

CURRENT SEROTYPE DISTRIBUTION AMONG CHILDREN WITH INVASIVE PNEUMOCOCCAL DISEASE (IPD) IN GERMANY

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BACKGROUND

Invasive pneumococcal disease (IPD) among children in Germany has been under surveillance since 1997. PCV vaccination has been recommended since 2006 and currently includes PCV13/PCV15. Here, we present data on the current serotype distribution of IPD cases among individuals under the age of 18, and the potential added benefit of higher valent PCVs.

METHODS

IPD in children and adolescents in Germany has been monitored since 1997. Isolates were serotyped using the Neufeld Quellung reaction. IPD surveillance in Germany was, in part, sponsored by Pfizer and Merck.

RESULTS

From 2017/18 to 2024/25 serotypes 3 and 19A have remained prevalent serotypes among children with IPD in Germany, while non-vaccine serotypes 24F and 38 have gained in importance (Fig 1).

In 2023/24, the GRLS received 351 IPD isolates from individuals <18 years. Among children <2 years (n=139), prevalence of PCV13 serotypes was 26.6%, PCV15: 30.9%, PCV20: 40.3%. For children 2-4 years (n=105), prevalences were 41.9%, 46.7% and 53.3%, for 5-17 years old (n=107), 37.4%, 47.7% and 60.7%, respectively. In the current season, 2024/25 (n=256), PCV13 prevalence for <2y, 2-4y and 5-17y was 19.4%, 42.6% and 43.5%, respectively (PCV15: 27.2%, 47.1%, 50.6%, PCV20: 45.6%, 63.2%, 63.5%), (Figs 2-5).

In comparison to the pre-SARS-CoV-2-pandemic season 2018/19, PCV13 serotypes have become more prevalent, in each age group, whereas the two additional PCV15 serotypes (22F, 33F) have remained unaffected, and five additional serotypes in PCV20 (8, 10A, 11A, 12F, 15B) have become less prevalent.

The rise in PCV13 serotypes was primarily caused by serotypes 3 and 19A, while the reduction in PCV20non15 serotypes was associated with 10A and 12F (Figs 6A/6B).

Over the last 8 seasons, 2010/11-2023/24, the prevalence of PCV15non13 serotypes has remained about the same, whereas the prevalence of PCV20non15 serotypes was indirectly proportional to PCV13 serotypes. The overall reduced prevalence of vaccine serotypes was caused by an increase in non-vaccine serotypes 38 and 24F (Figs. 6C/6D).

In IPD among children <2y, serotypes 24F and 38 are among the most prevalent serotypes (Fig. 7).

In 2023/24, 98% of notified IPD cases in children <18y. were sent to the GRLS, and 86% were confirmed as IPD (Fig 8).

