

Effects of the lack of rail grinding on the rail maintenance

HENRIQUE CAROU

ICRI Workshop, August 27, 2023, Rio de Janeiro



Henrique Carou

Specialist Engineer

MetroRio

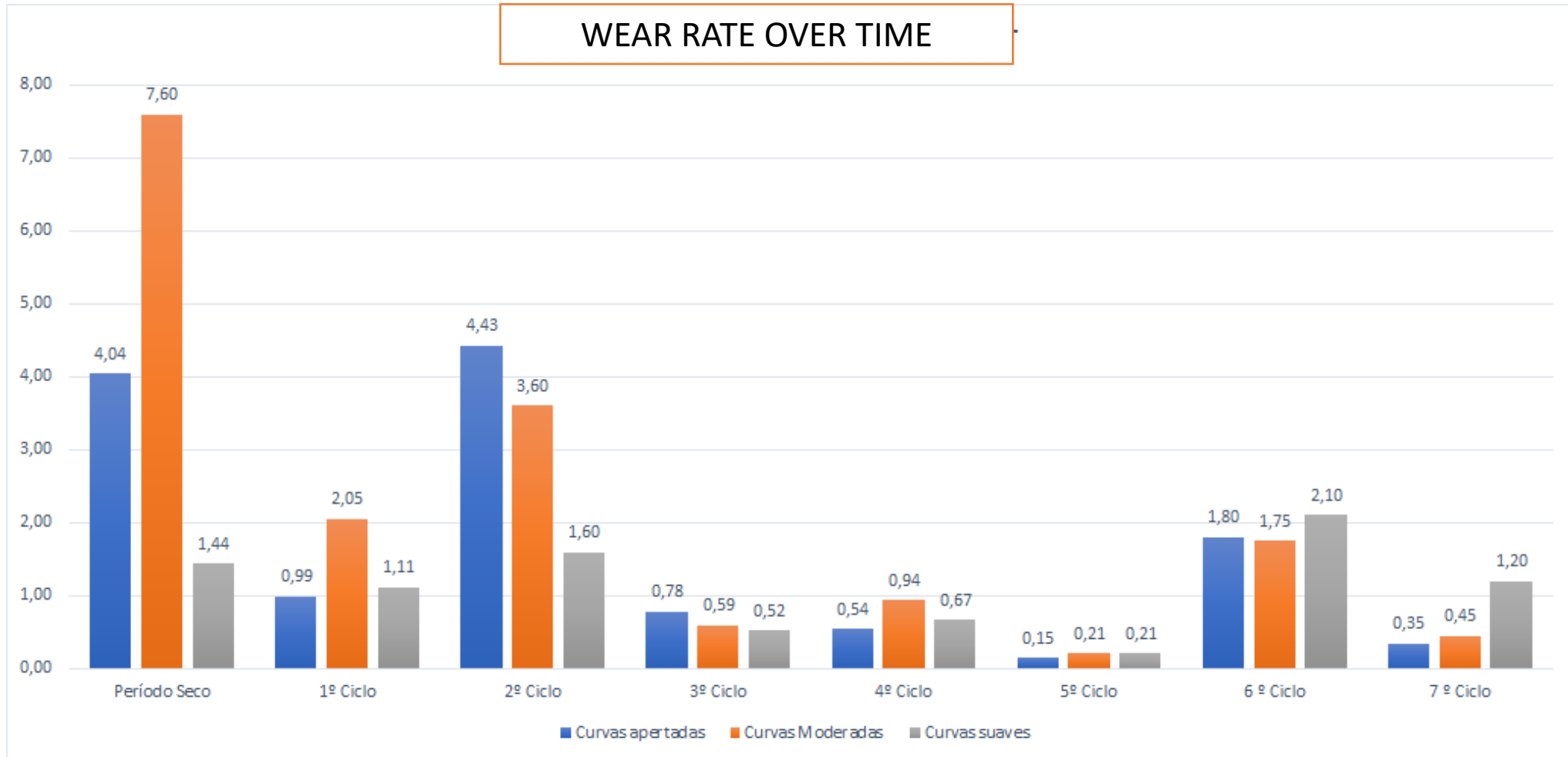
hcosta@metrorio.com.br



