

Respiratory Viruses in Luxembourg (ReViLux)

Report – Sentinel Week 37 and Sequencing Update

Summary

Over the past two weeks (2025/36-37), the sentinel network detected a baseline activity, based on **less than 4.5%** of consultations being associated with influenza-like illness. Among the specimens collected by the sentinel network over the past two weeks, the percentage of positive tests for **human rhinovirus** was **33.3%**, **SARS-CoV-2**, **parainfluenza** and **adenovirus** **6.7%** each.

Overall towards the end of the holiday seasons, SARS-CoV-2 activity remained below 10%, but only a small number of samples were received. Over the past 4 weeks, low level of RSV circulation has been detected by the sentinel network.

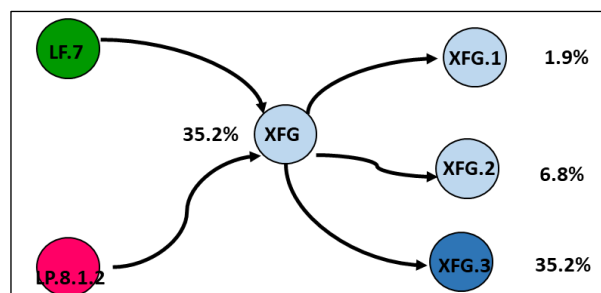
Regarding SARS-CoV-2 genomic surveillance, several sub-lineages and recombinant lineages of JN.1 have circulated in Luxembourg over the past few months, but XFG and XFG.3 have emerged as dominant variants in Luxembourg and Europe.

The estimated distribution for **XFG** was **43.8%** (95%CI: 36.1 – 51.8%), **35.2%** (95%CI: 27.9 – 43.1%) for **XFG.3** and **9.9%** (95%CI: 5.8– 15.5%) for **NB.1.8.1** in weeks 2025/32-35. Other variants circulated at levels below 5% in Luxembourg during the same period.

Variants under monitoring

XFG is a recombinant variant of the lineages LF.7 and LP.8.1.2 and also often nicknamed as “Stratus”. The sub-variant was designated by the World Health Organisation as variant under monitoring on the 25/06/2025. In Luxembourg, XFG was first detected in March 2025 and the estimated proportion increased over the last few weeks. From the selected samples, we estimate that in August 2025 (weeks 2025/32-2025/35) the proportion was around 80%. The WHO assessed that current vaccines remain effective to XFG against severe disease.

Figure 1. Recombinant XFG with distribution of sub-variants in August 2025



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 2025/37**) marking the end of school holidays, **2.1%** of the consultations were reported as ILI, which still represents a baseline activity for Luxembourg, according to ECDC and the Moving Epidemic Method. During the summer, the network continuously reported baseline ILI rates, indicating low activity. Similar rates have been observed over the last two inter-seasons. However, interpretation is difficult due to the small number of participating GP practices and summer holidays. The history of ILI consultations is displayed in figure 2, 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	%	
2025/34	7	5.30	3	2.27	132
2025/35	12	7.02	1	0.58	171
2025/36	3	3.61	0	0.00	83
2025/37	14	9.86	3	2.11	142

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

Laboratory results

During weeks 2025/36 and 2025/37, respiratory viruses were identified in 16 (53.0%) of the 30 sentinel samples sent to LNS. Sixty percent of the samples received, were from children under 18 years of age. Since week 2025/32, LNS has not received any samples from patients over 65 years of age; this age group is therefore underrepresented in the sentinel network.

In weeks 2025/36 and 2025/37, **human rhinovirus (33.3%)** was the most prevalent circulating virus typical of this time of the year, followed by **SARS-CoV-2, parainfluenza** and **adenovirus** with **6.7%** each.

Over the last 2 weeks, all adenovirus cases were identified in children below 5 years, while human rhinovirus and parainfluenza were detected across various age-groups below 65 years of age.

Overall, no new Influenza cases were detected in the network during the last 4 weeks, but low level of RSV circulation. Low-level of RSV and influenza activity were also detected across Europe. An overview of the submitted samples and circulating viral pathogens during the inter-season and previous inter-season can be found in table 2, figure 3 and figure 4.