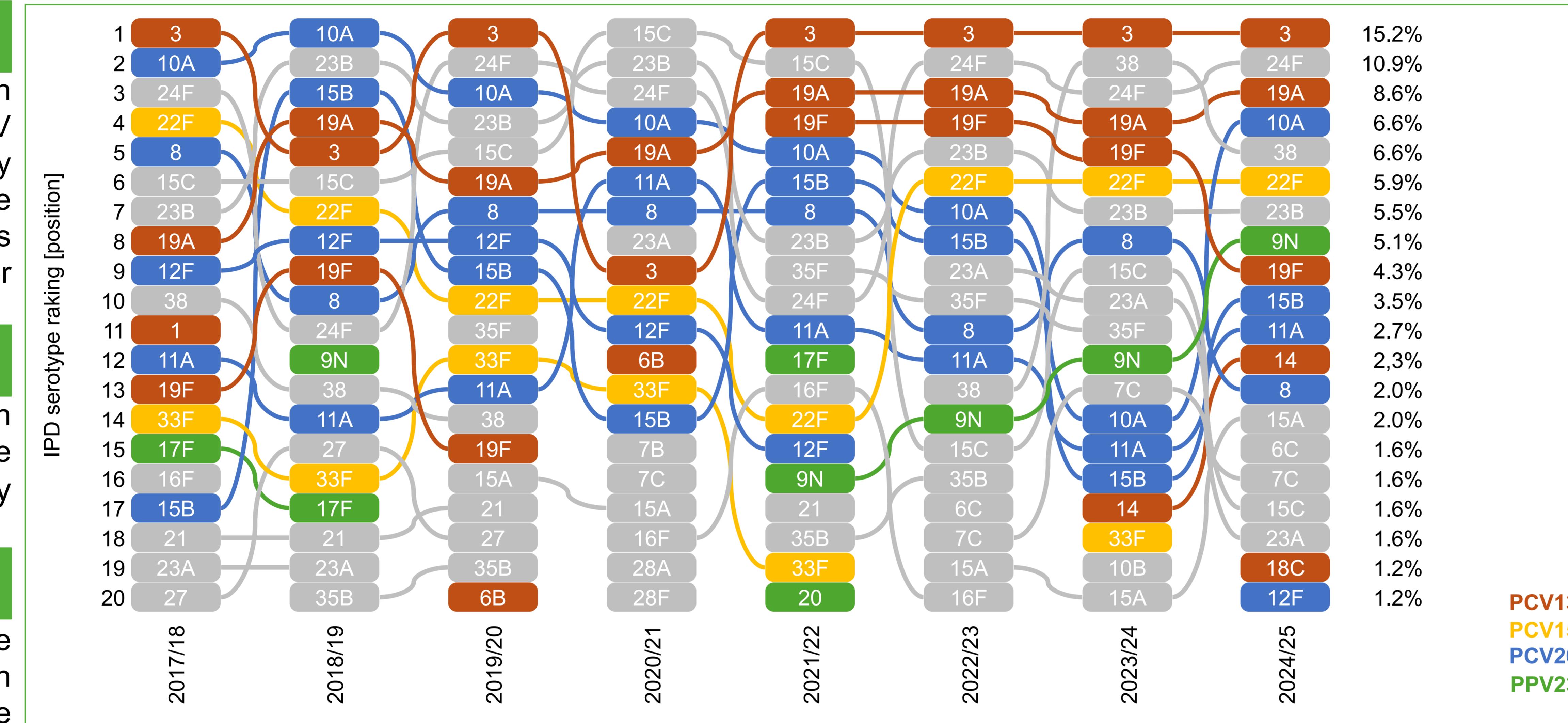


Figure 1: Serotype dynamics among IPD in children <18 years of age in Germany.

Serotype prevalence values are listed for the current season 2024/25 (data from July 2024 to April 2025, n=256).

