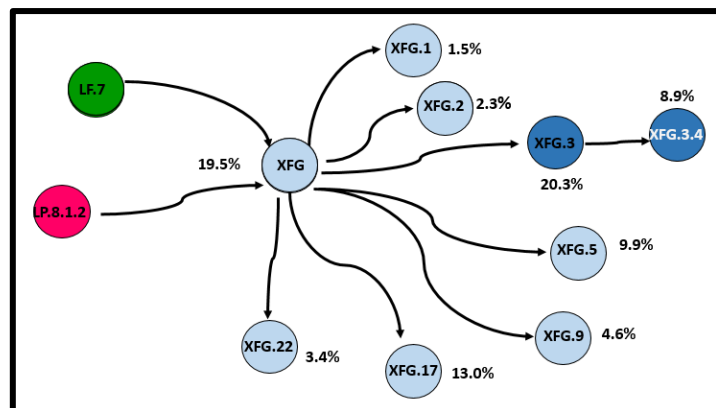
Among specimens collected during week (2025/46), the positivity rate was **28.2%** for **human rhinovirus**, **10.3%** for **RSV** and **7.7%** for **SARS-CoV-2**. Influenza A circulation remained low, with three cases of A(H3) and one case of A(H1)pdm09 detected in recent weeks.

Regarding SARS-CoV-2 genomic surveillance, several sub-lineages and recombinant lineages of JN.1 have circulated in Luxembourg over the past few months; however **XFG** and its sub-variants remain the dominant variant in Luxembourg and across Europe. During weeks 2025/41-44, the estimated distribution was **54.2%** (95% CI: 48.0 – 60.3%) for **XFG**, **29.1%** (95% CI: 23.6 – 34.9%) for **XFG.3** and **13.7%** (95% CI: 9.8 – 18.5%) for **NB.1.8.1**. Other variants circulated at low levels ($\leq 5\%$) during the same period.

Variants under monitoring

XFG is a recombinant variant derived from LF.7 and LP.8.1.2 lineages. The World Health Organisation designated XFG as Variant Under Monitoring on the 25/06/2025. In Luxembourg, XFG was first detected in March 2025 and its genetic diversity has increased over recent months. Based on samples collected (2025/41-44), XFG accounted for approximately **83%** of sequenced cases.

Recombinant XFG with distribution of sub-variants (weeks 2025/41-44)



Sentinel Surveillance Network

The Sentinel Surveillance aims at monitoring the circulating respiratory viruses, from traditional ones like Influenza to more recent ones like SARS-CoV-2, and hence underpin public health actions. The Sentinel Network is a group of general practitioners and paediatricians spread across the country. They report the weekly number of patients showing symptoms suggestive of acute respiratory infection (ARI) and influenza-like illness (ILI), and those patients are then sampled and tested for a panel of respiratory viruses. The circulation of respiratory viruses in the north hemisphere is generally monitored by seasons that go from week 40 to week 20. The period between weeks 20 and 40 is called inter-season and monitoring is done on a voluntary basis.

