

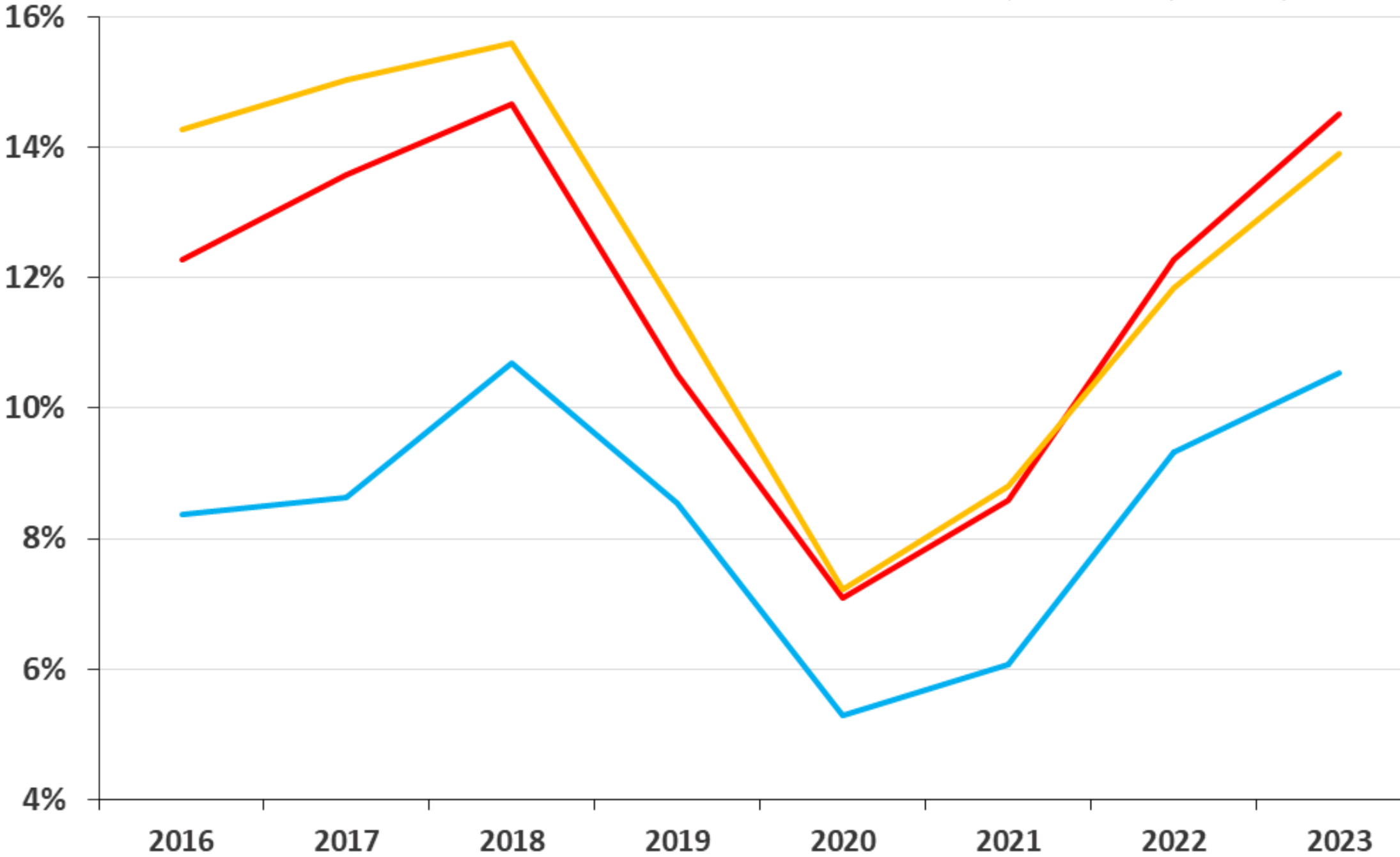
Improving Belgian Train Services Using Data-Driven Insights

- **Objective:** Identify priority areas for the National Railway Company to enhance train service quality.
- **Method:** Analysis of punctuality, cancellations, and connection efficiency data.

Unified delays: IC, P, and local trains face similar disruption patterns (2016–2023)

- **Observation:** Delays across all train types follow a similar pattern, suggesting shared causes.
- **Insight:** Possible reasons for delays include infrastructure constraints such as track maintenance or bottlenecks, coordination issues at major hubs or weather-related disruptions.

