Data-Driven Insights for Enhancing Belgian Railway Services

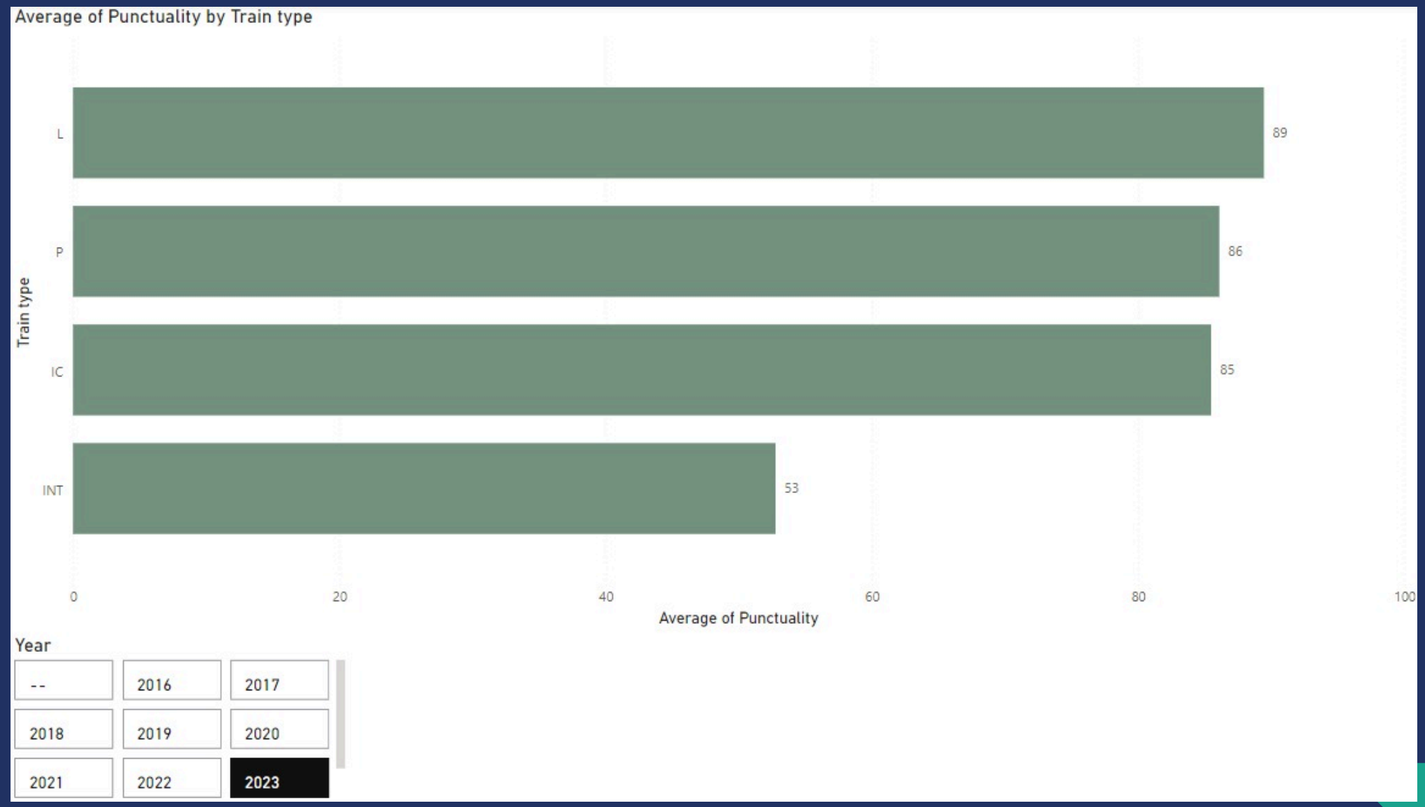
A Strategic Framework for Improving Train Punctuality and Service Quality

Key Insights and Overview

Train Punctuality and Cancellations Overview

Punctuality by Train Type:

- **L** trains have the highest punctuality **(89%).**
- **P** trains follow closely **(86%).**
- **IC** trains perform slightly lower **(85%).**
- **INT** trains are significantly behind with only **53%** punctuality.
- Conclusion: over some years the INT train type has been ranking as the lowest in punctuality.



