

# A Study on Railway Accident in Korea

12 OCT. 2021

Aviation and Railway Accident Investigation Board(ARAIB)



Ministry of Land,  
Infrastructure and Transport

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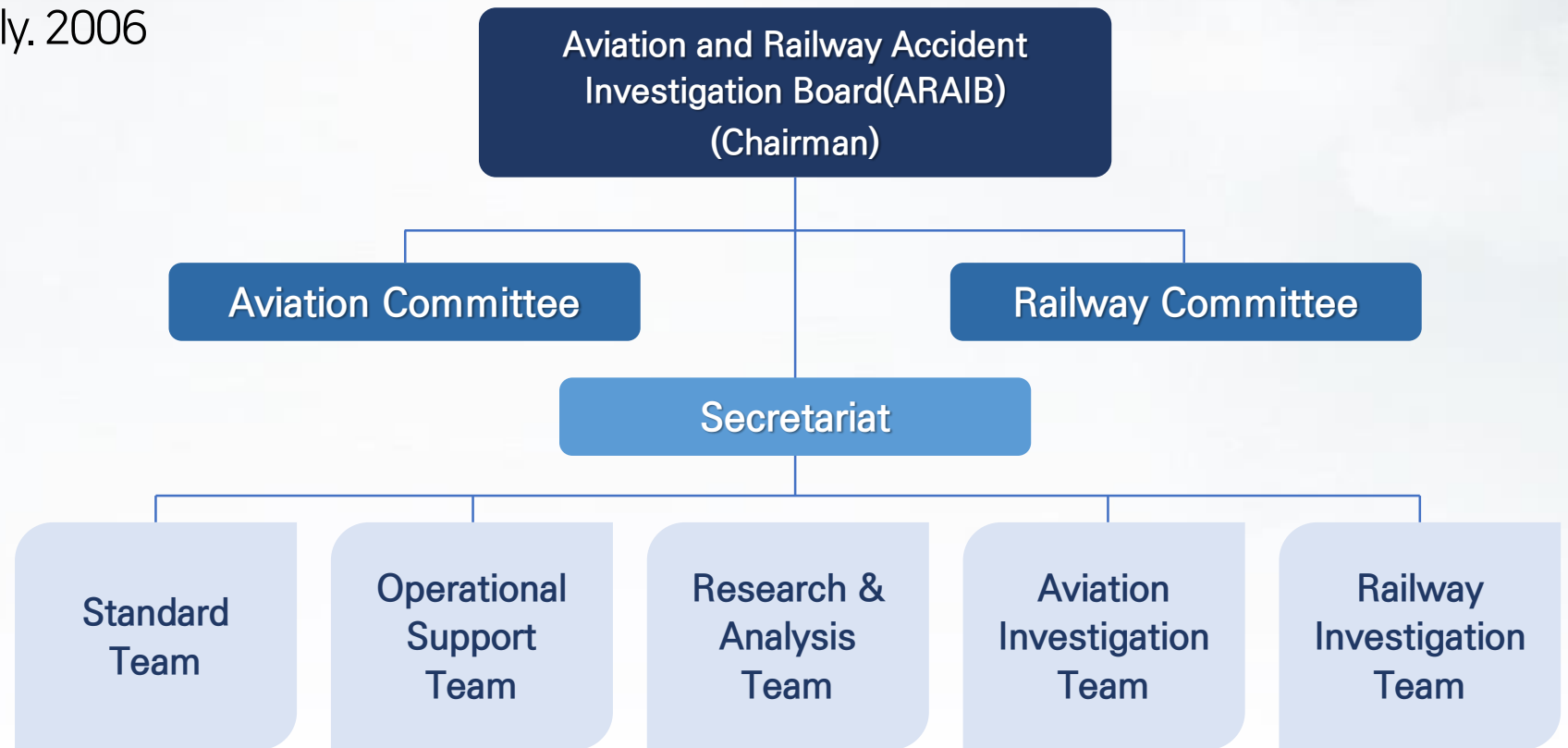
# I | Introduction