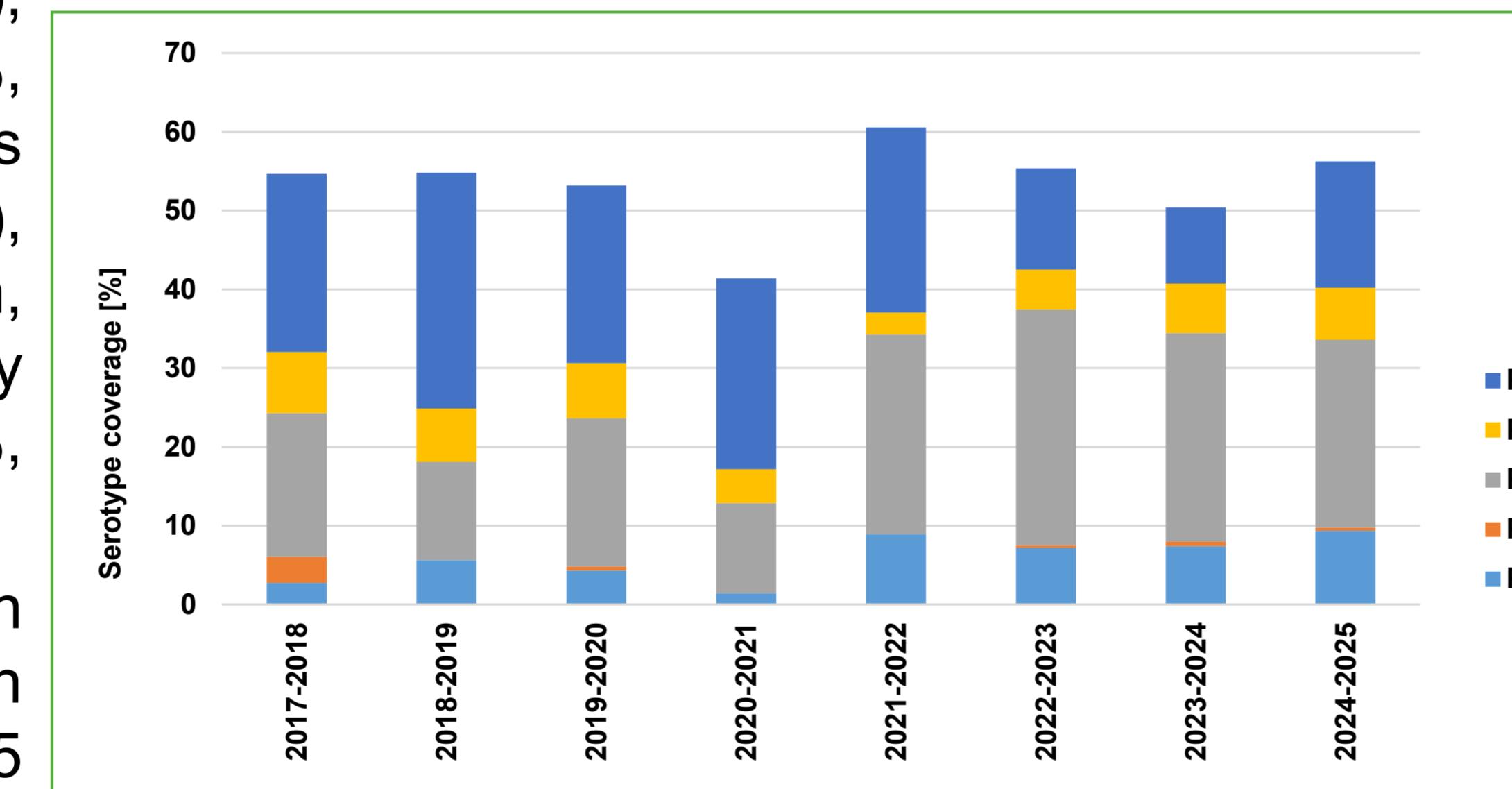


Figure 2: Serotype coverage of different vaccine formulations among IPD in children <18 years of age in Germany.