Clinical results

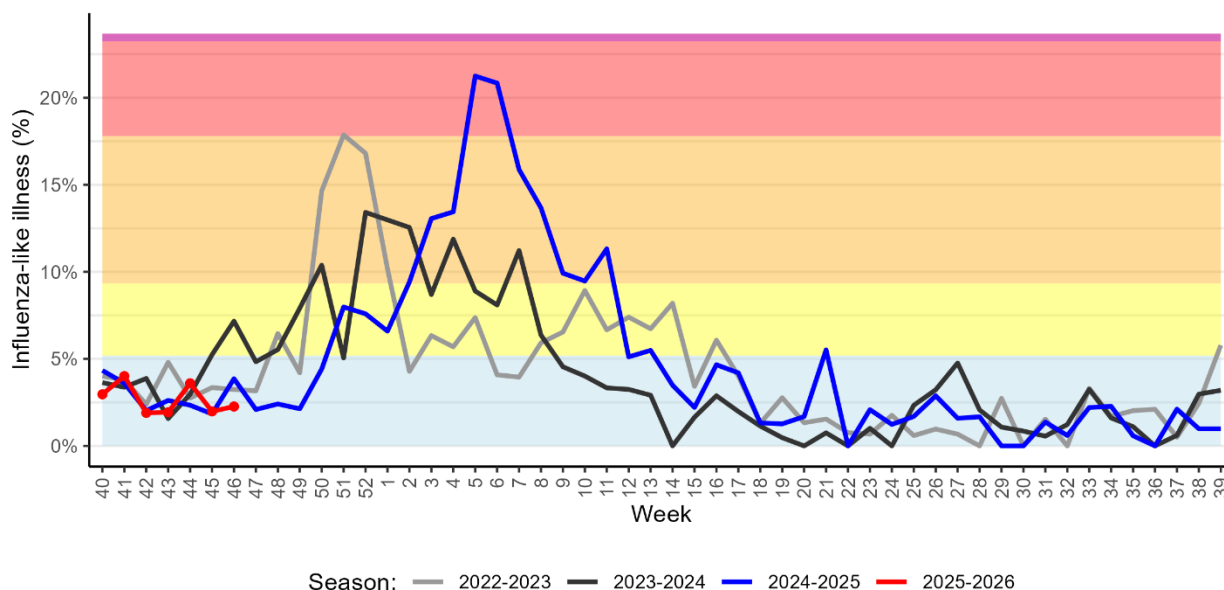
Last week (**end of week 2025/46**), **2.3%** of the consultations were reported as ILI, representing a baseline activity for Luxembourg, according to ECDC and the Moving Epidemic Method. Over the past 4 weeks, ILI rates have remained below the 5.2% threshold. Similar trends have been observed in previous seasons. The history of ILI consultations is displayed in figure 1, and a detailed summary of the number of ARI and ILI cases during the last four weeks is included in table 1.

Table 1. Syndromic surveillance over the last 4 weeks

Week	ARI		ILI		Total consultations
	N	%	N	%	
2025/43	68	14.62	9	1.94	465
2025/44	33	11.87	10	3.60	278
2025/45	26	10.32	5	1.98	252
2025/46	33	12.45	6	2.26	265

ARI: Acute Respiratory Infections; ILI: Influenza-Like Illness.

Figure 1. Percentage of patients with Influenza-like illness over the last three seasons and 2025-2026 (red); Background colours according to intensity of circulation: baseline, low, medium, high, very high.



Laboratory results

During calendar week 2025/46, the LNS received 39 samples. Of these, 41.0% (N=16) were from adults aged 18 to 64 years, followed by 28.2% (N=11) from children under 5 years. Children aged 5 to 17 years and elderly individuals accounted for 20.5% (N=8) and 10.2% (N=4) of the samples, respectively. Overall, 53.9% (N=21) were female and 46.2% (N=18) were male patients.

Respiratory viruses were detected in 21 (53.8%) of the 39 sentinel samples. The predominant pathogen was **human rhinovirus (28.2%)**, followed by **RSV (10.3%)** and **SARS-CoV-2 (7.7%)**. Over the preceding two weeks, SARS-CoV-2 remained below 10%, whereas RSV activity increased markedly following the school holidays.

Since the beginning of the season, twelve cases of RSV have been confirmed. Subtyping identified six RSV-B and five RSV- A cases. Approximately **40% of RSV** infections occurred in children **under 2 years of age**, while **30%** were reported in adults **aged 18 to 64 years**.

Influenza A circulation remained low. Among four cases detected, 75% (N=3) were subtyped as A(H3) and 25% (N=1) as A(H1)pdm09. Subtyping of the most recent case is still pending. The majority of influenza A cases (80%) were observed in adults aged 18 to 64 years.

