Case Study
D-Spain
A-318 Road (CH.60+000, Córdoba)

The information detailed in this Case Study has been provided by DGT. The road A-318 is located in Cordova province (South of Spain) and connects A-92 highway (near Seville/Cordoba provinces border) and N-432 road. The road authority in charge is “Junta de Andalucía”, which is part of the Regional Government of Andalusia (Spain).

The road section has one lane per direction and its layout is winding (moderate speed limits and sharp curves). This road has been entirely coded (between CH.0+000 and CH.72+600).

The point of interest is located at CH.60+000, where the Annual Average Daily Traffic (AADT) in 2018 was 6,033 vehicles. Figure 1 shows the location of A-318 (CH.60+000).

The next figure is an aerial view of the A-318 (CH.60+000).

The pavement condition was not at the desired level, due to general deterioration over time.
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Maintenance Remedies

The maintenance measure was to re-surface the poor road condition stretches along the road. Additionally, markings and guardrails were included at the maintenance works. The maintenance was carried out by "Junta de Andalucía" Regional Government and, the investment budget was around 200,000 €/km.

The following images show the road surface condition, before and after the surface rehabilitation.

As it can be seen in Figure 4, the metal guardrails were changed at CH.33+000.

Road Assessment

The Star Rating Score (SRS – a measurement of the component parts of the risk where the higher the score, the higher the risk) has been analyzed for 100 meters of the resurfaced stretch before and after the maintenance works in both sections (CH.60+000 and CH.33+000).

Before, the maintenance remedies at CH.33+000 (Figure 5), the Star Rating Score was 10.24 for vehicle occupants, 23.03 for motorcycles and 128.46 for bicyclists. The road was not assessed for pedestrians. The Star Rating (the simplified assessment of risk where the higher the number of stars, the safer the road) was 2 stars for vehicles occupant and motorcycles and 1 star for bicyclists.

After the completion of the maintenance works at CH.33+000 (Figure 6), the Star Rating Score was 4.35 for vehicle occupants, 9.41 for motorcycles, not applicable for pedestrians and 47.79 for bicyclists. So, due to maintenance remedies only, the Star Rating was increased for all road users (4 stars for vehicles occupant, 3 stars for motorcycles and 2 stars for bicyclists).
Before the maintenance remedies at CH.60+000 (Figure 7), the Star Rating Score was 36.18 for vehicle occupants, 51.31 for motorcycles, not applicable for pedestrians and 209.01 for bicyclists. The Star Rating was 1 star for vehicles occupant, motorcycles and bicyclists.

After the completion of the maintenance works at CH.60+000 (Figure 8), the Star Rating Score was 11.38 for vehicle occupants, 13.54 for motorcycles, not applicable for pedestrians and 57.35 for bicyclists. So, as a result of maintenance remedies only, the Star Rating was significantly increased for all road users (3 stars for vehicle occupants and motorcycles, and 2 stars for bicyclists).

Conclusions
In this example the Star Rating is used to illustrate how the safety of part of a network can be assessed when maintenance measures are implemented. It shows how it is not necessary to rely entirely upon crash data to demonstrate a potential safety improvement.

The maintenance carried out improved the road safety status substantially, with the Star Ratings increased by one or two stars.

The maintenance-only remedies implemented are considered effective.

Figure 7. Star Rating Score: A-318 CH.60+000 (Before maintenance)

Figure 8. Star Rating Score: A-318 CH.60+000 (After maintenance)