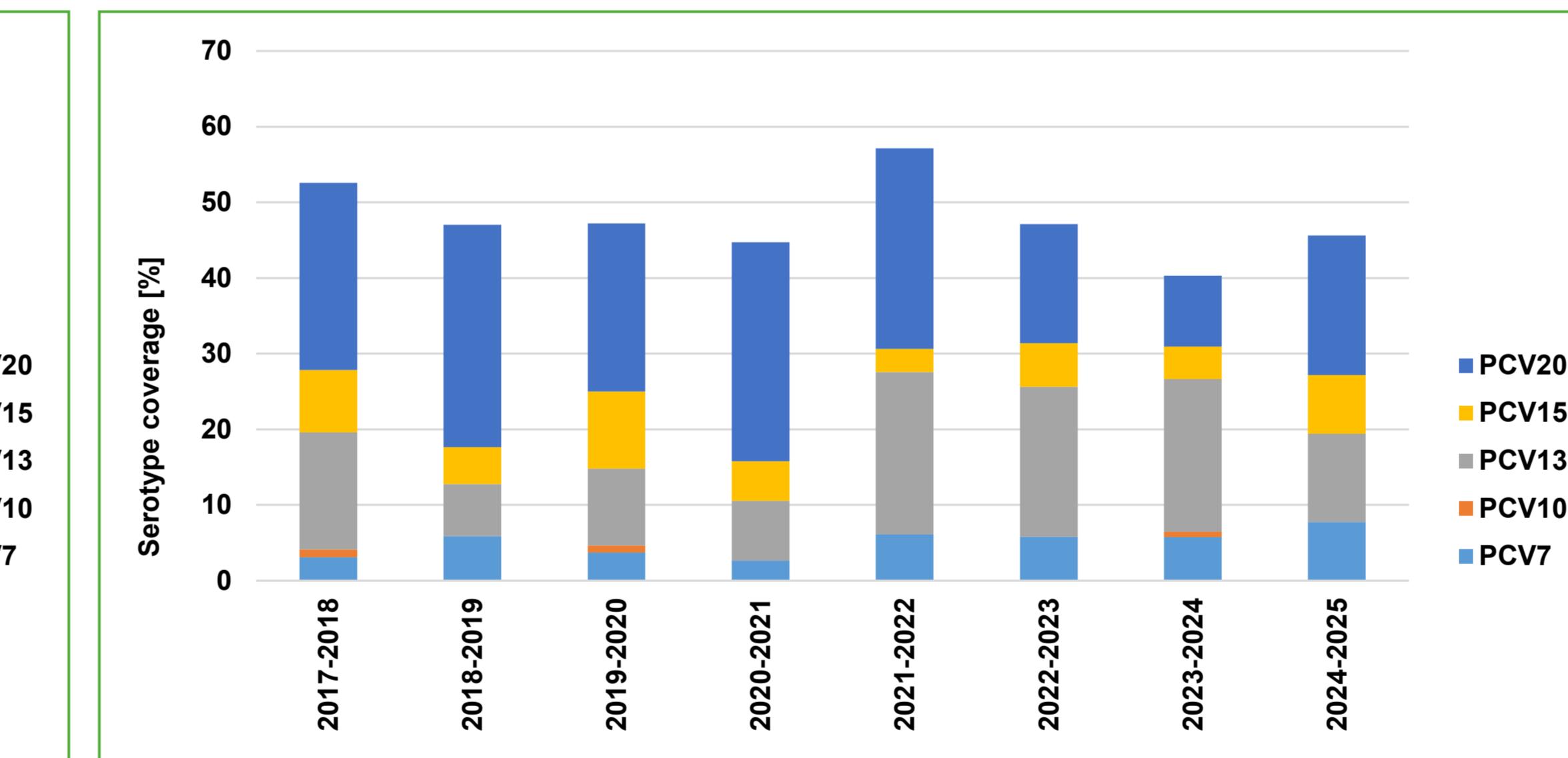


Figure 3: Serotype coverage of different vaccine formulations among IPD in children <2 years of age in Germany.