- ✓ Name : **"Aviation and Railway Accident Investigation Board(ARAIB)"**

<http://www.araib.go.kr>

- ✓ Establishment : July. 2006

- ✓ Organization



## II | Scope of Railway Accident Investigation

### ✓ Aviation and Railway Accident Investigation Law Article 2

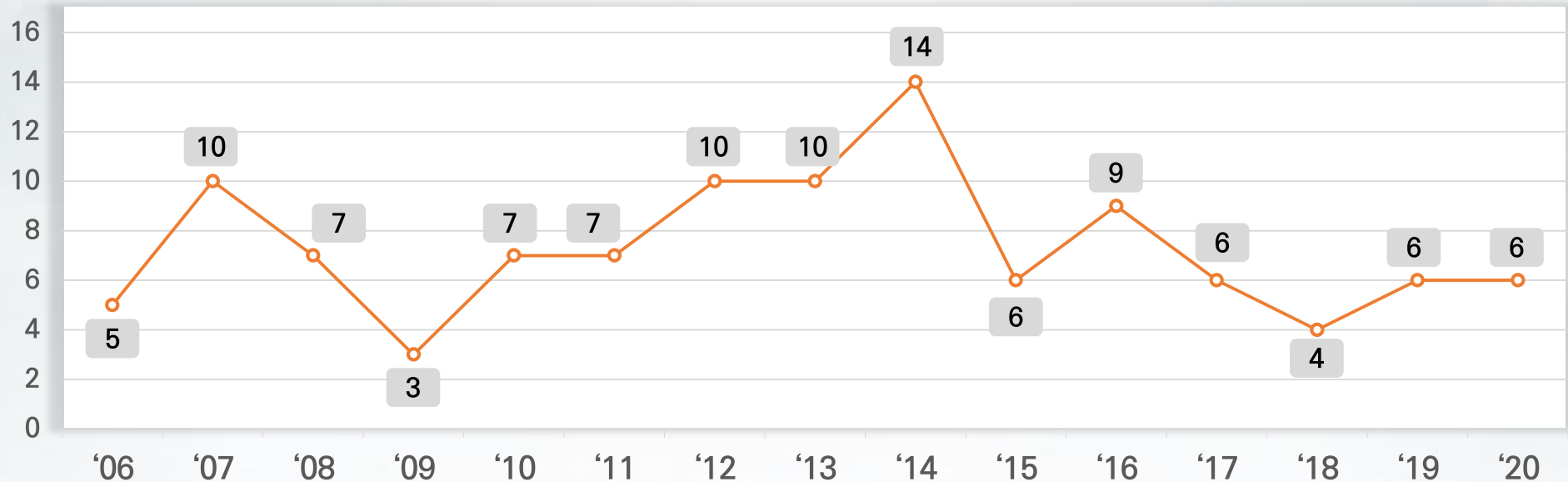