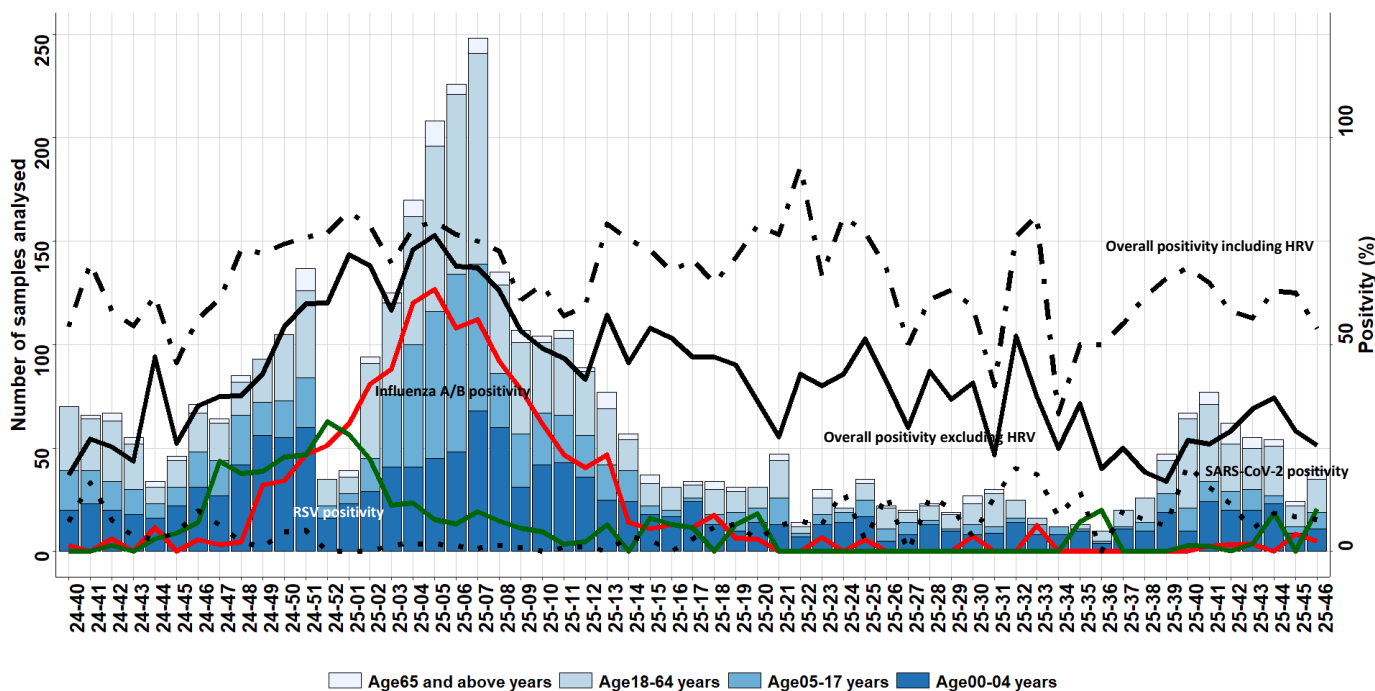
An overview of the circulating viral pathogens in the sentinel network in Luxembourg during the current and previous (inter)- season is presented in figure 2, 3 and table 2.

Table 2. Distribution of respiratory viruses detected within the Sentinel Network over the past 4 weeks compared to previous season; Results from last weeks are not all yet consolidated.

Virus	Season 2025/26					Season 2024/25		
	Positivity Rate in %							
	W43	W44	W45	W46	Total N (%)	W45	W46	Total N (%)
Human rhinovirus	30.9	35.2	34.8	28.2	144 (38.2)	34.8	31.4	720 (24.8)
Respiratory syncytial virus	1.8	9.3	0.0	10.3	12 (3.2)	4.3	7.1	287 (9.9)
SARS-CoV-2	5.5	9.3	8.3	7.7	46 (12.2)	4.3	9.9	80 (2.7)
Adenovirus	7.3	13.0	8.7	5.1	24 (6.4)	13.0	8.6	203 (7.0)
Influenzavirus A	1.8	0.0	4.2	2.5	5 (1.3)	0.0	1.4	502 (17.2)
Parainfluenzavirus	20.0	9.3	4.3	0.0	29 (7.7)	4.3	7.1	99 (3.4)
Metapneumovirus	0.0	1.9	4.3	0.0	4 (1.1)	2.2	4.3	157 (5.4)
Influenzavirus B	0.0	0.0	0.0	0.0	0 (0.0)	0.0	1.4	404 (13.9)

*Co-detection is counted once for each virus detected. Data is displayed in two-week intervals due to low case count during inter-season. All data is provisional, taking into account possible late reporting

Figure 2. Presents number of sentinel samples received per week by age-group (weeks 2024/40 to 2025/46) including overall sample positivity- including human rhinovirus (HRV, dot-dash line), excluding HRV (black line), SARS-CoV-2 (dotted line), influenza **combined** (red) and RSV (green); Secondary axis corresponds to positivity; Results from last weeks are not all yet consolidated.