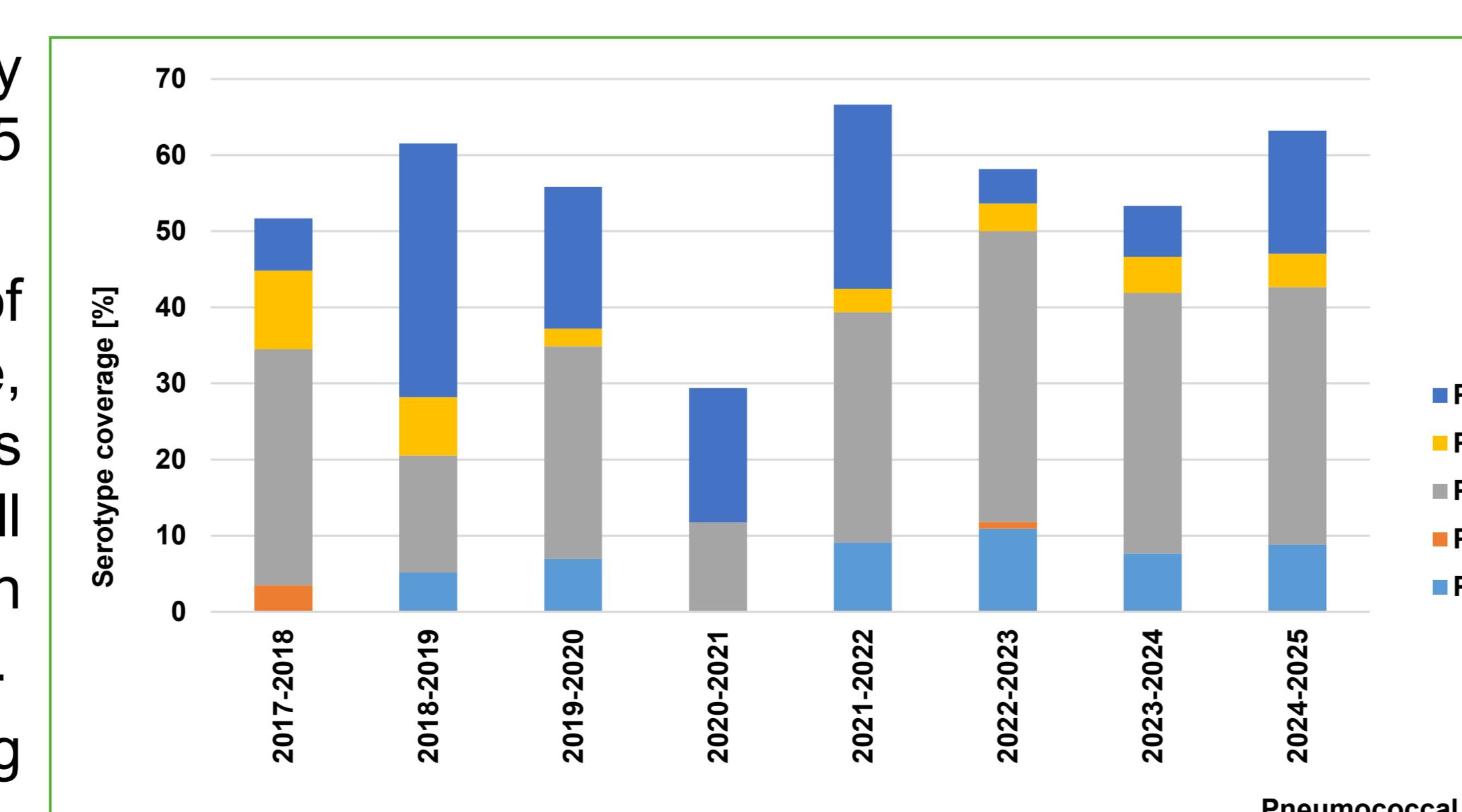


Figure 4: Serotype coverage of different vaccine formulations among IPD in children 2-4 years of age in Germany.

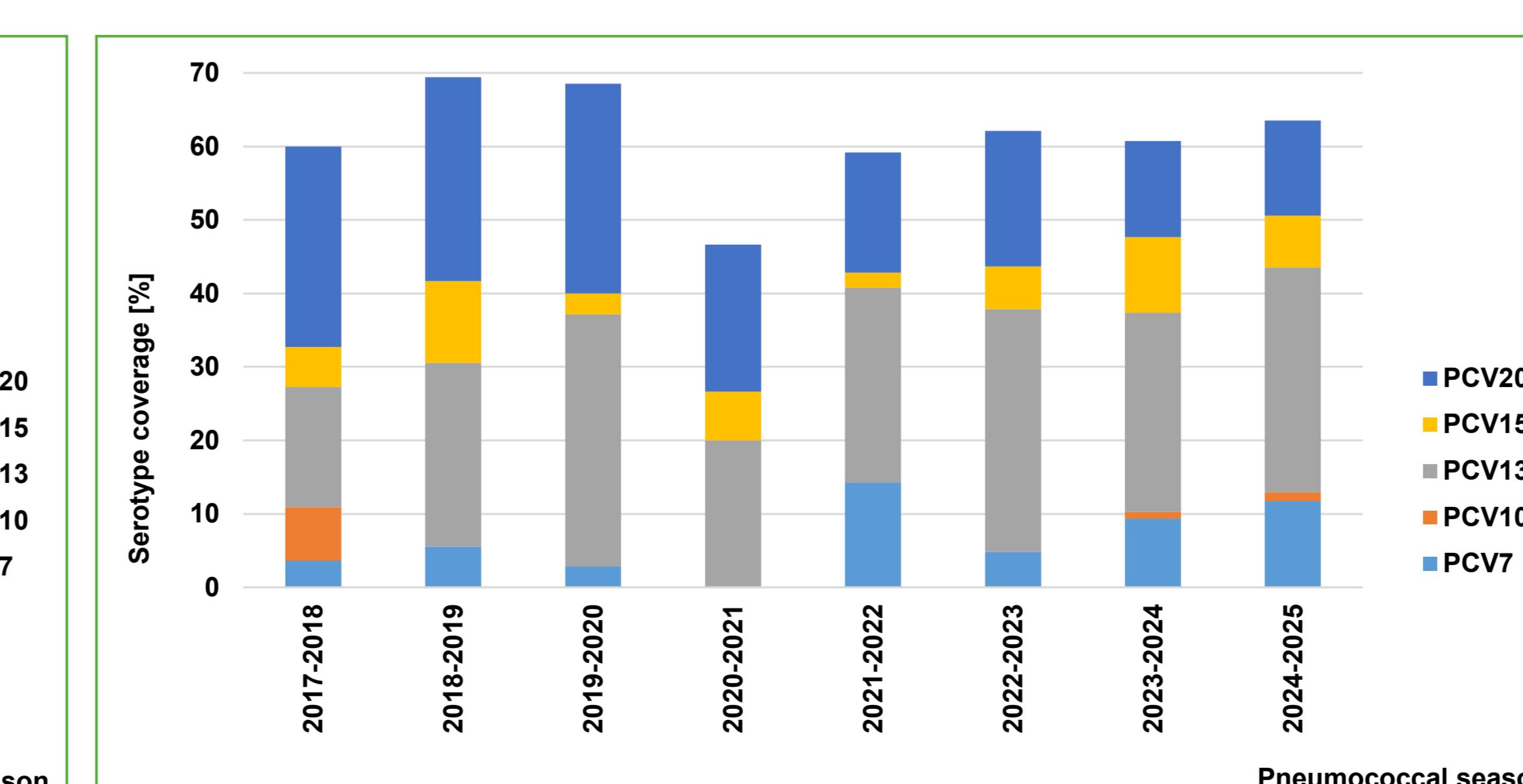


Figure 5: Serotype coverage of different vaccine formulations among IPD in children 5-17 years of age in Germany.