▶ Train collision or derailment

▶ Railway vehicle or train fire accident

▶ More than three casualties in the operation of a railway vehicle or train

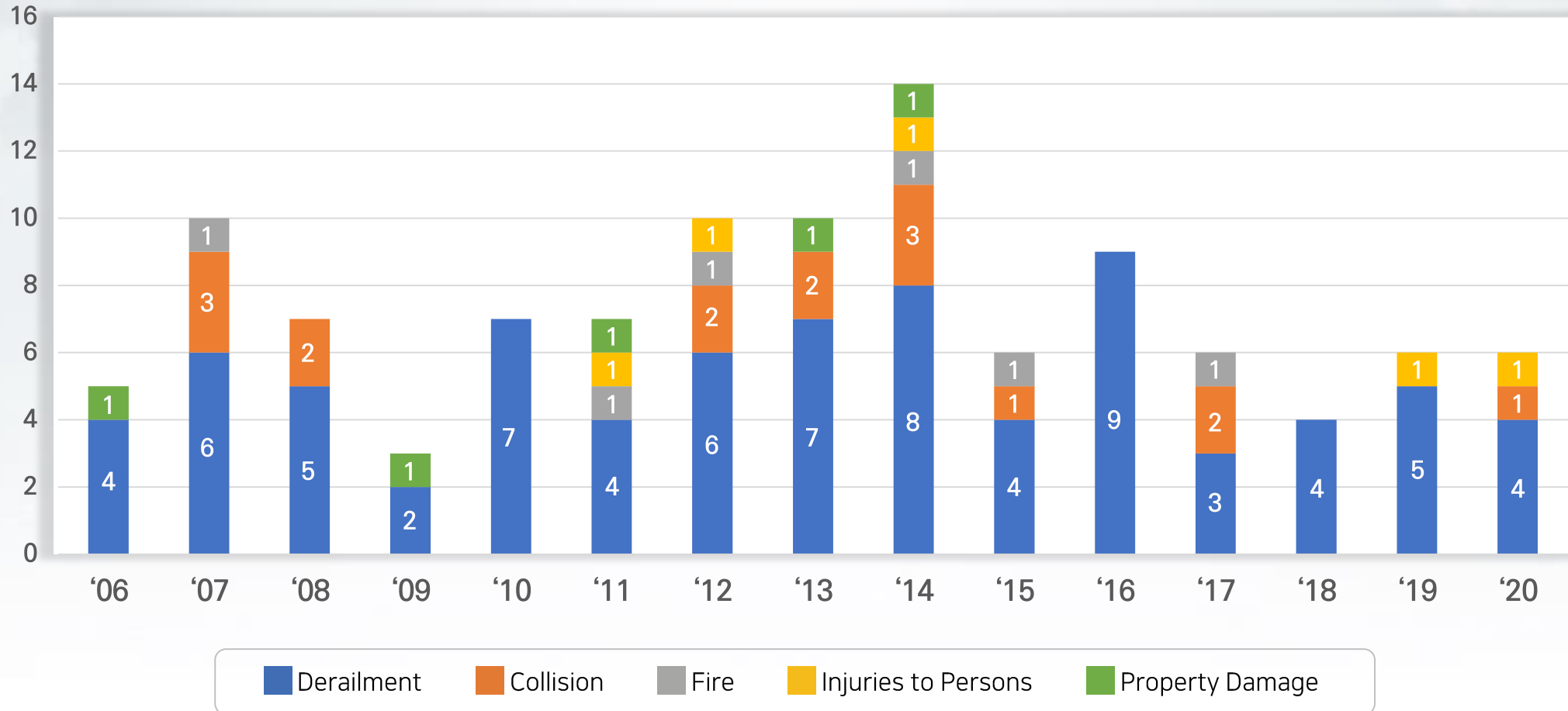
▶ Damage of more than 50 million won during the operation of a railway vehicle or train