Case study of a metropolitan system

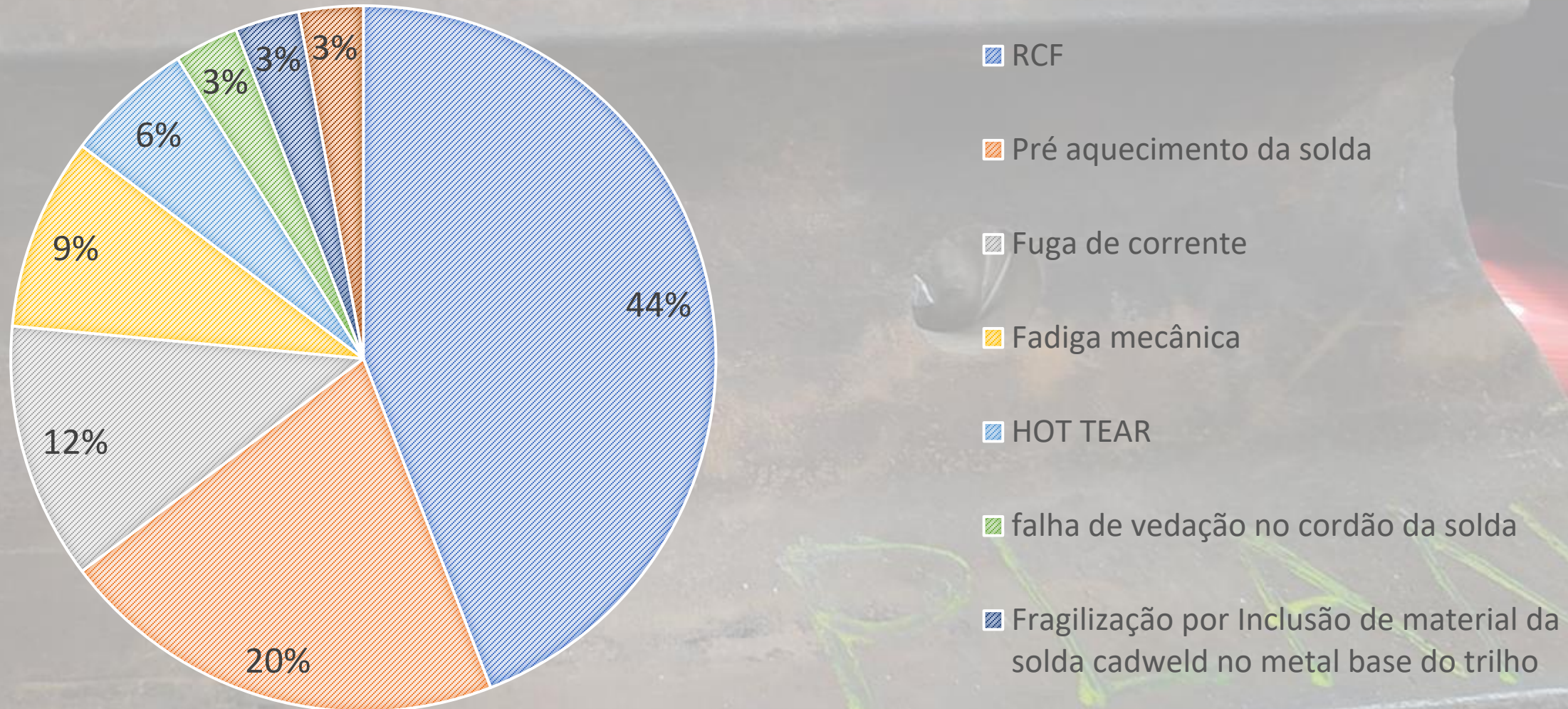
- Characteristics:
- Low Axle load
 - 17t/axle
- Short Headway
 - 3 minutes minimum
- 6 car configuration
- Standard 115-RE rails
- Slab and Ballasted track
- Elastic fastenings