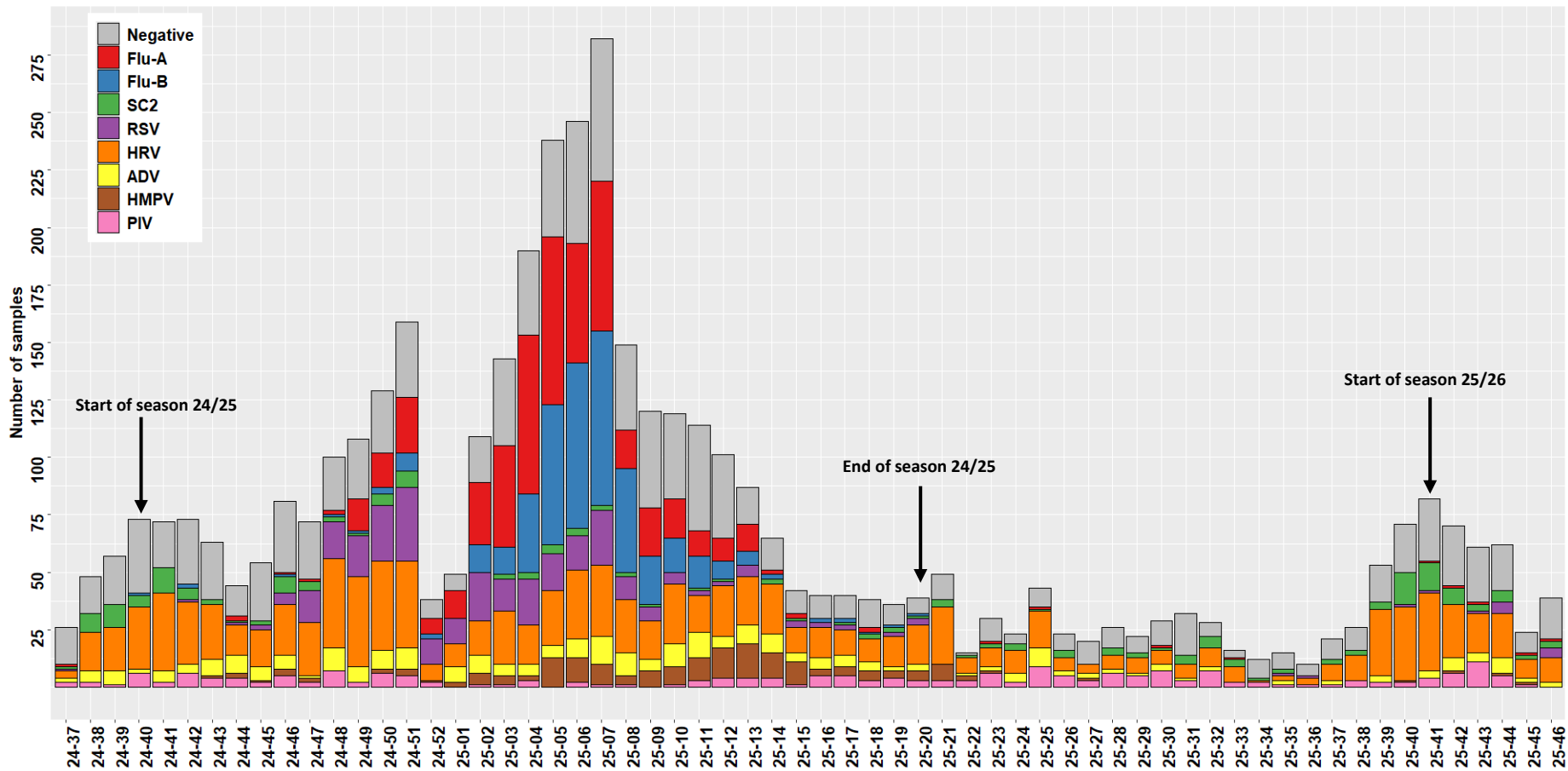


Figure 3. Circulation of respiratory viruses detected within the Sentinel Network by calendar week (seasons 24/25 and 25/26). FLU-A: influenza A; FLU-B: influenza B; PIV: parainfluenza virus; RSV: respiratory syncytial virus; ADV: adenovirus; HMPV: metapneumovirus; HRV: human rhinovirus; SC2: SARS-CoV-2; Results from last weeks are not all yet consolidated.

