UIC SAFETY PLATFORM

UIC Safety Report 2024
Significant Accidents 2023

October 2024

INTERNATIONAL UNION
OF RAILWAYS

Foreword

Since 2007, UIC has been committed to delivering a comprehensive Annual Safety Report, providing a critical insight into safety performance and trends across the railway industry. These reports, published in a PDF format, have served as a valuable resource, fostering a deeper understanding of our safety metrics and progress year after year.

This year, in keeping with our dedication to innovation and continuous improvement, we are delighted to be able to introduce a significant improvement in the presentation and sharing of this document. For the first time, the UIC Annual Safety Report will be presented as an interactive, dynamic dashboard operated by Power BI. While the underlying logic and structure of the report remain the same, this new format provides enhanced functionalities, offering a more flexible and user-friendly way to access, analyse, and visualise safety data.

The decision to transition to a dashboard-based report reflects UIC's commitment to making safety information more accessible and actionable. Users will now have the ability to interact with the data, drill down into specific metrics, and customise the visuals to meet specific requirements. This shift aligns with our goal to not only present data but to provide a tool that supports deeper engagement with safety performance indicators, enabling faster, data-driven decision-making across the industry.

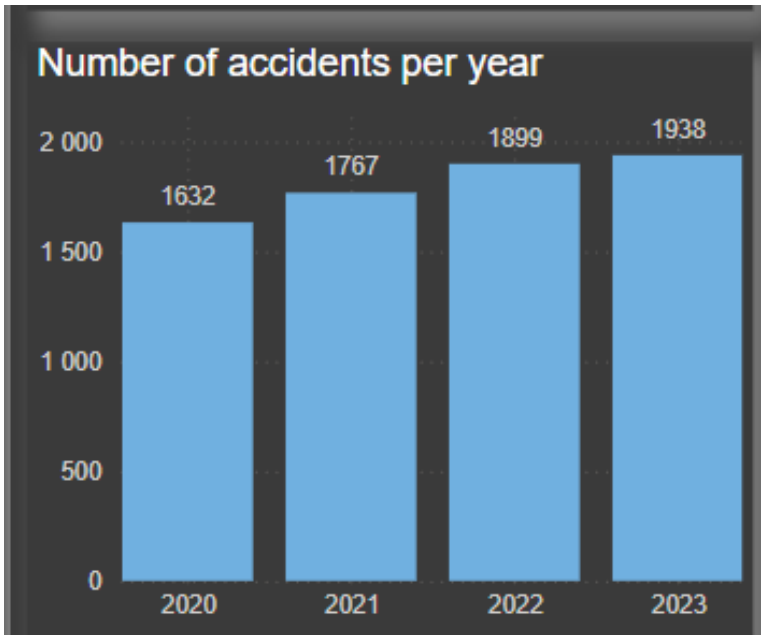
We are also pleased to welcome new contributors to the UIC Safety Report: Amtrak from the USA, ANI from Colombia, and SOFSE from Argentina. Their participation marks a significant step towards expanding the global reach of our safety reporting. In the future, we hope that more infrastructure managers from other countries will join this initiative, further developing the scope of the UIC Safety Report and improving cooperation to improve safety worldwide.

We are confident that this new approach will add significant value to the UIC safety reporting process and look forward to the positive impact it will have on enhancing transparency, collaboration, and safety outcomes across the railway sector.

François DAVENNE

Executive summary

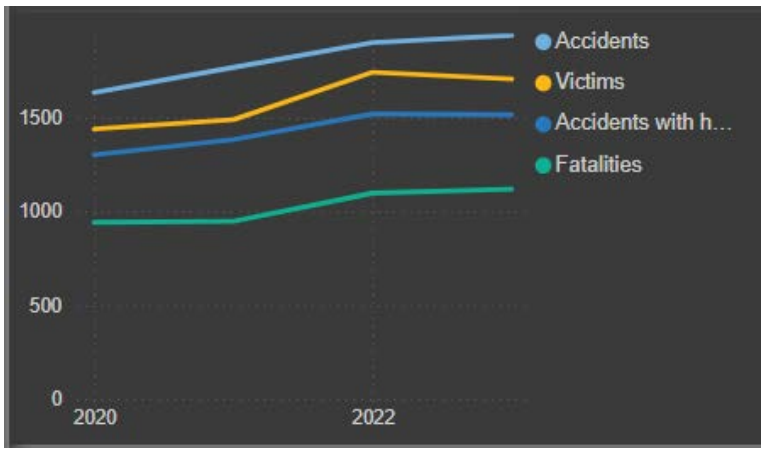
This year, 36 railway undertakings from 33 different countries across Europe, Asia-Pacific and the Americas provided their safety-related data for the UIC Safety Database. 25 of these companies also participated in an additional data collection for a focus study on Signals Passed at Danger (SPADs). UIC is pleased to announce that this year the Safety Report's scope has expanded to the Americas thanks to the participation of three new companies: the Argentinian State Railways (SOFSE), the Columbian National Infrastructure Agency (ANI), and Amtrak from the USA. UIC remains committed to broadening its reach and inviting companies worldwide to join this initiative, improving safety, and working together towards a harmonised safety taxonomy.