## 1 Status of the Number of Annual Accidents

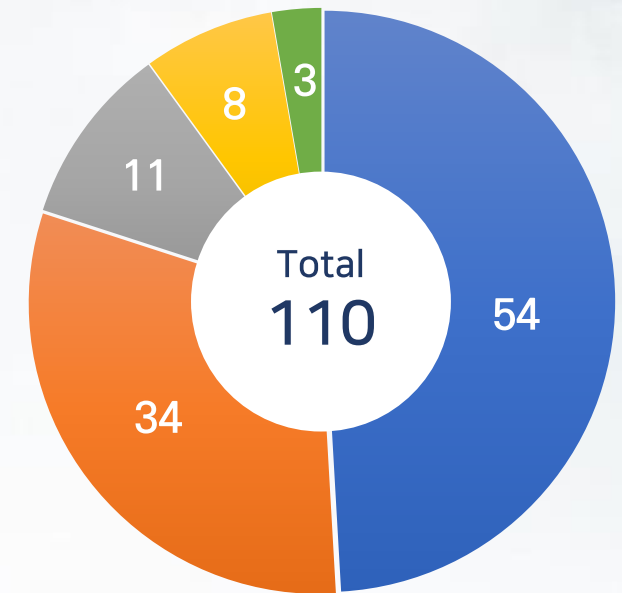
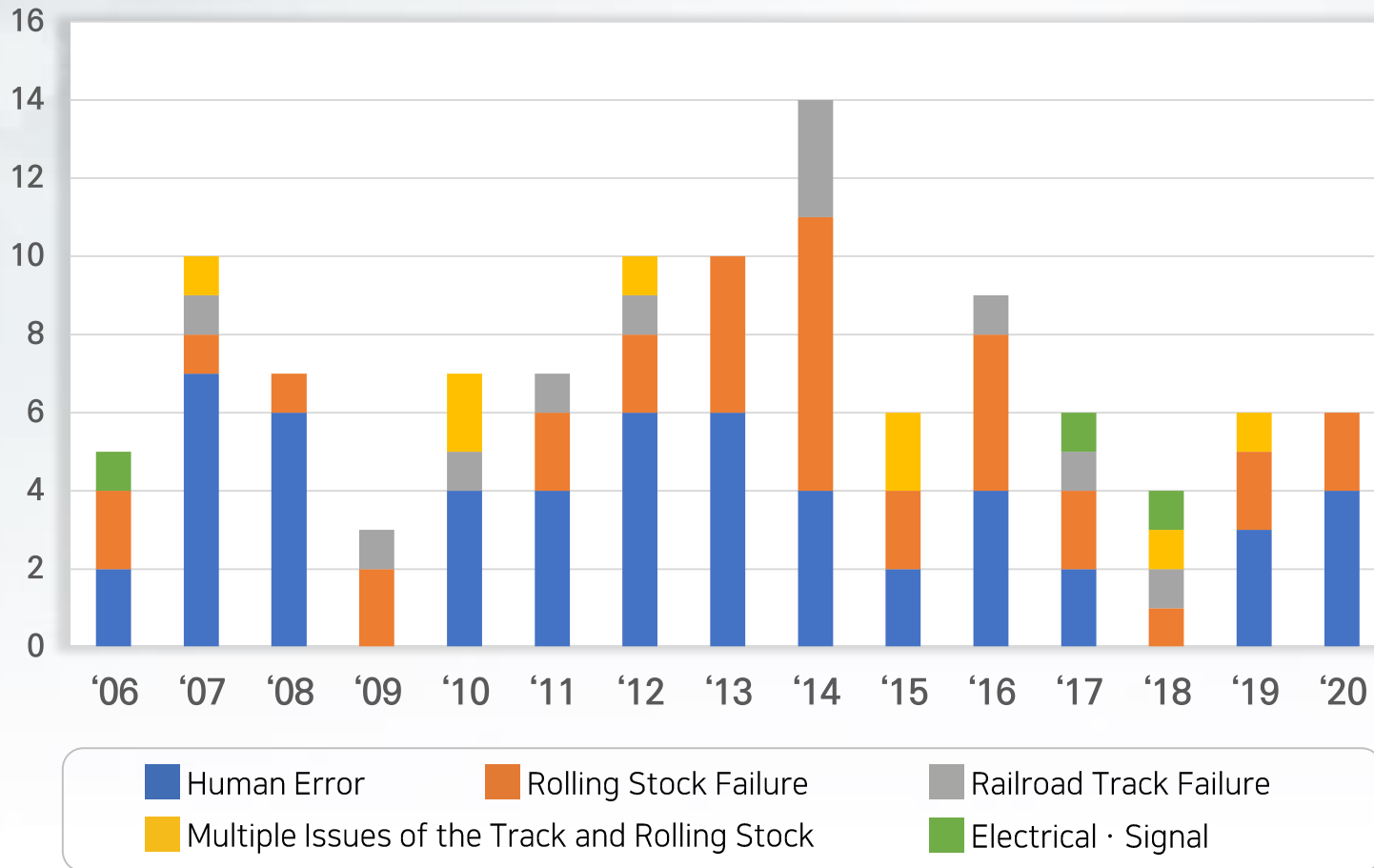


- ✓ For 15 years Since the Establishment of ARAIB (From July 2006 to December 2020), there have been an average of 7.3 annual accidents.
  - Since the Railway Safety Management System(SMS) was introduced(2013) and implemented(2014) as a part of safety policy enhancement, the number of railway accidents has shown a single-digit number.