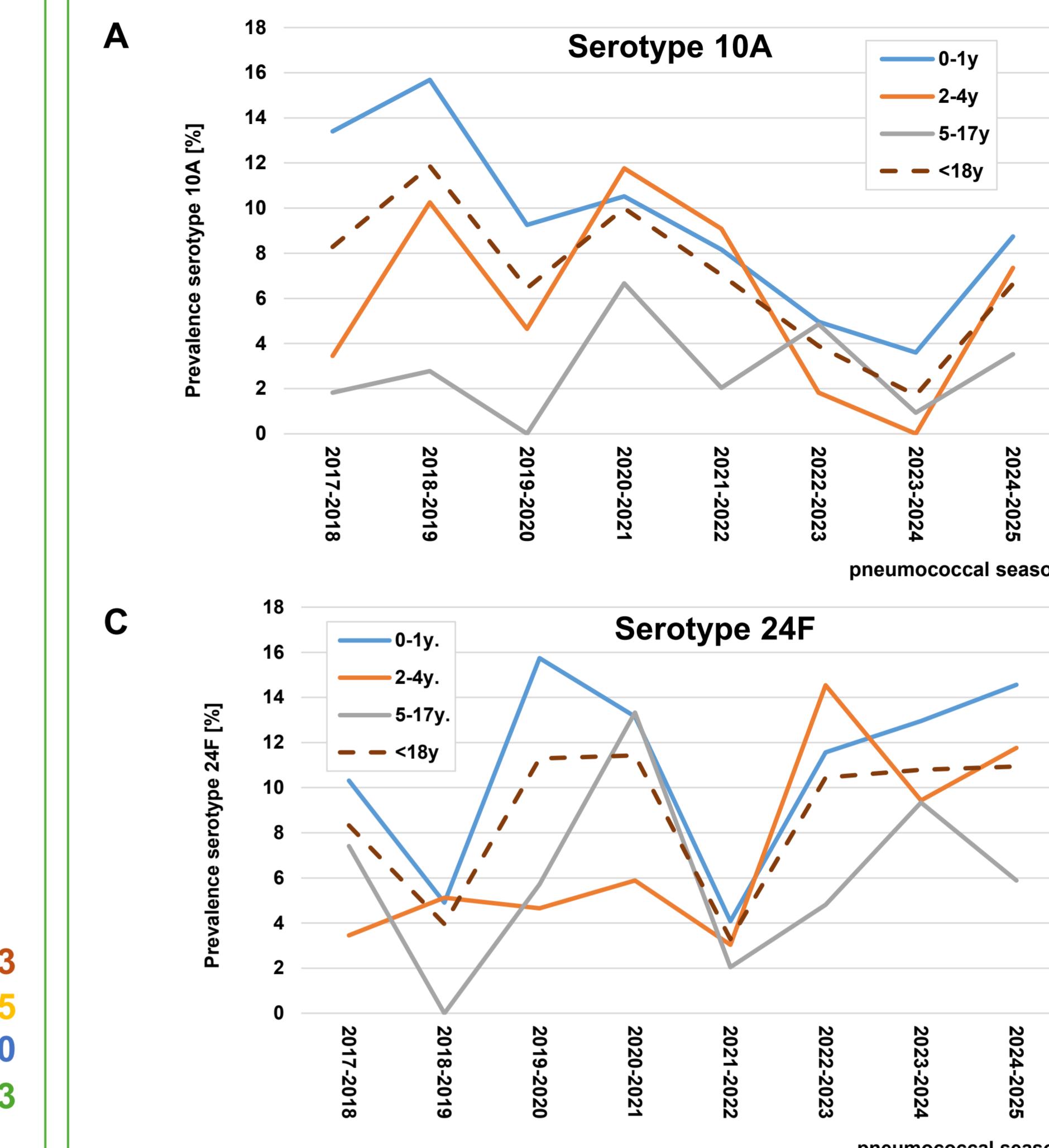


Figure 6: Prevalence of serotypes 10A (A), 12F (B), 24F (C) and 38 (D) among IPD in children <18 years of age in Germany, over the last 8 pneumococcal seasons.