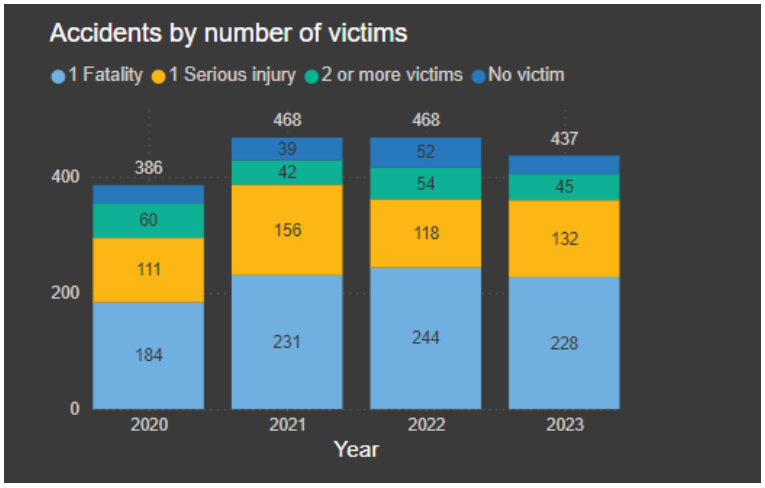
In 2023, as in the years following 2020 (the year impacted by COVID-19), a sustained rise in significant accidents was observed. This increase is reflected both in absolute numbers and in the accidents-per-train-kilometer ratio.

This upward trend poses a new challenge for the railway sector, given the long-term downward trend observed from 2006-2019.

Despite the increase in the number of significant accidents in 2023, the Global Safety Index (GSI) showed a slight decrease compared to 2022. Similarly, the Relative Safety Index mirrored this GSI trend, with minor fluctuations. Nonetheless, this downward trend in the GSI is a positive sign.

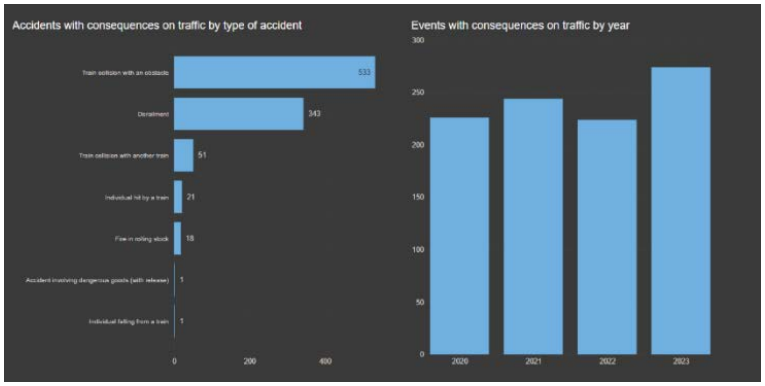


In 2023, safety data was mixed. While the total number of accidents increased, the number of victims decreased. Unfortunately, despite this, the number of fatalities was also on the rise, underscoring the severity of certain events.

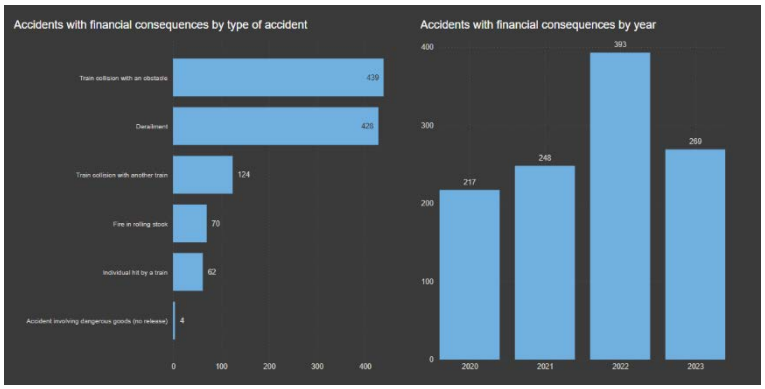


The number of level crossing (LC) accidents in 2023 decreased by approximately 7% compared to 2022, as LC accidents without victims recorded a notable 38% fall, but LC incidents involving individuals rose significantly from the previous year.