## 2 Status of Accident Types



### 3 Status of Accident by Cause

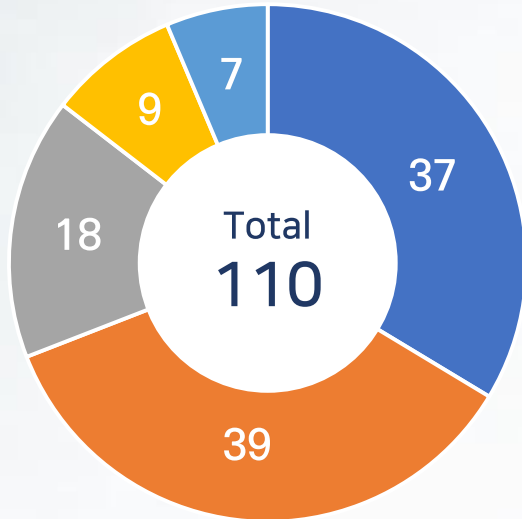


# III

## Analysis on Railway Accident Statistics

### 4 Status of Train Types

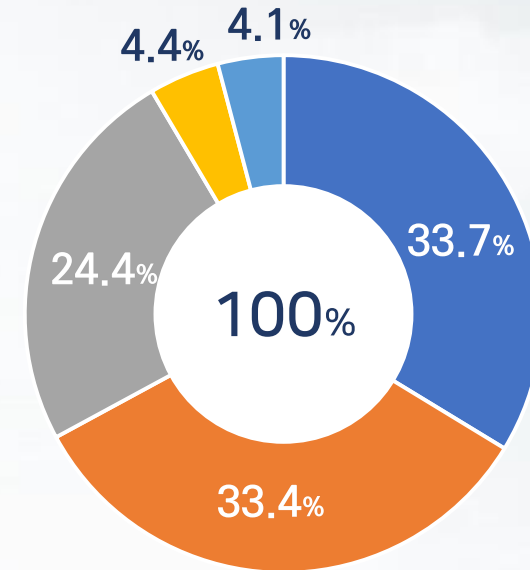
(No. of Occurrence)



Types of Train	Cargo Train	Metro Train	Passenger Train	Maintenance Train	High-speed Train	Total
No. of Occurrence	37	39	18	9	7	110

### 5 Status of Issued Safety Recommendation

(Ratio)

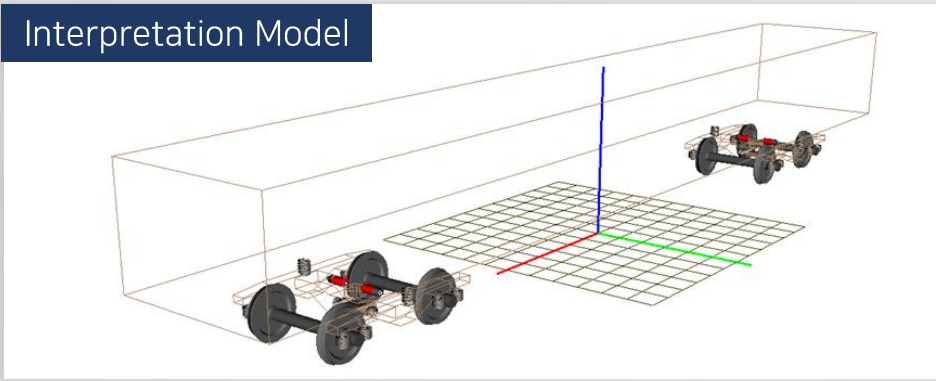


Improvement Measures	Guidance and Inspection	System Improvement	Equipment Improvement	Education & Training	Compliance with Standards
Ratio	33.7%	33.4%	24.4%	4.4%	4.1%