Lubrication improvement An mid-journey

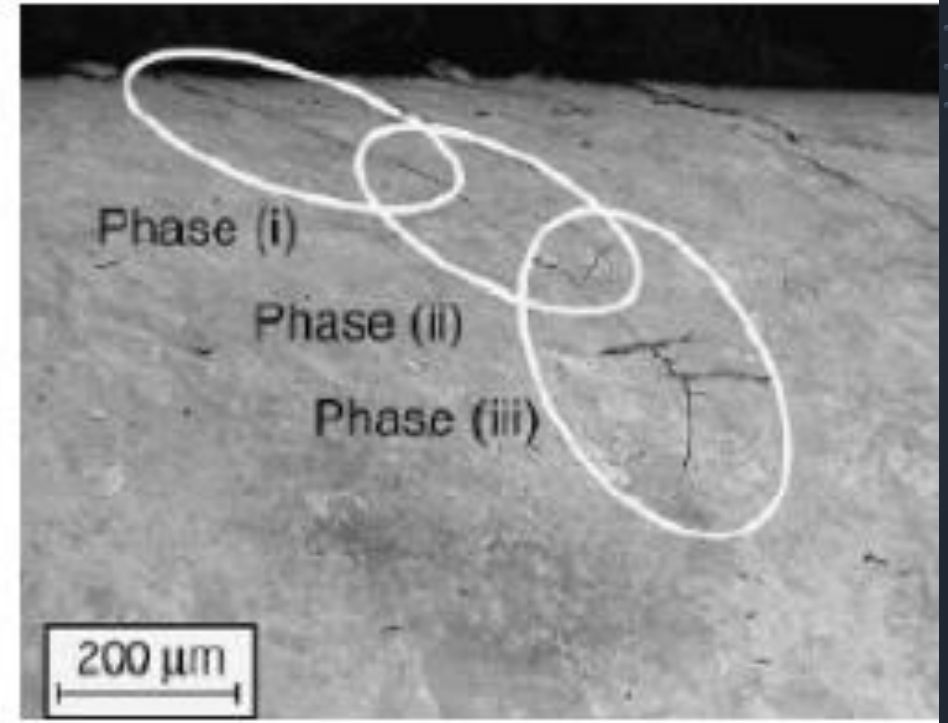
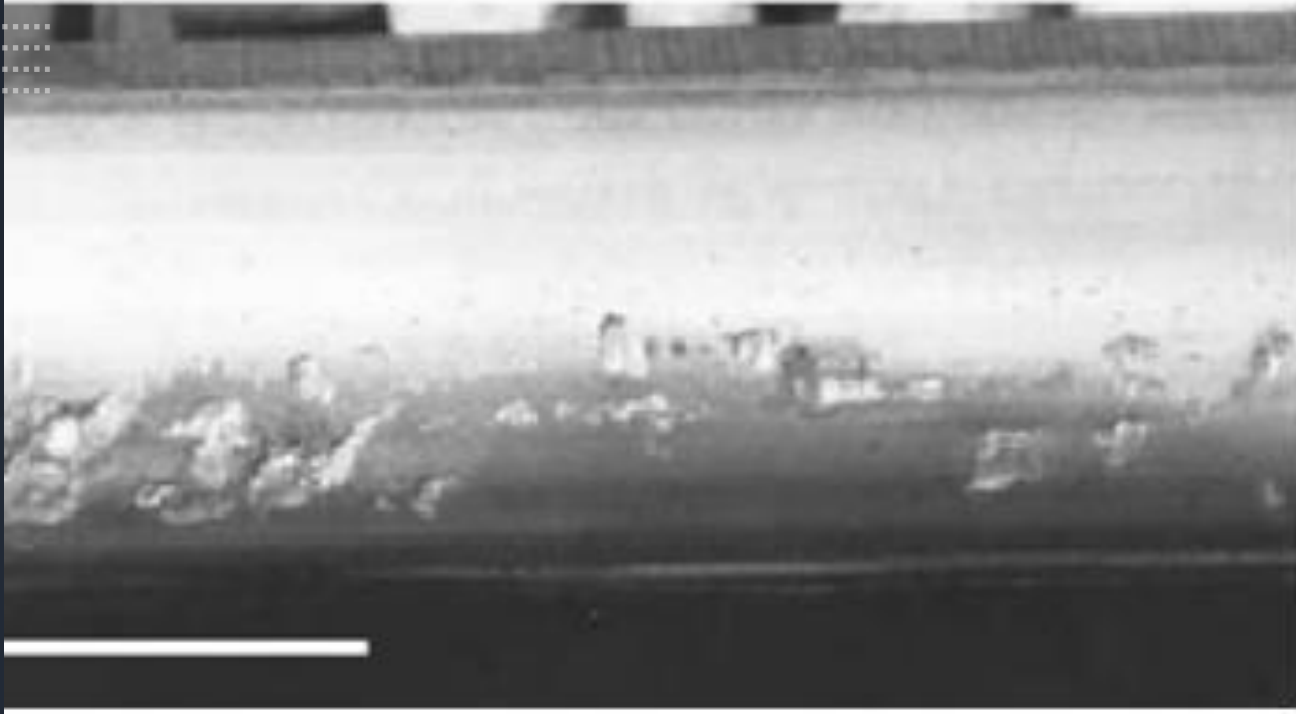