Train collisions with obstacles (such as road vehicles) at level crossings fell by approximately 15% between 2022 and 2023, while incidents involving individuals being hit by trains increased by approximately 15%.



There was a notable increase in events causing traffic disruptions, reaching one of the highest levels in the dataset since 2006. This surge appears to be strongly correlated with the high number of train collisions with obstacles, which stands out as the primary contributor.

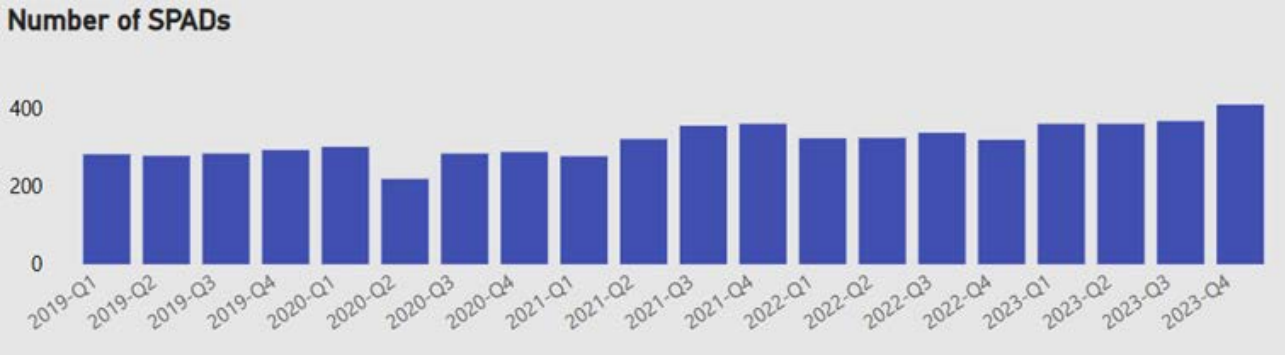


In 2023, accidents with financial consequences declined when compared with 2022. The spike observed in 2022 was due to not only a high number of train collisions with obstacles (163 incidents) but also derailments (114 incidents), both of which had a significant financial impact. Additionally, less frequent incidents, such as fires and dangerous goods accidents, also played a role.

Focus 2024: SPADs

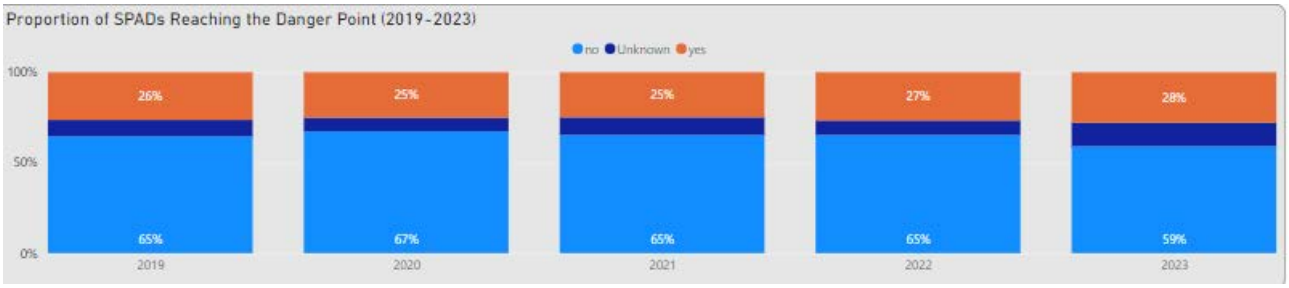
This year's study focused on Signals Passed at Danger (SPADs). The variables examined included the type of train, the nature of the railway line, and the presence or absence of train protection systems. To analyse the causes of SPADs, the Human Performance Factors and 10 Incident Factors Framework established by the Rail Safety and Standards Board (RSSB) was adopted, with UIC's gratitude for their contribution. Nevertheless, identifying the root causes of SPADs remains a complex task due to the varying systems and classification categories used by different companies, making it challenging to align them effectively. However, certain companies aligned their cause categories with those used in this study, which greatly contributed to a more consistent and comprehensive analysis.