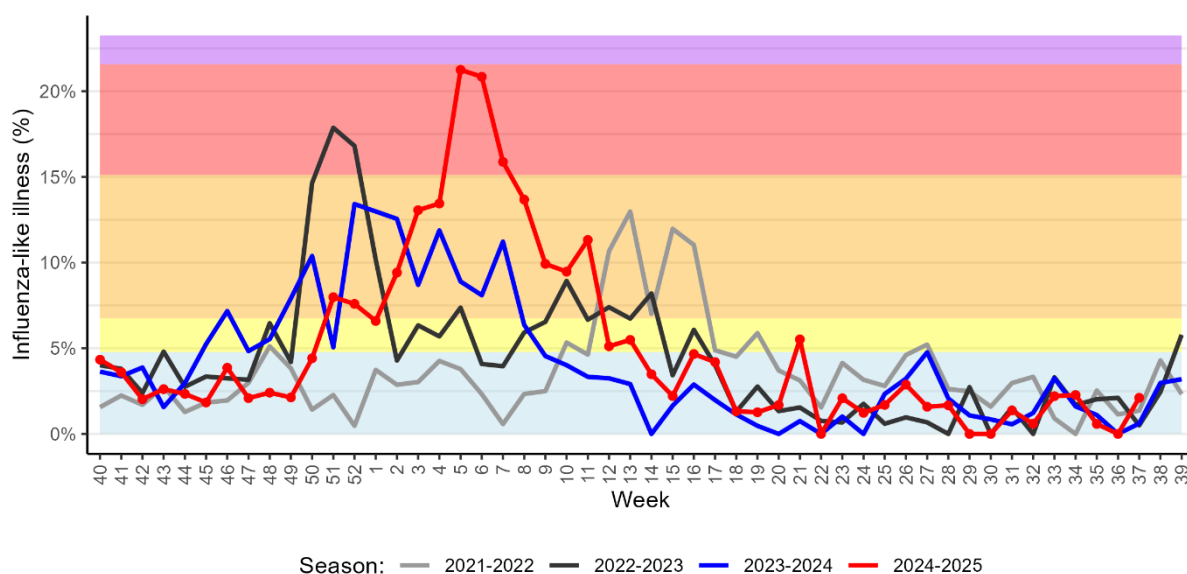


Figure 2. Percentage of patients with influenza-like illness over the last three seasons
Background colours according to intensity of circulation: baseline, low, medium, high, very high.

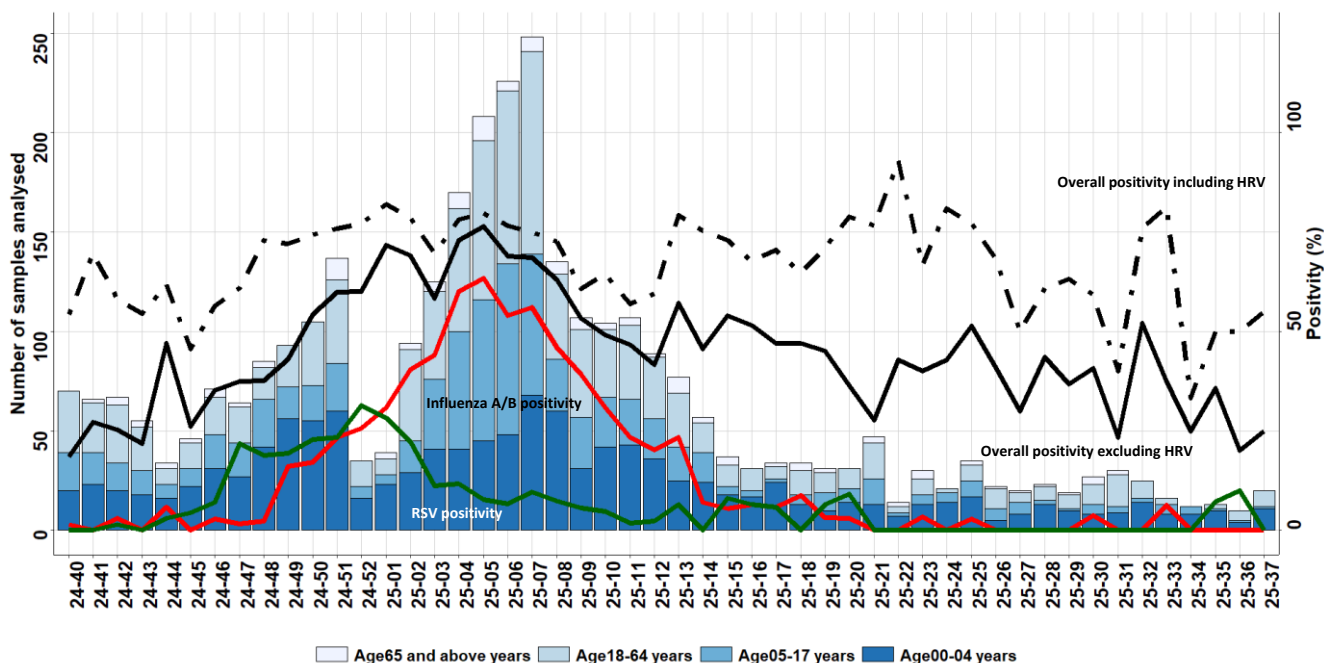
Table 2. Distribution of respiratory viruses detected in the Sentinel Network over the last 8 weeks compared to the previous year.