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Causes of rail fracture



RCF



- What is it?
- How it starts?
- How is the evolution?

RCF examples



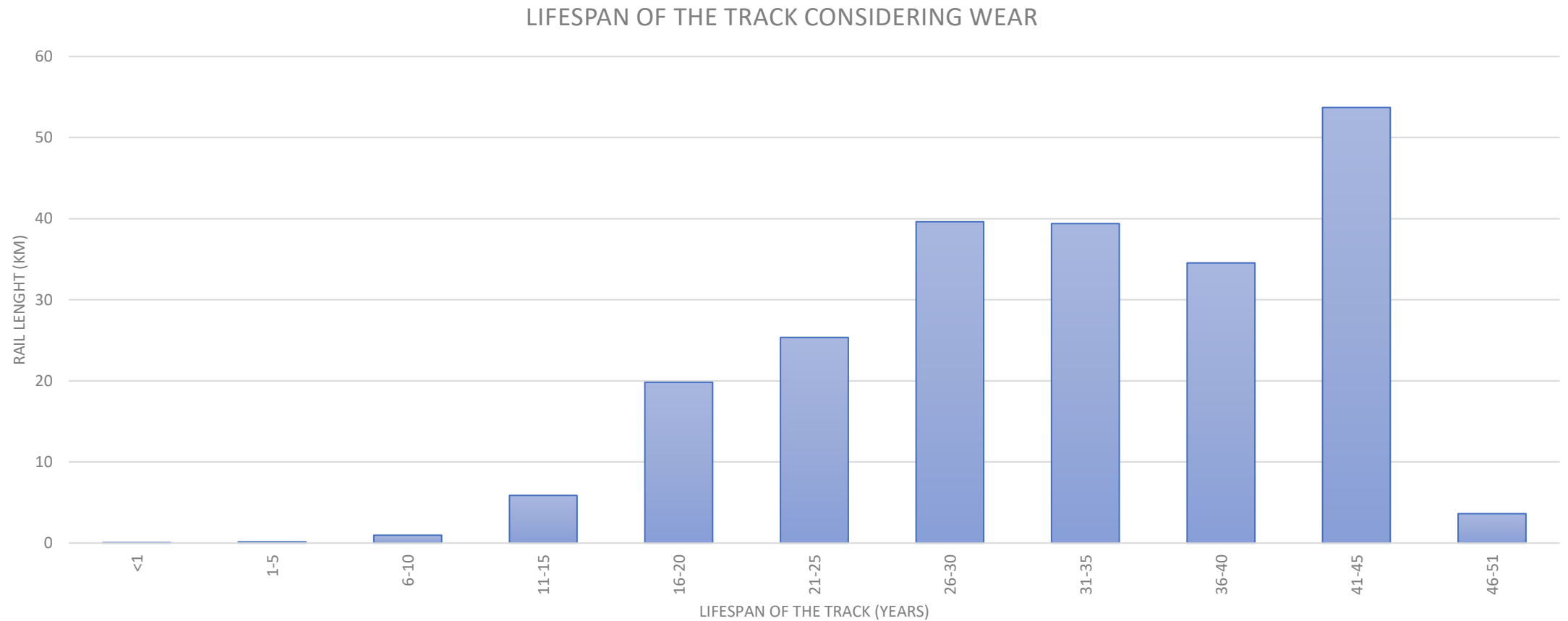
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Fractures Examples



