Notes on MPR and warranty

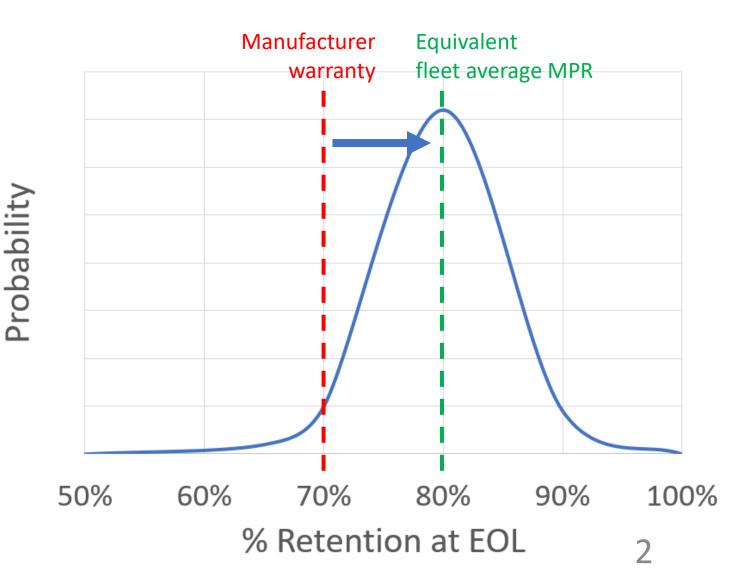
For discussion at UN ECE EVE-40, Nov. 24-25, 2020

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NOTE: the concepts presented here are for discussion only, and values presented are only for illustration of the concepts.

Difference between warranty and MPR

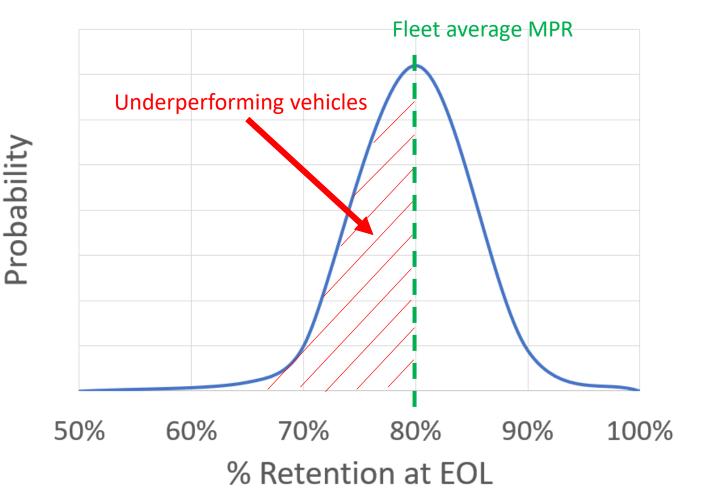
- MPR concept enforces a fleet average performance
- By contrast, manufacturer warranties enforce <u>individual</u> performance
- For a given performance curve in the field, the warranty level chosen by OEMs is therefore lower than the "equivalent" fleet average MPR



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Fleet average and individual performance

- By its nature, a fleet average MPR allows perhaps 1/2 of individual vehicles to underperform the MPR and still pass
- In this example, 50% of vehicles achieve < 80% retention (but most are > 70%)
- Shape of the curve matters
- If the distribution is sufficiently skewed, many could have << 70% retention
- How much individual underperformance is acceptable?
- How can we control it with a fleet average MPR?



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Possible "backstop" concept for MPR structure

- MPR might consist of fleet average criterion + backstop criterion
- Both must be met. For example:
 - Fleet must average 80% retention
 - AND not more than 10% of fleet can achieve less than 70% retention