Virus	Inter-season 2024/25				Inter-season 2023/24	
	Positivity Rate in %					
	W30/31	W32/33	W34/35	W36/37	W34/35	W36/37
Human rhinovirus	21.1	36.6	11.5	33.3	30.6	9.7
SARS-CoV-2	8.8	19.5	11.5	6.7	19.4	6.1
Parainfluenzavirus	17.5	22.0	11.5	6.7	2.8	9.7
Adenovirus	7.0	4.9	7.7	6.7	11.1	9.7
Respiratory syncytial virus	0.0	0.0	3.8	3.3	0.0	3.1
Influenzavirus A	1.8	2.4	0.0	0.0	0.0	3.0
Metapneumovirus	0.0	0.0	0.0	0.0	0.0	0.0
Influenzavirus B	0.0	0.0	0.0	0.0	0.0	0.0

*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 3. Number of sentinel samples received weekly by age-group during season and inter-season 2024/25,

Overall positivity of the samples (dotted line); excluding HRV (black line); influenza (red) and RSV (green); secondary axis corresponds to positivity; of note age-group >65 years not represented since weeks >2025/31



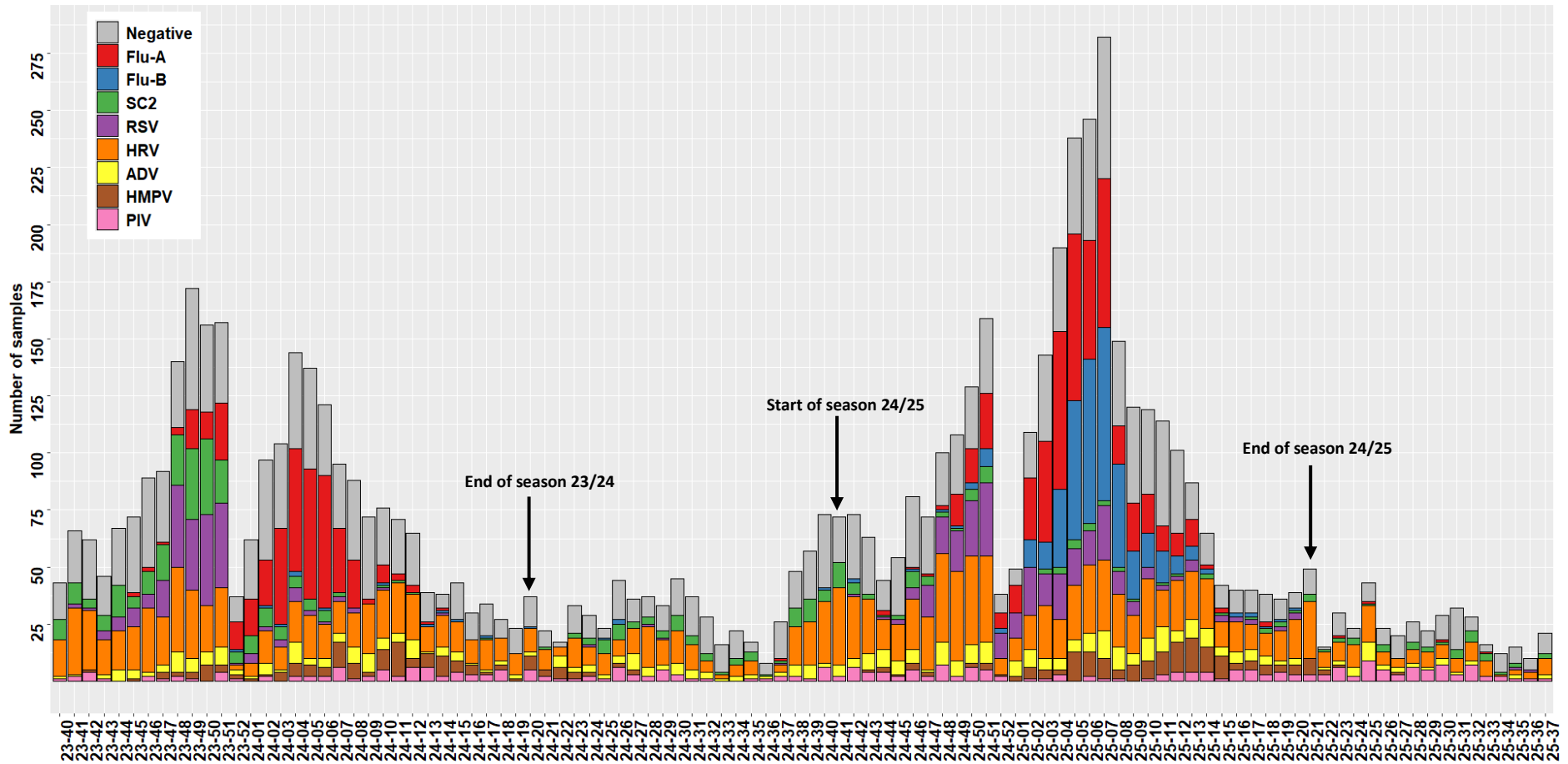


Figure 4. Distribution of respiratory viruses detected within the Sentinel Network by calendar week during seasons and inter-seasons 2023/24 and 2024/25; results from last week are not yet fully consolidated.

FLU-A: influenza A; FLU-B: influenza B; PIV: parainfluenza virus; RSV: respiratory syncytial virus; ADV: adenovirus; MPV: metapneumovirus; HRV: human rhinovirus; SC2: SARS-CoV-2

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; 1.34 mode USHER).

Sequencing activity

162 samples from 280 cases (57.9%) reported in Luxembourg were sequenced with specimen dates between weeks 2025/32 and 2025/35. About 33 % (N=54) were hospital samples and the remaining samples were community samples (67%; N=108). We prioritized sequencing the most recent samples and hospital samples. Any low coverage will be addressed in future 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.

