

## Railway safety in 2020. An overview

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Fewer accidents, less traffic on tracks and a very low accident rate sum up railway safety in 2020. Unfortunately, the number of victims in accidents remains unchanged as compared to 2019. Only 20% of incidents can be attributed to malfunctioning of the railway system, 80% of these accidents occurred at rail-road crossings and during illegal crossing of tracks. Due to the COVID epidemic, 2020 was an unusual year in many aspects.

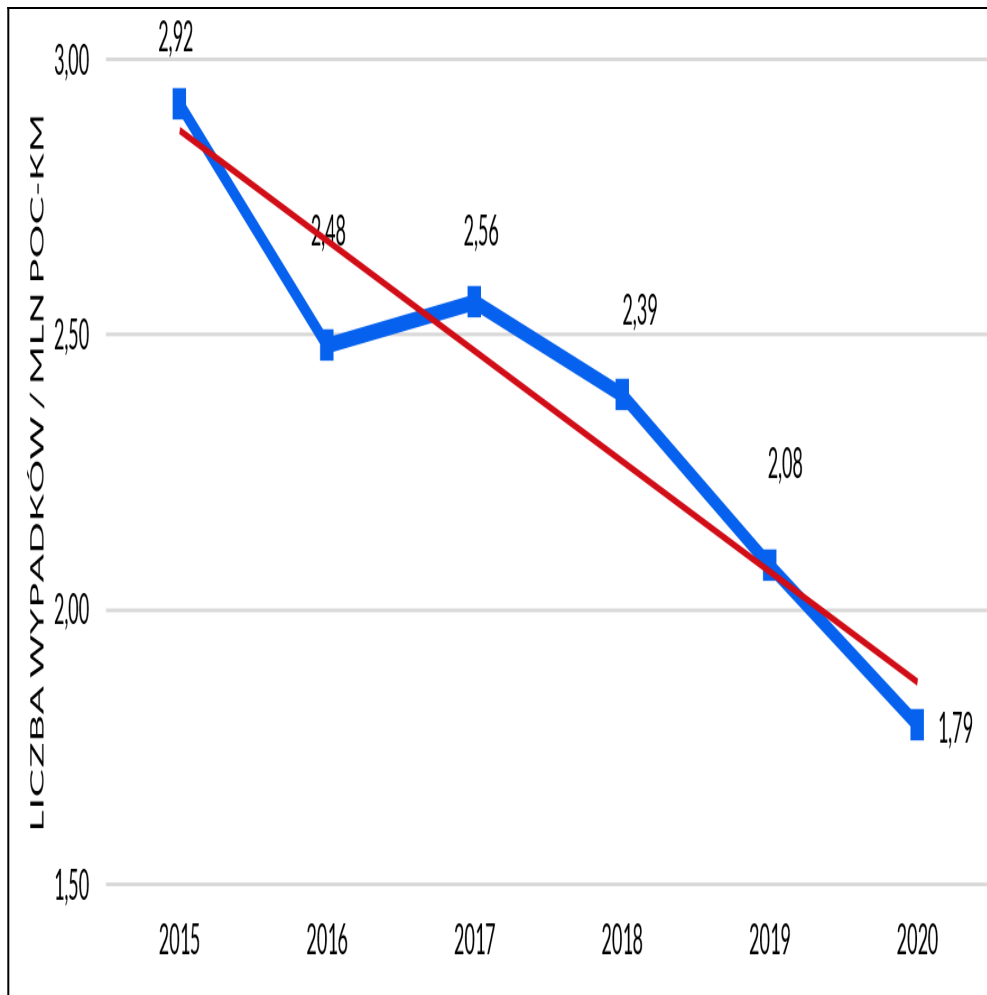
### NUMBER OF ACCIDENTS AND ACCIDENT RATE

In 2020 there was a significant decrease in the number of accidents in rail transport as compared to previous years. 425 accidents were recorded on railway lines (including 6 serious ones), 19% less than in 2019, when 525 accidents took place (4 serious ones). There were 111 accidents at railway sidings as compared to 117 in 2019 (a decrease of 5.1%).

*- One of the reasons for a significant drop in the number of accidents can be attributed to unusual conditions we experienced in 2020. The limitations brought by the epidemic were the reason for a unpredicted decrease in demand for transport services, which in turn resulted in lower traffic on tracks. In these circumstances, the most reliable indicator of the safety level on railway lines is the accident rate, which relates the number of incidents to the operational performance - comments Ignacy Góra, the President of the Office of Rail Transport. - In 2020 the accident rate was only 1.79 and the lowest ever since we started collecting data - he adds.*

In 2020 passenger and freight trains run a total of almost 15 m train-km less than in 2019 (6% drop). The accident rate, which is the quotient of the number of accidents and the operational performance of all trains in a year, was 1.79. The lower the rate, the higher is the safety level. The accident rate allows to assess the level of safety, as it is not dependent on fluctuations in operational performance, which feature is particularly important during a decrease in transport in the current epidemic.