SARS-CoV-2 Genomic Surveillance

The LNS receives positive specimens (nasopharyngeal or oropharyngeal swabs analysed by RT-PCR) from the national network of laboratories. A selection of hospital specimens are sequenced, as well as a representative selection of community specimens. Illumina devices are used. Bioinformatic analyses are based on a standardised pipeline and lineage assignment is performed through the Pangolin software (Pangolin: 4.3.1; 1.35 mode USHER).

Sequencing activity

Of the 790 reported cases in Luxembourg, 262 samples (33.2%) were successfully sequenced. Specimen collection dates ranged from calendar weeks 41 to 44 of 2025. Among these, 40.5% (N=106) were obtained from hospital settings, while 59.5% (N=156) originated from the community. Sequencing efforts prioritized the most recent specimens and those from hospitalized patients. Any low coverage will be addressed in subsequent sequencing runs.

Variant circulation

In recent months, several SARS-CoV-2 variants have co-circulated in Luxembourg and worldwide. Multiple JN.1 sub-variants such as **NB.1.8.1**, **XFG** and **XFG.3** have emerged. All three exhibit a growth advantage over other sub-lineages from JN.1 and have been classified as variant under monitoring (XFG.3 under XFG) by the World Health Organisation.

During the past 4 weeks (2025/41-44), the estimated proportion of **XFG** and **XFG.3** were **54.2%** and **29.1%**, respectively. Combined, these two variants account for approximately **83%** of all sequenced cases in Luxembourg and have been detected across all age-groups (figure 5). In recent months, genetic diversity within XFG has increased, leading to the emergence of multiple sub-variants (figure 7). In addition, the proportion of **NB.1.8.1** remained stable (**13.7%**), suggesting limited transmission in Luxembourg. Comparable trends have been reported in other European countries. Variants that dominated earlier in the year, such as XEC or KP.3, were not detected. A summary of all circulating variants identified in the selected sample, along with variants under monitoring, is provided in table 4 and figure 6.

Between weeks 2025/41 and 2025/44, 106 (40.5%) samples from hospital laboratories and 156 (59.5%) specimens from private laboratories/ sentinel practitioners were sequenced. Among hospital patients, the majority were female (53.7%) with 70 cases (66.0%) aged over 60 years. In contrast, nearly 75% of community cases were aged 60 years or younger. The proportion of female patients in the community was slightly higher (57.7%) compared to the hospital setting.

Table 3 compares the sampling setting and the prevalence of the two dominant variants over the past four weeks. NB.1.8.1 was primarily detected in the community setting (64%) compared to the hospital setting versus (36%).

Table 3. Comparison of the two dominant sub-variants by sampling setting (weeks 2025/41-2025/44);

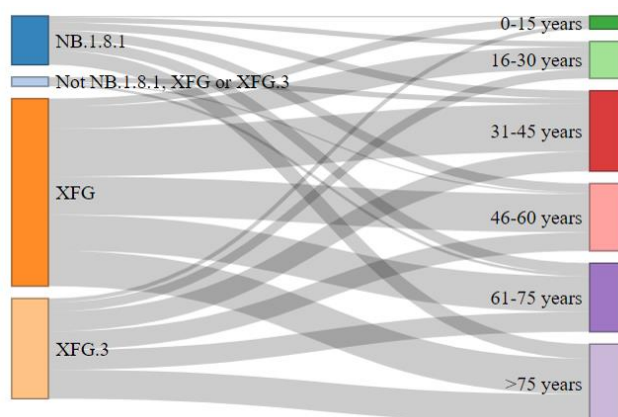
Lineage	Community			Hospital		
	Women	Men	Total	Women	Men	Total
XFG	72.6%	66.7%	70.6%	47.1%	70.7%	57.6%
XFG.3	27.4%	33.3%	29.4%	52.9%	29.3%	42.4%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4. Distribution of SARS-CoV-2 lineages detected during weeks 2025/37 to 2025/44; Previously reported cases might be updated by retrospective analysis;

JN.1 and XFG excludes sub-variants listed in table.