Over the past 4 weeks, the estimated proportion of **XFG** increased from **26.5%** (weeks 2025/28-31) to **43.8%** (weeks 2025/32-35), while **XFG.3** remained stable at approximately **35%**. The two variants represent 80% of all sequenced cases in Luxembourg and have been detected in all age-groups (figure 5). In contrast, the proportion of **NB.1.8.1** decreased from 17% to just under 10%, indicating limited spread in Luxembourg. Other European countries observed similar trends. NB.1.8.1 remains the dominant variant in Asia, and trends may change in the coming weeks. Dominant variants from earlier this year, such as XEC or KP.3, were detected or were detected at very low levels. All circulating variants identified in the selected sample or variants under monitoring are presented in table 4, figures 6 and 7.

During weeks 2025/28 to 2025/35, 101 (31.2%) samples from hospital laboratories and 223 (68.8%) specimens from private laboratories/ sentinel practitioners were sequenced. Table 3 compares sampling setting and prevalence of the two dominant variants. Of note, we used eight-week timeframe, due to the low number of samples received from hospitals. All hospitals regularly send LNS samples, and we prioritize them for characterisation.

Table 3. Comparison of the two dominant sub-variants by sampling setting (weeks 2025/28-2025/35); 8 weeks included due to low sample size from hospitals