Fig. 1. The accident rate in 2015 - 2020



## ACCIDENTS ON LEVEL CROSSINGS AND ILLEGAL TRACK CROSSING

As in previous years, the largest number of accidents in 2020 occurred with a third party (external to railway system). In total, there were 332 such accidents, which is 78.1% of all accidents on railway lines. The remaining 93 accidents are incidents which cause is internal to the railway system – omission of employees, incorrect performance of tasks or improper functioning of infrastructure or rolling stock. A significant decrease was recorded in the number of accidents within the railway system – in 2019 there were 149 such accidents, which is a decrease by 37.6%. In 2020 there were 170 incidents on level crossings as compared to 199 in 2019 (15% decrease).

Fig. 2. Accidents at level crossings and illegal track crossings in 2015 - 2020

Fig. 3. The number of accidents by category of level track crossings – 2019 and 2020 comparison

In order to increase the level of safety at level crossings, the President of the Office of Rail Transport initiated in 2020 testing of an innovative monitoring system for level crossings. These

innovative devices can register breaches of the Highway Code by a car driver or warn a driver, for instance about approaching a crossing too fast. Recordings with infringements can be automatically sent to appropriate authorities.

Fig. 4. Number of fatalities and seriously injured persons in accidents at level crossings in 2020

Accidents with persons crossing rail tracks illegally in places where it is not permitted are another category and unfortunately common occurrence. In 2020 150 such accidents were recorded as compared to 142 in 2019 (6% increase). The number of these accidents may change as many are still under investigation and it is possible that some may be reclassified as suicides.

Fig. 5. Accidents involving persons crossing rail tracks at level crossings and in places where it is not allowed in 2015-2020

## CASUALTIES AND FATALITIES IN RAILWAY ACCIDENTS

In 2020 161 persons died in rail accidents (number unchanged as compared to 2019) and 48 persons were seriously injured (number unchanged as compared to 2019). Almost all fatalities were in accidents with a third party. In 2020 47 people died in accidents at level crossings, which is 21.7% less than in 2019 (60 people were killed). As compared to 2019 there were more victims among unauthorized persons on railway sites - 111 people as compared to 100 in 2019 (11% increase).

In 2020 there were also two accidents which causes can be attributed to the railway system (two persons died at the Szymankowo station, where a locomotive collided with a draisine, and one during modernisation works on line No. 351).

Fig. 6. Number of persons injured in accidents in 2020

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Fig. 7. Number of persons injured and killed in accidents at level crossings in 2020

## SPAD INCIDENTS

Another group of incidents with potentially serious consequences are those related to the omission of a signal prohibiting further ride, including a semaphore indicating the "Stop" signal and incidents resulting from starting a railway vehicle without permission. These are collectively

referred to as SPAD – from "Signal Passed at Danger".

In 2020 there were 14 fewer (-50%) SPAD accidents than in 2019, while there were 2 more (+ 2.4%) SPAD incidents than in 2019. The total number of accidents and incidents in this category is 10.8% less than in 2019. Despite recorded decrease, the number of these incidents is still high.

Fig. 8. Number of SPAD incidents in 2015-2020 (railway lines and sidings)

Due to the consequences of omitting the signal prohibiting further ride, preventing SPAD incidents requires both continuous improvement of railway carriers as well as educational and supervisory activities of the President of the Office of Rail Transport. The grave consequence of such incidents were visible in a fatal accident at the Szymankowo station (omission of the entry signal and calling-on signal led to a collision of a draisine with a locomotive).

The President of the Office of Rail Transport monitors the number and causes of SPAD incidents. In 2020 the activities of the task force for monitoring the safety level of the railway sector in Poland concerned, inter alia, this group of incidents. Meetings were held with the rail carriers which have particular problems with SPAD incidents and with several companies whose employees participated in SPAD incidents and have the shortest professional experience. Train drivers with little experience cause nearly 40% of incidents in this category. The President of the Office of Rail Transport also noted that it is necessary to verify not only the work of the driver, but also the superiors and persons responsible for training.

The data presented in this article are from the Railway Incidents Register for 2020 as of February 1, 2021. Taking into account the ongoing proceedings of railway commissions or state authorities, the figures provided should be treated as preliminary. These data may be verified later and may change.