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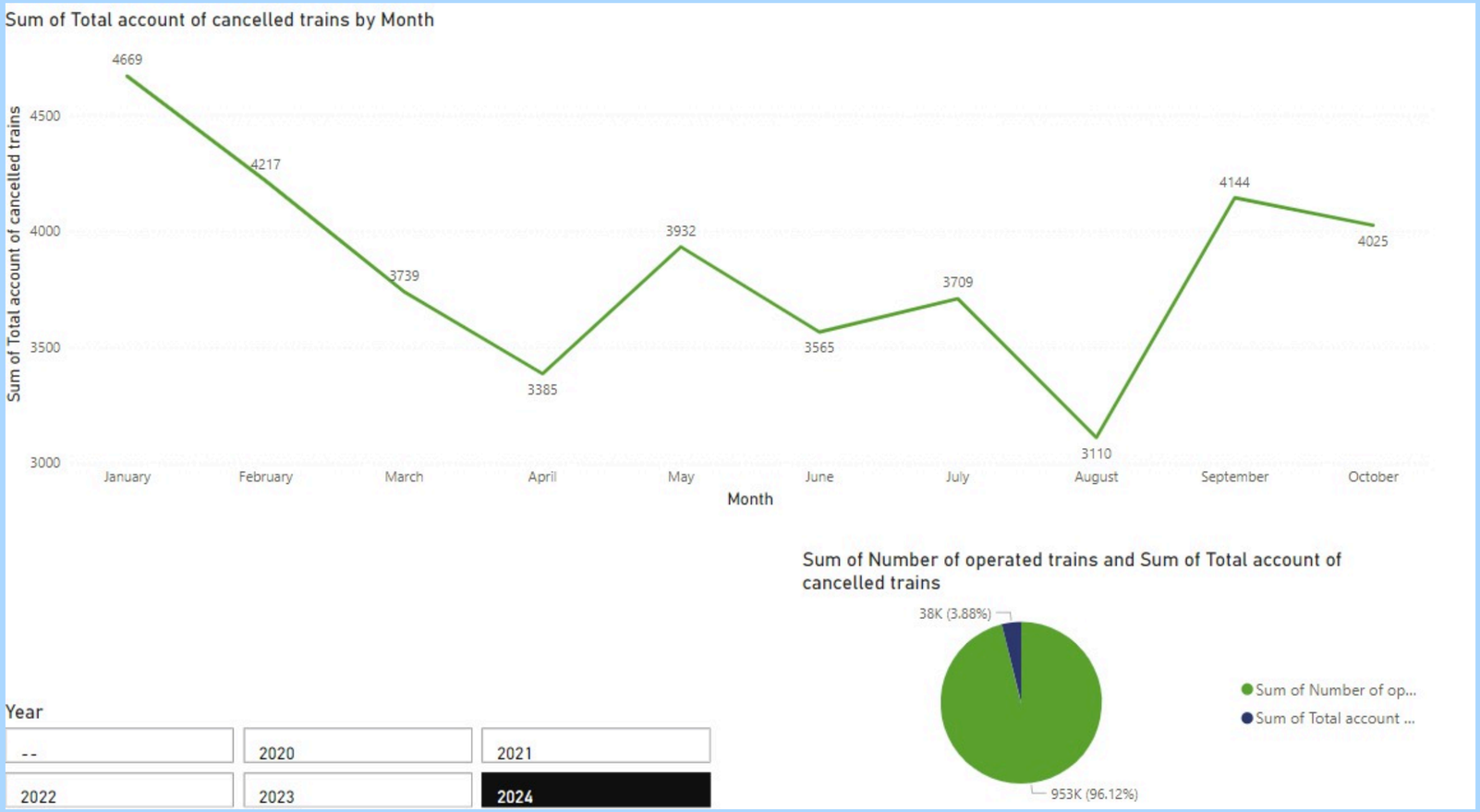


Cancellations by Month:

- **January** saw the highest cancellations **(~4669).**
- Cancellations dropped to a low in **August (~3110).** before rising sharply in **September (4144)**.

Conclusion:

Seasonal change and operational factors impact cancellation trends.