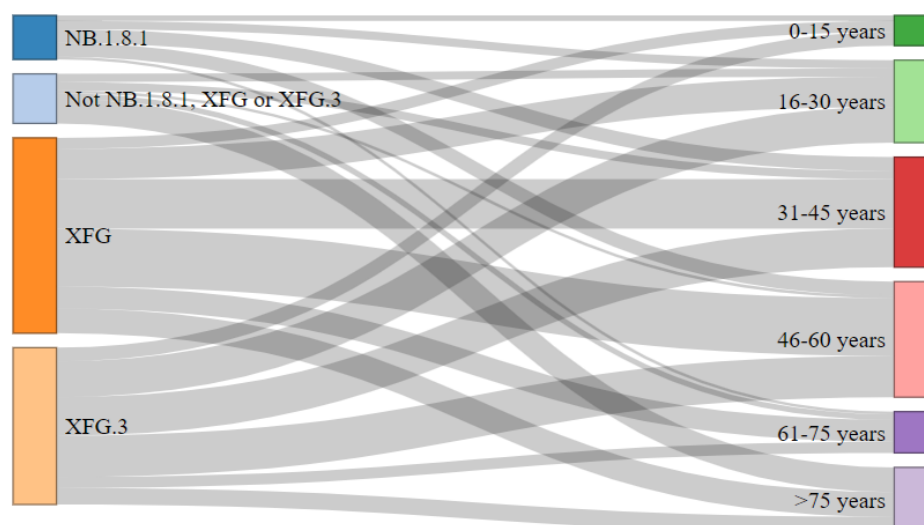
Lineage	Community			Hospital		
	Women	Men	Total	Women	Men	Total
XFG	54.1%	47.3%	52.0%	43.4%	50.0%	44.7%
XFG.3	45.9%	52.7%	48.0%	56.6%	50.0%	55.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4. Distribution of SARS-CoV-2 lineages detected during weeks 2025/28 to 2025/35. 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 28-31 (N=162)		weeks 32-35 (N=162)	
			%	CI %	%	CI %
XFG*	13.03.2025	yes	26.5	19.9 – 34.0	43.8	36.1 – 51.8
XFG.3	22.04.2025	under XFG	36.4	29.0 – 44.3	35.2	27.9 – 43.1
NB.1.8.1	07.04.2025	yes	16.7	11.3 – 23.3	9.9	5.8 – 15.5
LP.8.1	05.11.2025	yes	9.9	5.8 – 15.5	4.3	1.8 – 8.7
Other	not applicable	no	7.4	3.9 – 12.6	3.7	1.4 – 7.9
JN.1*	25.08.2028	yes	1.2	0.2 – 4.4	2.5	0.7 – 6.2
KP.3	03.04.2024	yes	0		0.6	0.02 – 3.4
LF.7.9	03.03.2025	no	1.9	0.4 – 5.3	0	
XEC	19.07.2024	yes	0		0	

Figure 5. Distribution of XFG, XFG.3, NB.1.8.1 and Others detected during weeks 2025/32 to 2025/35 (N=162) by age groups. Other variants are grouped into one class ("Not NB.1.8.1, XFG or XFG.3")-due to low frequency