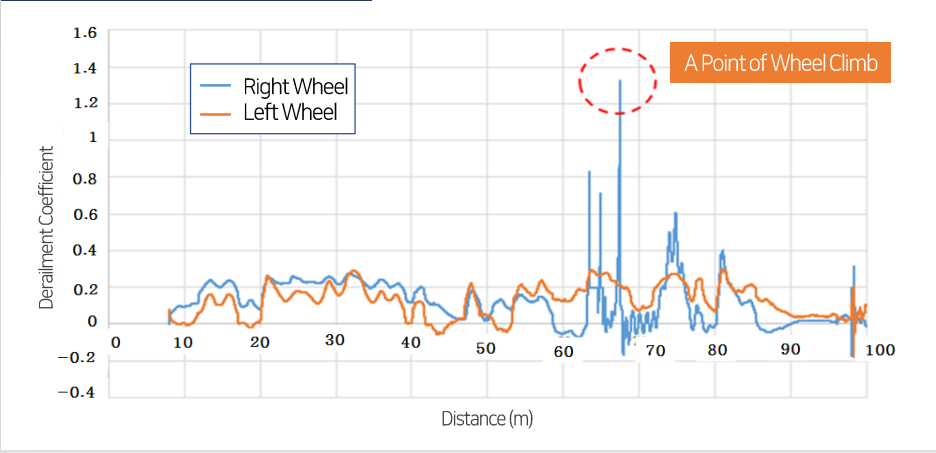
# IV Accident Analysis Case Study

## 1 Derailment Analysis

Interpretation Model



Interpretation Result

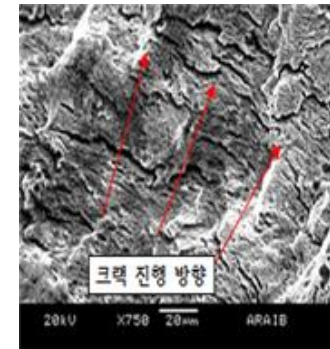


\* As a result of interpretation, derailment coefficient of the right wheel was 1.3 exceeding the reference value of 1.2

## 2 Analysis on Fracture Surface

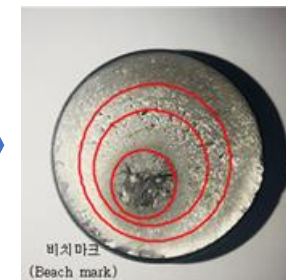
Scanning Electron Microscope

\* Crack's direction of travel checked



Imaging Microscopy

\* Fatigue crack grown on the surface and propagated to the middle





# Accident Prevention Activity

## ✓ Overview

- **(Purpose)** To educate railway operators about accident case studies and encourage them to discuss how to prevent railway accidents and secure safety
- **(Period)** From 1 Jun. to 14 Oct. 2021
- **(For)** 9 Railway Operators
  - KORAIL, SR Co., Seoul Metro, Busan Transportation Co., Daegu Metropolitan Transit Co., Incheon Transit Co., Gwangju Metropolitan Rapid Transit Co., Daejeon Express Transit Co., Airport Railroad Co.
- **(Main Agenda)** Presentation on Railway Accident Case and Discussion
- **(Future Plan)** Education will be annually implemented and further expanded to Light Rail Transit Operators.





# Accident Prevention Activity

## Materials

### ✔ Case 1



### ✔ Case 2



## ✔ Contents for Each Sector

### • Safety

- Train Collision in Taebaek Line from Moongok to Taebaek Station
- KTX Collision at Gyeongbu Line Daegu Station

### • Operation

- Metro Collision at Seoul Line No. 4 Sanggye Station

### • Rolling Stock

- Evaluation Method of Derailment Accident
- Metro Train Derailment at Gyeongbu Line Noryangjin Station
- Metro Train Derailment at Seoul Line No. 4 Balsan Station
- Metro Train Derailment at Seoul Line No. 4 Changdong Depot
- Cargo Train Derailment at Donghae Line Bujeon Station
- Metro Train Derailment at Gyeongbu Line Yeongdeungpo Station



# Accident Prevention Activity

## Materials

### ✓ Case 3



### ✓ Case 4



## • Track

- Maintenance Train Derailment at Jeolla Line Osu Station
- Cargo Train Derailment at Gyeongbu Line Daejeonjochajang Station
- Cargo Train Derailment at Taebaek Line Gohan Station

## • Signal

- Metro Train Collision at Seoul Line No. 2 Sangwangshipri Station
- Test Train Collision in Central Line from Wonduck to Yangpyeong Station
- KTX Derailment at Gangreung Line Cheongnyang Signal Box

**Thank you.**



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