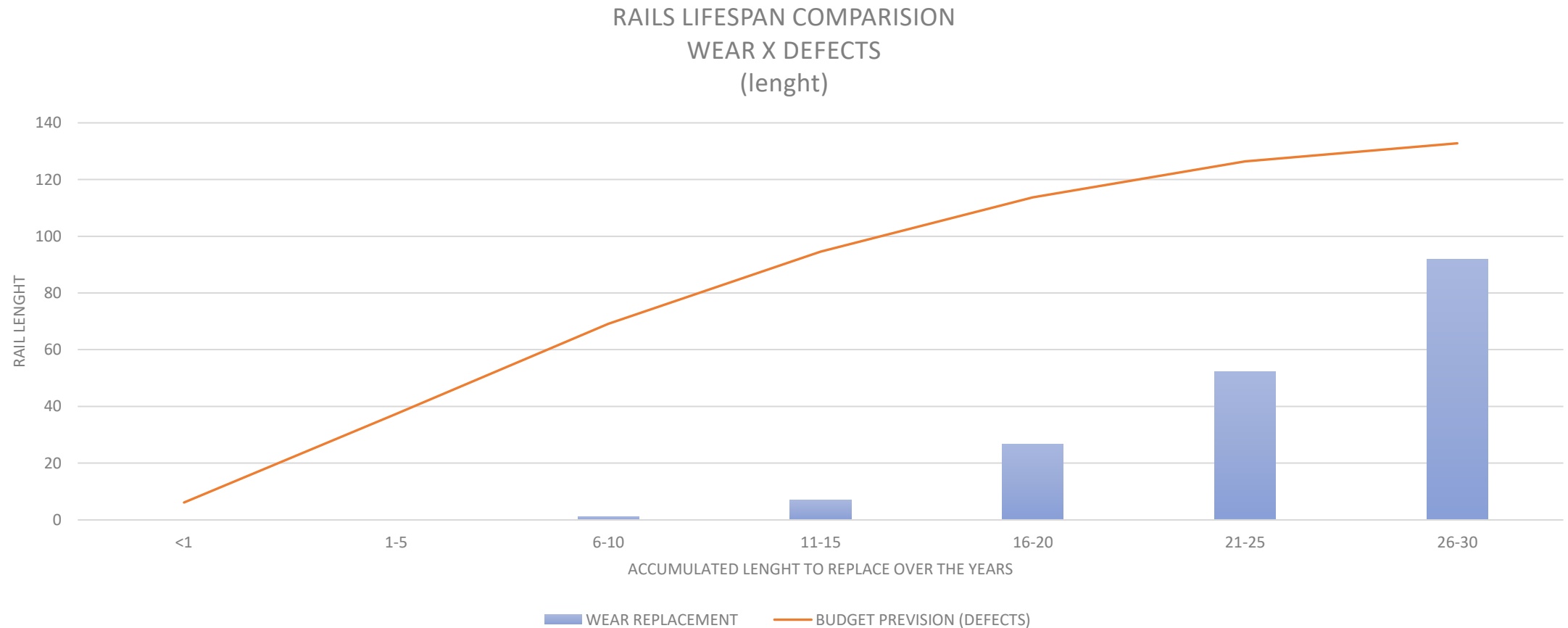
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Lifespan of the track considering wear



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Prevision of accumulated rail replacement over the years



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IMPROVED LUBRICATION



RAIL SURFACE
MANAGEMENT



INCREASED HARDNESS

RCF Control / Treatment

- Rail reprofiling
 - Growth prevention
 - Wheel x rail contact maintenance



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Harder Rails

Reduce defect. creation rate

47% increased lifespan

Gradual hardness avoid fragility

Hard on top and tenacious on bottom

Rail Head
fine-lamellar
fine-pearlitic
high hardness

Rail Web
lamellar
pearlitic
low hardness

Rail Foot
lamellar
pearlitic
low hardness

420 BHN

370 BHN

310 BHN

300 BHN



Thank You

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