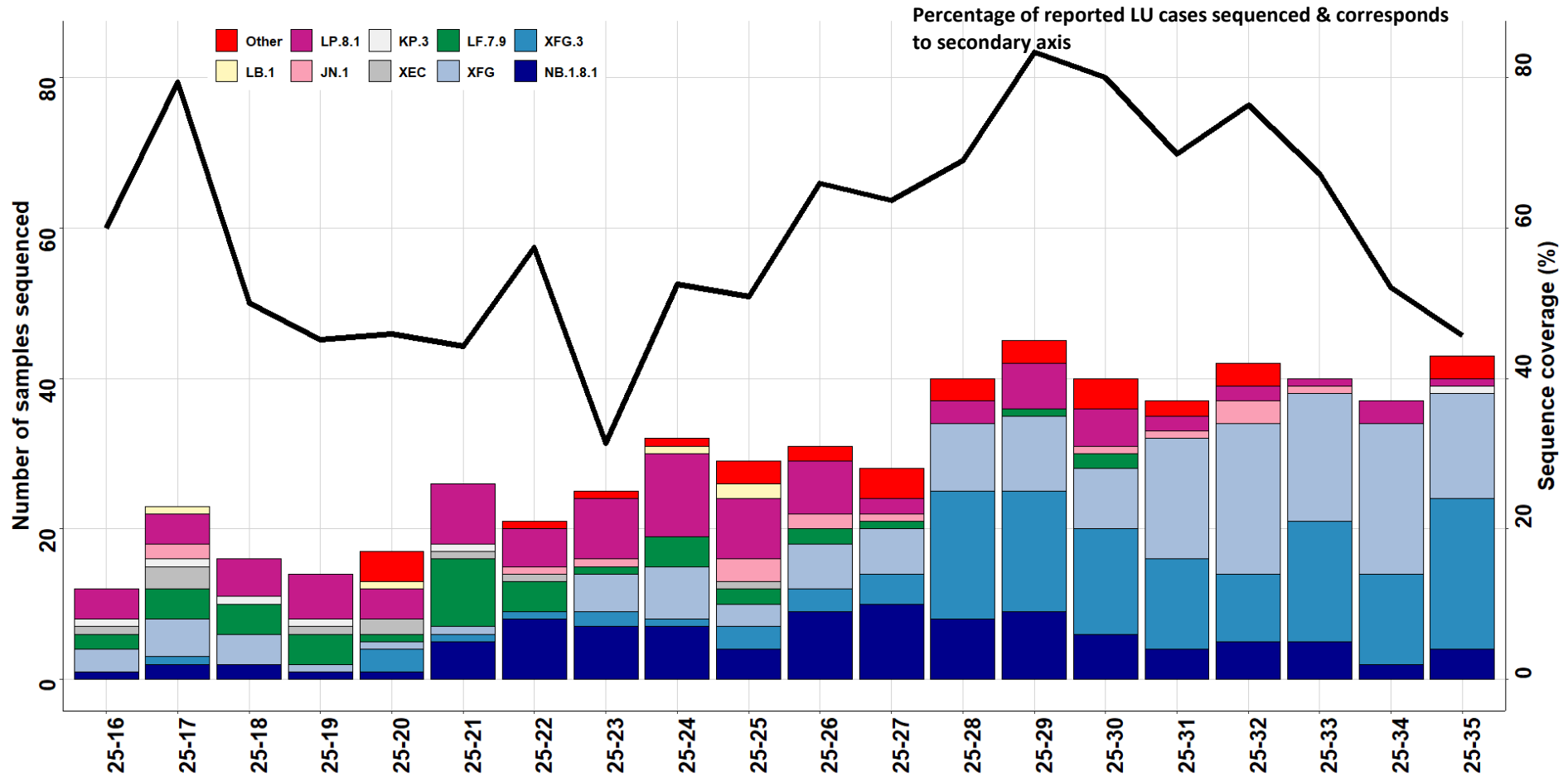
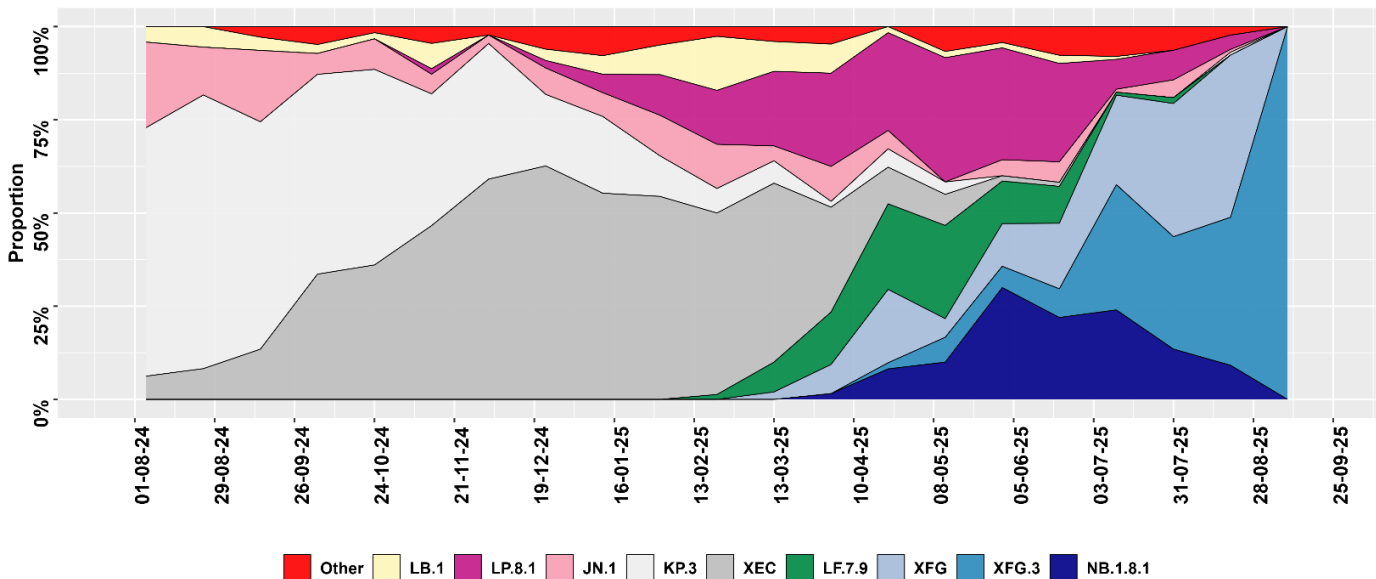


Figure 6. Distribution of lineages and sequencing coverage since 2025/16 (last 20 weeks). All displayed variants include descendant lineages- except those specified on the legend. Other: recent cases recombinant XFI and XFC (diverse)

Figure 7. Proportion of each variant circulating in Luxembourg over the last 12 months. All displayed variants include descendant lineages, except those specified on the legend



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