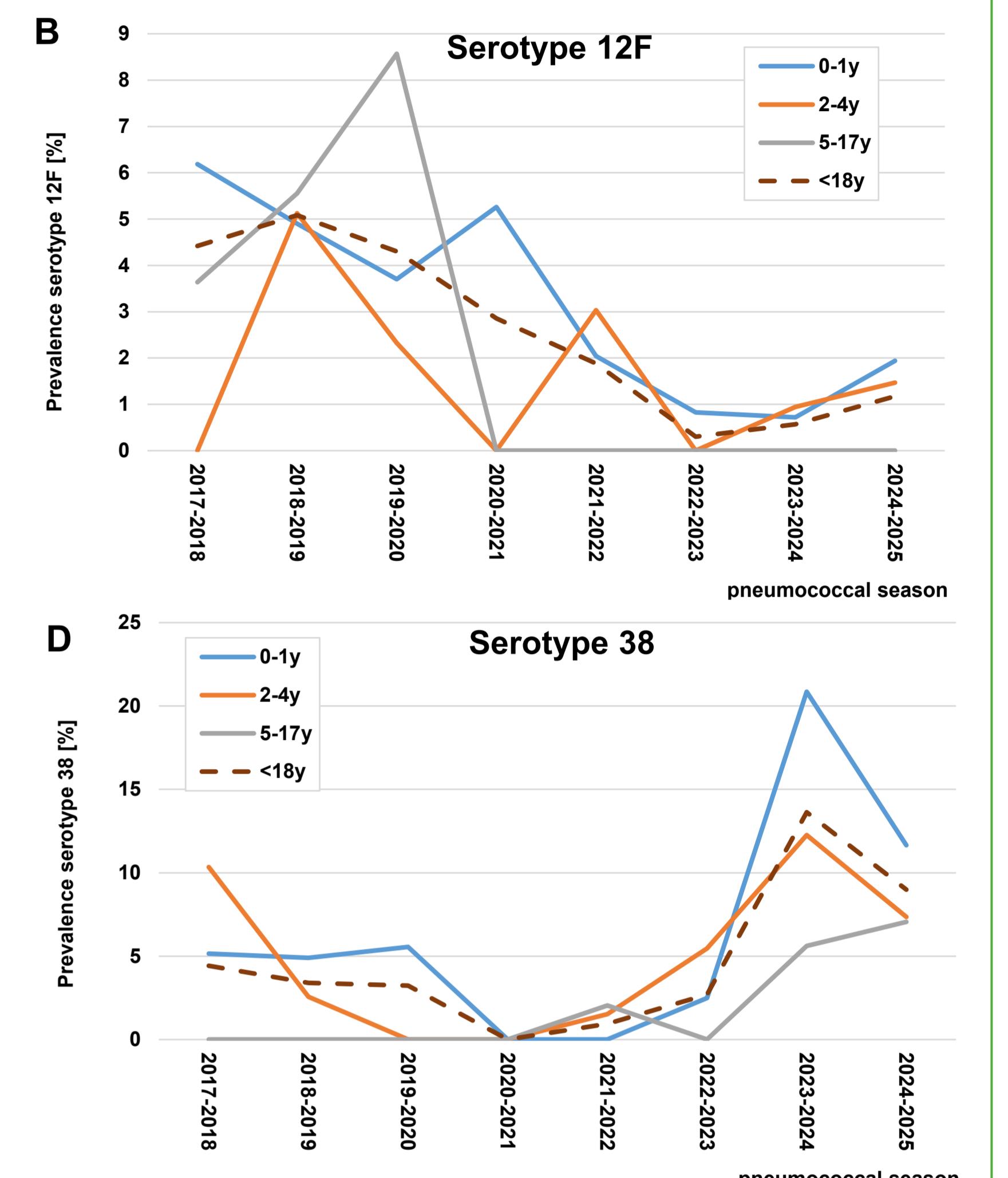


Figure 6: Prevalence of serotypes 10A (A), 12F (B), 24F (C) and 38 (D) among IPD in children <18 years of age in Germany, over the last 8 pneumococcal seasons.

	2023/24		2024/25	
	Serotype	%	Serotype	%
1	38	20,9	24F	14,6
2	3	15,8	38	11,7
3	24F	12,9	10A	8,7
4	15C	5,8	3	6,8
5	19F	4,3	23B	6,8
6	19A	4,3	22F	5,8
7	22F	4,3	9N	5,8
8	23B	4,3	19F	4,9
9	10A	3,6	19A	4,9
10	8	2,9	15B	3,9

Figure 7: Ranking by prevalence of serotypes in IPD in children <2 years of age.