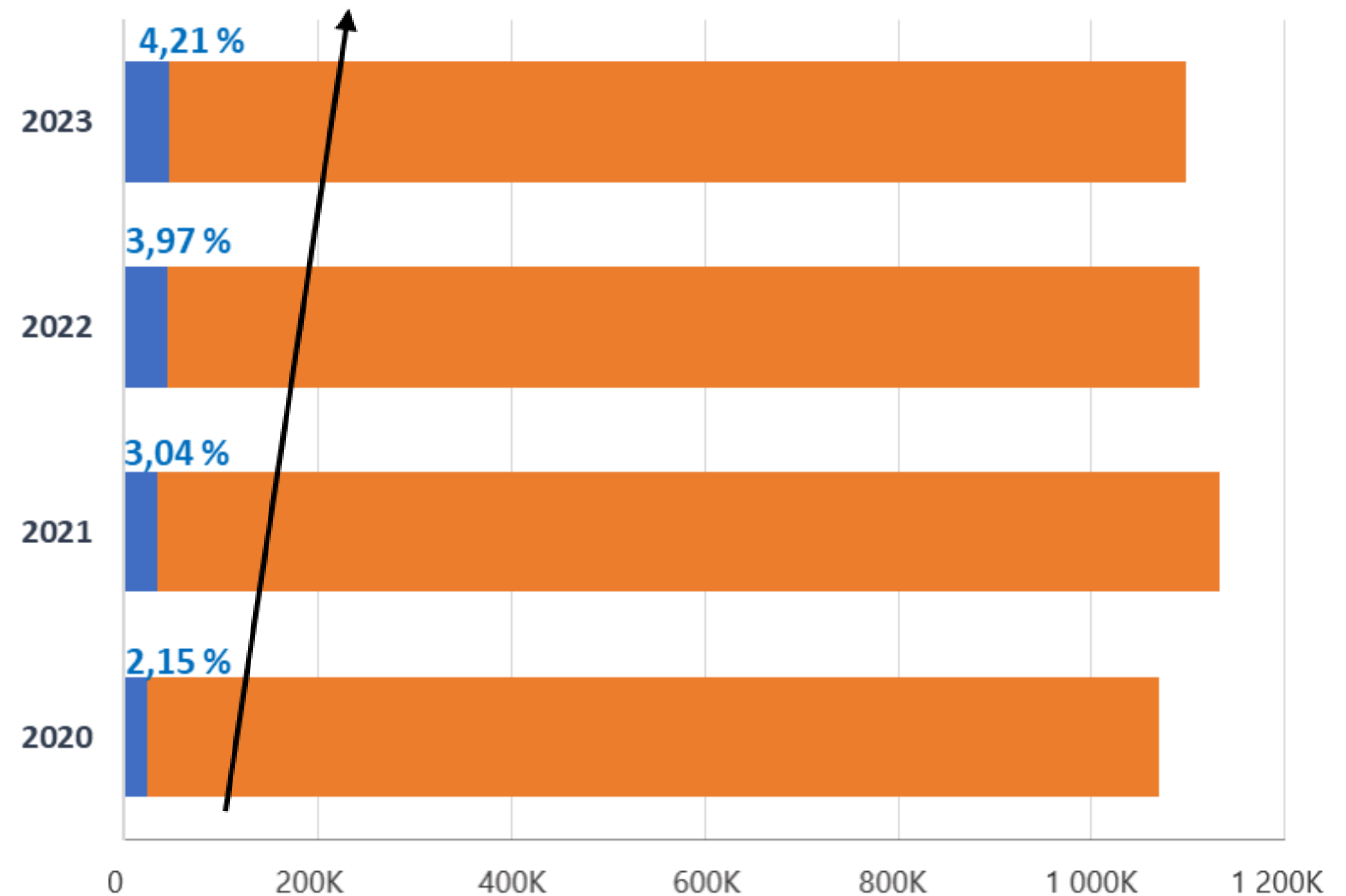
Train types:
IC trains, P trains, local trains.
(% of delay of total operating trains)