Lineage	First detection in Luxembourg	Under WHO monitoring	weeks 37-40 (N=273)		weeks 41-44 (N=262)	
			%	CI %	%	CI %
XFG*	13.03.2025	yes	52.4	46.3 – 58.4	54.2	48.0 – 60.3
XFG.3	22.04.2025	under XFG	31.9	26.4 – 37.8	29.1	23.6 – 34.9
NB.1.8.1	07.04.2025	yes	12.1	8.5 – 16.6	13.7	9.8 – 18.5
Other	not applicable	no	2.2	0.8 – 4.7	2.3	0.9 – 4.9
JN.1*	25.08.2023	yes	0.7	0.09 – 2.6	0.4	0.01 – 2.1
LP.8.1	05.11.2024	yes	0.7	0.09 – 2.6	0.4	0.01 – 2.1
KP.3	03.04.2024	yes	0		0	
XEC	19.07.2024	yes	0		0	

Figure 5. Distribution of XFG, XFG.3, NB.1.8.1 and Others detected during weeks 2025/41 to 2025/44 (N=262) by age groups; Other variants are grouped into one class (“Not NB.1.8.1, XFG or XFG.3”)-due to low frequency.



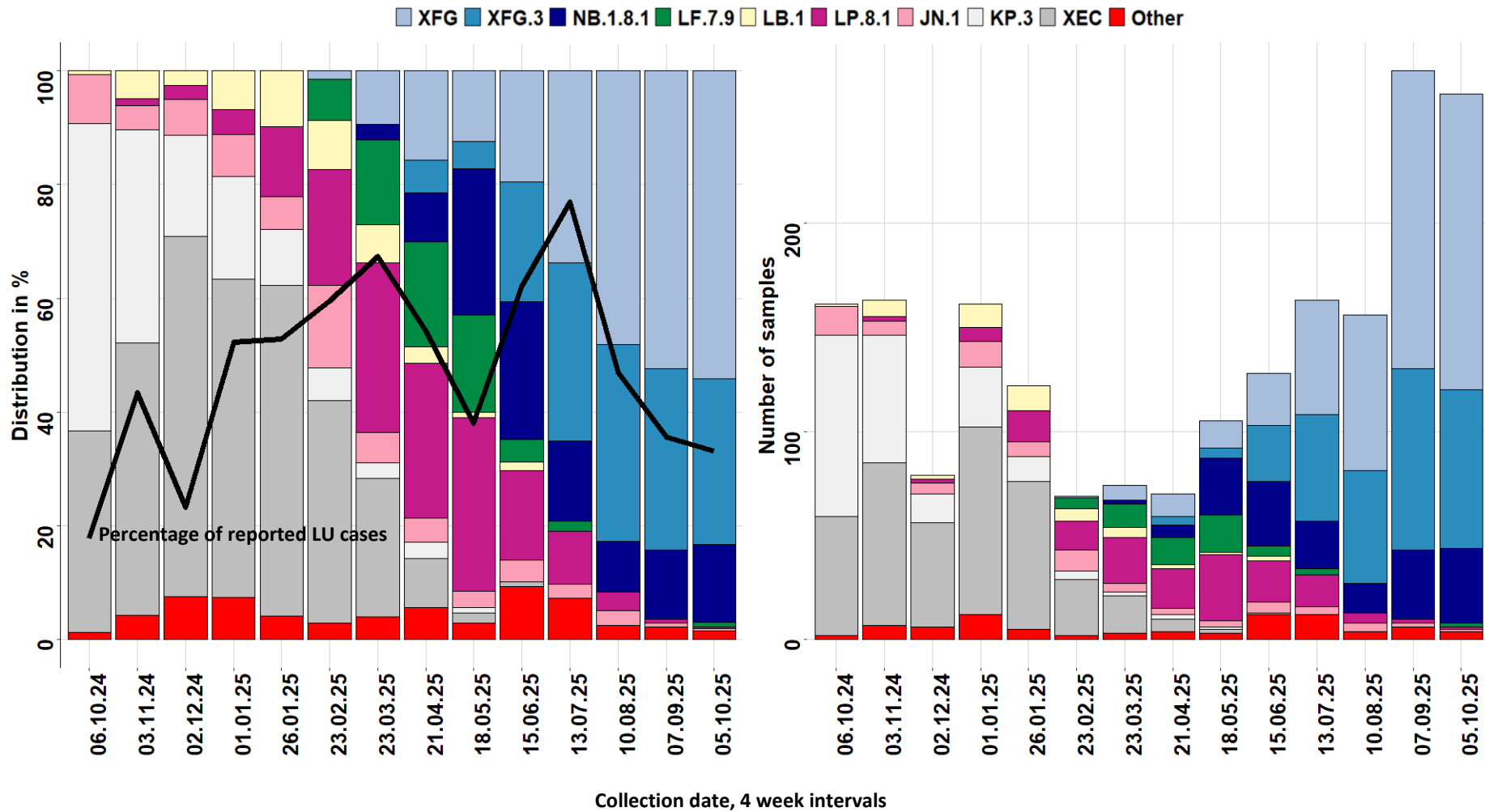
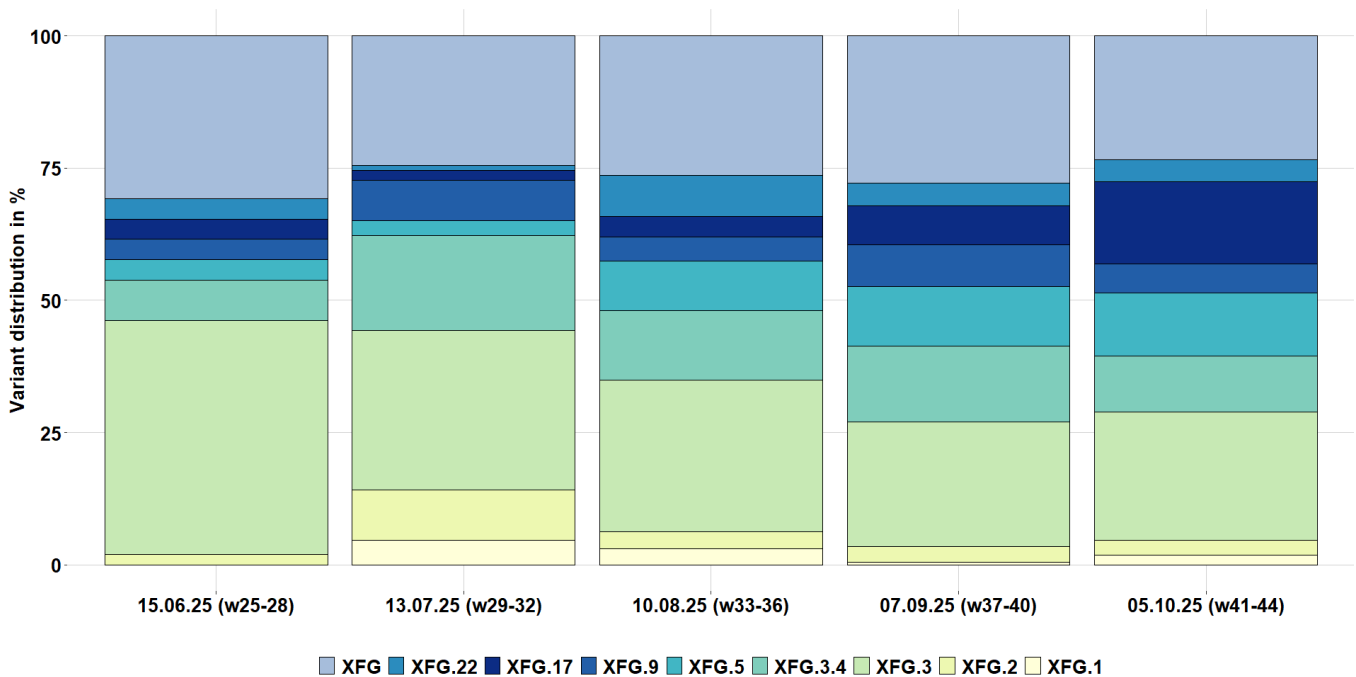


Figure 6. Lineage distribution and sequencing coverage from week 2024/41 (06.10.2024) to week 2025/44 (05.10.2025) in 4 week intervals; for example: collection date 07.09.2025 covers all samples sequenced until 05.10.2025; All displayed variants include descendant lineages- except those specified on the legend. Other: recent cases-recombinant XFJ, and XFT

Figure 7. Proportion of selected XFG sub-variants circulating in Luxembourg over the past 19 weeks shown; illustrating the diversity within XFG.



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