

6th German Conference on Rail Human Factors 18th/19th February 2025

Decoding Delay: Human Factors Perspective on Stranded Trains in Germany

Kristin Mühl, Paul Stutz, Birgit Jaekel – DZSF

In the context of rail operations, train disruptions involving prolonged standstills present a significant challenge, both for operational efficiency and passenger satisfaction. In recent years, there have been numerous reports on the news on stranded trains in Germany, stopping for two hours or longer between two stations. While critical incidents in rail transport receive substantial attention, non-safety-critical yet operationally disruptive events have been comparatively overlooked. It should be noted, however, that even a non-critical incident involving a stranded train can have consequences that jeopardise the safety of passengers if it takes too long to continue the journey or to evacuate. In particular, if people's basic needs (toilet, air to breathe, tolerable temperatures) are not adequately met and stress levels rise, this may lead to actions that endanger other people.

This research focuses on analyzing stranded trains within regional and long-distance services in Germany from May 2023 to May 2024, focusing specifically on incidents that were not necessarily safety-critical but remained unresolved for a period of at least two hours. Unlike regular delays or minor disruptions, several hundred cases highlight unusual and infrequent operational challenges where standard disruption management processes were unable to restore normalcy in a timely manner. The data is currently being comprehensively analysed and examined for human and organisational factors (e.g. human error, internal and external communication processes, decision making processes). Our approach aims to identify systematic patterns and recurring issues that contribute to these disruptions. To gain a more profound understanding of the processes and patterns, it is recommended to conduct comprehensive interviews with the individuals involved in the process following the analysis. We will therefore present and discuss initial qualitative methodological approaches.

This research contributes to the limited body of knowledge on stranded trains by applying a focus of human and organisational factors to an issue that is often treated solely from a technical or logistical perspective. Insights gained from this study aim to support rail operators and other stakeholders in developing more resilient and human-centered disruption management strategies, ultimately leading to more reliable rail services and improved passenger experience.