*background lines were kept for clear view of the percentages

Steady surge: Increase in train cancellations from 2020 to 2023

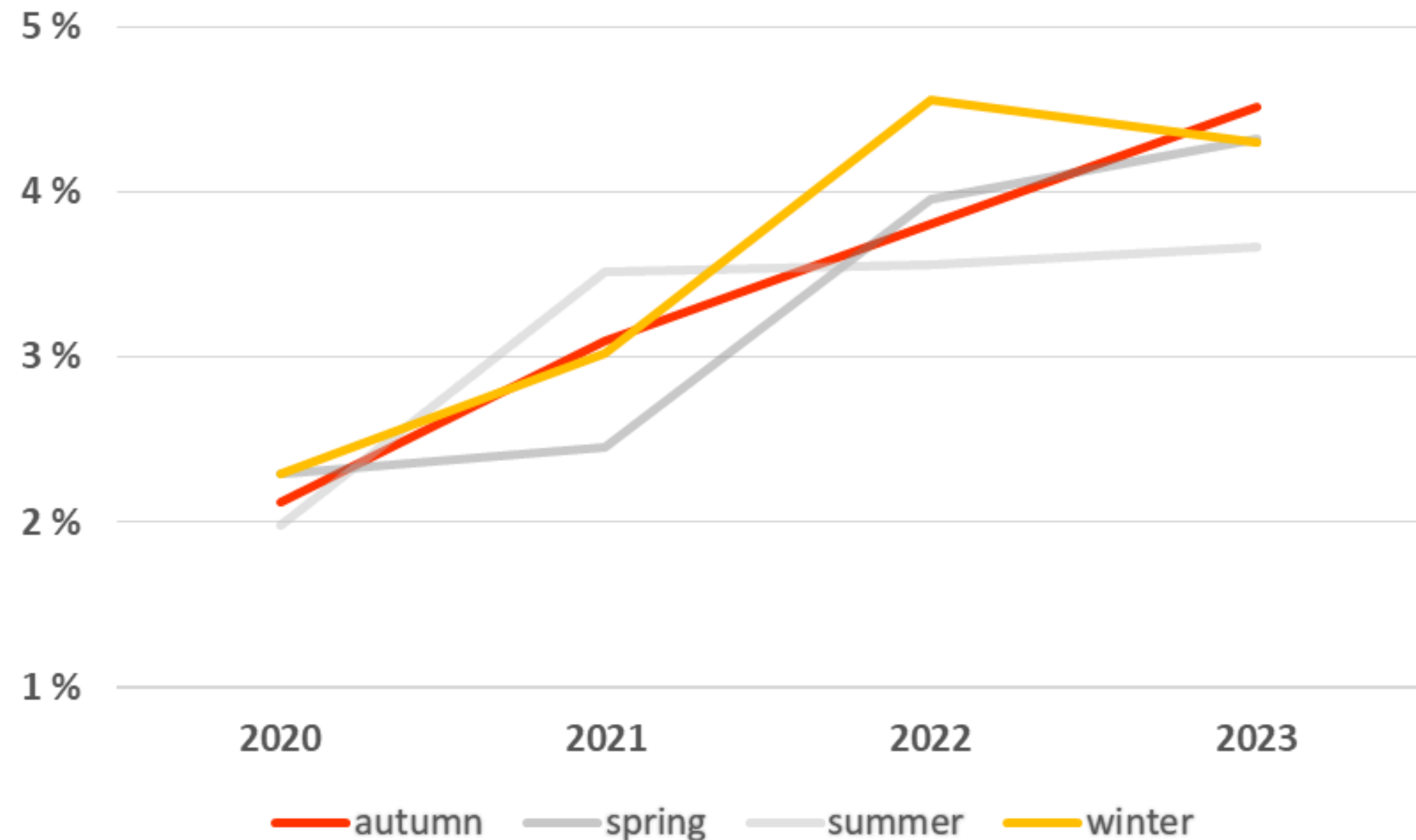
- **Observation:** The number of cancelled trains has increased significantly from 2020 to 2023, both in quantitative and relative terms.
- **Insight:** Potential contributing factors: operational challenges, infrastructure issues, or external influences like strikes or public health crises (e.g., COVID-19).



*background lines were kept for clear view of the numbers

Seasonal strain: train cancellations peaking in winter and autumn (2020–2023), %

- **Observation:** Percentage of train cancellations is noticeably higher during winter and autumn.
- **Insight:** Adverse weather conditions (e.g., snow, heavy rains, or fog) and seasonal maintenance may contribute to these seasonal peaks.



*background lines were kept for clear view of the percentages



Conclusions

- worrying trend of increasing train cancellations, particularly during winter and autumn
- consistent delays across all train types
- systemic issues in infrastructure, weather resilience, and operational efficiency.



Data-driven recommendations to enhance train services

1. Infrastructure investments:

- Upgrade tracks and signaling systems to minimize delays and cancellations.
- Implement robust weather-proofing measures to reduce seasonal impacts.

2. Operational enhancements:

- Improve staffing levels and optimize train scheduling systems.
- Strengthen coordination at key hubs and during peak travel periods.

3. Policy and crisis management:

- Develop contingency plans for handling strikes or unexpected disruptions.
- Collaborate with meteorological agencies to proactively manage weather-related challenges.