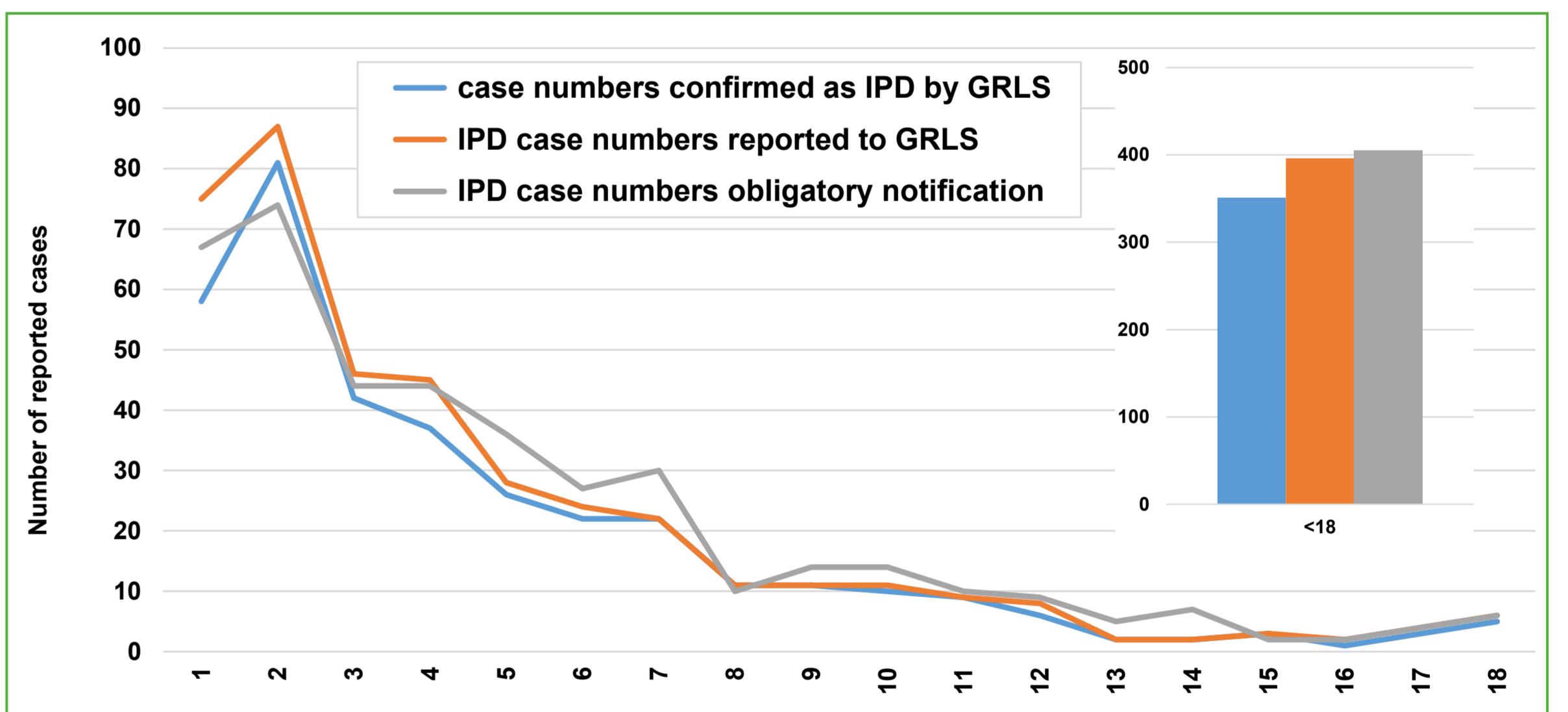


Figure 8: IPD case numbers reported to the GRLS (orange), case numbers confirmed as IPD (blue) by the GRLS laboratory routine as well as case numbers from obligatory laboratory notifications (grey), by patient age, for the season 2023/24.

CONCLUSIONS

In 2023/24, in children <2 years, the added benefit of PCV15 over PCV13 was 4.3%, and the added benefit of PCV20 over PCV13 was 13.7%, in 2023/25 these were 7.8% and 26.2%

PCV13 serotypes have increased in prevalence after the SARS-CoV-2 pandemic.

Non-vaccine serotypes 24F and 38 have gained in importance, and rank among the most prevalent serotypes in children < 2 years of age.