In addition to examining the causes and consequences of SPADs, this report also includes an intra-annual analysis. SPAD trends are assessed on a quarterly and monthly basis, enabling the identification of potential seasonal patterns or periods of heightened risk. This analysis aims to enhance our understanding of when and why SPADs occur, ultimately leading to more targeted safety improvements in railway operations.



As a general observation, SPADs (Signals Passed at Danger) have been on the rise over recent years. This increase, as shown in the graph, mirrors a similar upward trend in significant accidents during the same period.

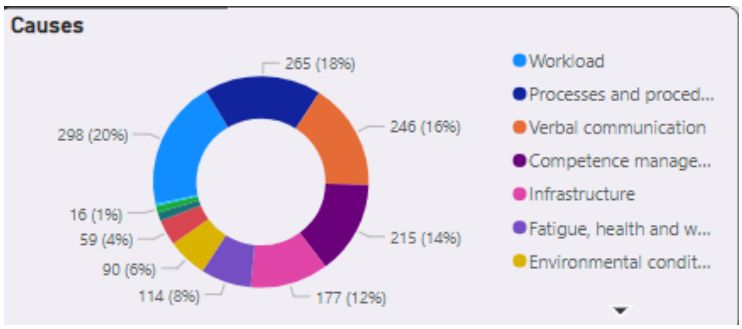
This trend is reflected in both actual counts and normalised figures per train-kilometer, except for 2020, when the opposite trend was observed due to the COVID-19 pandemic.



A stable majority of SPADs are not reaching the "danger point": the proportion of SPADs where it was not passed (blue) remains consistently high, around 65-67% in most years.

Only 19% of SPADs result in accidents. For the purposes of this study, the term "accident" includes collisions, derailments, level crossing (LC) accidents, and incidents involving individuals.

Very few SPADs reach the danger point when there is a continuous speed monitoring system. This shows that continuing to deploy these systems (e.g. ETCS) is beneficial for safety.



For incidents with identifiable underlying causes, the primary contributing factors are workload, processes and procedures, and verbal communication.

This executive summary outlines key highlights from the UIC Safety Report. For the complete report and more in-depth information, please use the provided links to access the full interactive digital version via Power BI.

UIC Safety Public Report: https://urlr.me/5GMcr

UIC Safety Report Focus 2024: https://urlr.me/Pfe5c

UIC Safety Report 2024
Focus on SPADs

This report presents an in-depth analysis of Signals Passed at Danger (SPADs), a critical issue in railway safety. SPADs occur when a train passes a stop signal without authorization, posing significant risks to the safety of rail operations. One of the key challenges in analyzing SPAD incidents lies in the diverse approaches used by different infrastructure managers to categorize the causes. These varying methods make it difficult to create a harmonized taxonomy for SPAD incidents, as each manager may emphasize different aspects or definitions of causality.

For the purposes of this report, we have adopted the taxonomy provided by the Rail Safety and Standards Board (RSSB), and we extend our gratitude to them for their contribution. Using this standardized framework allows us to explore SPAD incidents, considering variables such as the type of train involved, the nature of the railway line, and the presence (or absence) of train protection systems. However, identifying the root causes of SPADs remains complex, as they often result from a combination of human, technical, and operational factors.
The study defines the term "accident" to encompass the following categories: collision, derailment, level crossing (LC) accident, and incidents involving individuals.
In addition to examining the causes and consequences of SPADs, this report also includes a intra-annual analysis. We assess SPAD trends on a trimester and monthly basis, allowing us to detect potential seasonal patterns or recurring periods of heightened risk. The aim of this analysis is to provide a clearer understanding of when and why SPADs occur, ultimately contributing to more targeted safety improvements in railway operations.

We would like to express our sincere gratitude to all participants (listed hereafter) who provided the data making this ad hoc study possible: ÖBB (AT), Infrabel (BE), ŽSR (SK), NRIC (BG), SZ (CZ), SBB CFF FFS (CH), ADIF (ES), EUSKOTREN (ES), SNCF Réseau (FR), FGC (ES), Network Rail (GB), MÁV (HU), RAI (IR), CIE (IE), LTG (LT), RFI (IT), CFL (LU), LDZ (LV), ProRail (NL), PKP (PL), Bane NOR SF (NO), IP (PT), CFR (RO), Trafikverket (SE), SZ (SI).

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