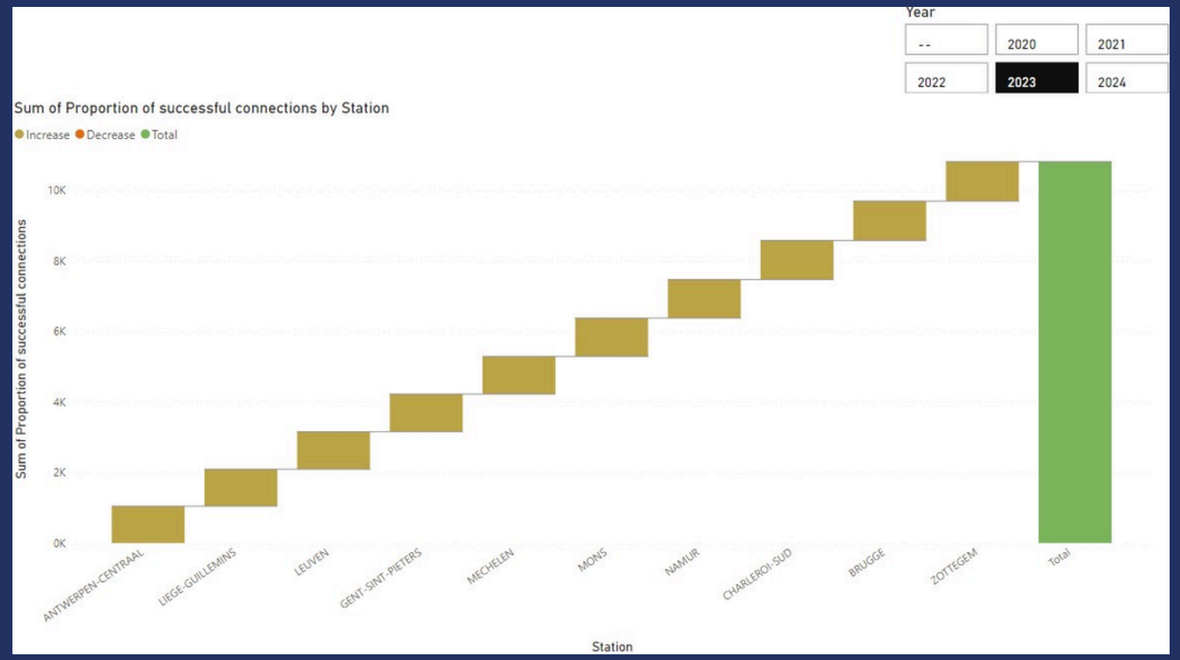
SPECIFIC ISSUES IDENTIFIED

Punctuality Trends by Month

- Highest punctuality in August **(90.2%).**
- Low punctuality in February **(84.4%)** and November **(79.6%).**
- End-of-year (November-December) shows a slight recovery.
- We found out that over the years, there has been constant strikes in November.

Station-Specific Performance

- Stations like Antwerpen-Centraal, Liege-Guillemins, and Leuven show relatively **lower successful connections.**
- Consistent improvement is required across stations to stabilize connections.



Recommendations

Improve Punctuality for INT Trains

- Conduct root cause analysis for low punctuality in INT trains (only 53%).
- Focus on infrastructure issues or international operational challenges.

Target High Cancellation Months

- Strengthen operations and resource allocation in January and September to reduce cancellations.
- Implement real-time monitoring systems and maintenance schedules during high-risk months.

Enhance Station Performance

- Improve scheduling and coordination at Antwerpen-Centraal, Liege-Guillemins, and Leuven.
- Invest in connection management systems to reduce delays between connections.

Implement a Data-Driven System

- Use predictive analytics to anticipate delays and proactively optimize schedules.

Conclusion

INT Train

INT trains' poor punctuality drives high cancellations in January and September, requiring root-cause analysis and better management.

Seasonal Preparedness

Focus on real-time monitoring and predictive analytics to mitigate delays during high-risk months (January and September).

Operational Improvements

Target key stations (Antwerpen-Centraal, Liege-Guillemins, Leuven) and optimize scheduling to stabilize connections.

THANK YOU !