EU-Commission
JRC Contribution to EVE IWG:
In-vehicle battery durability e-HDVs: energy capacity fade

69th meeting of the GRPE Informal Working Group

Electric Vehicles and the Environment (EVE)

Elena Paffumi, Gian-Luca Patrone
Seoul, South Korea, April 16th-17th, 2024

European Commission

En capacity fade

➢ Attempt to compare JRC TEMA results with published data

EVE IWG 69th, Seoul, South Korea
April 16th-17th, 2024

Attempt to compare JRC TEMA results with published data

➢ Wang et al., *Large-scale field data-based battery aging prediction driven by statistical features and machine learning*, Cell Reports Physical Science 4, 2023 https://doi.org/10.1016/j.xcrp.2023.101720

- Collection of battery field data from **60** electric vehicles operating for over **4 years**
- Overall, the study incorporates a massive dataset consisting of **240 million rows of raw data** from the EVs for comprehensive analysis.
- Data pre-processing that features voltage curve reconstruction
- Extraction of aging-related statistical features from historical usage data
- Prediction of battery aging trajectories and end of life with
- machine learning

- **LiFePO4/graphite** chemistry battery cells
- Recharging strategy, slow (most common), fast and ultra-fast (lower percentage of cases)
- Temperature between 20C;40C
- Different DOD and SOC

Wang et al. 2023, https://doi.org/10.1016/j.xcrp.2023.101720

European Commission
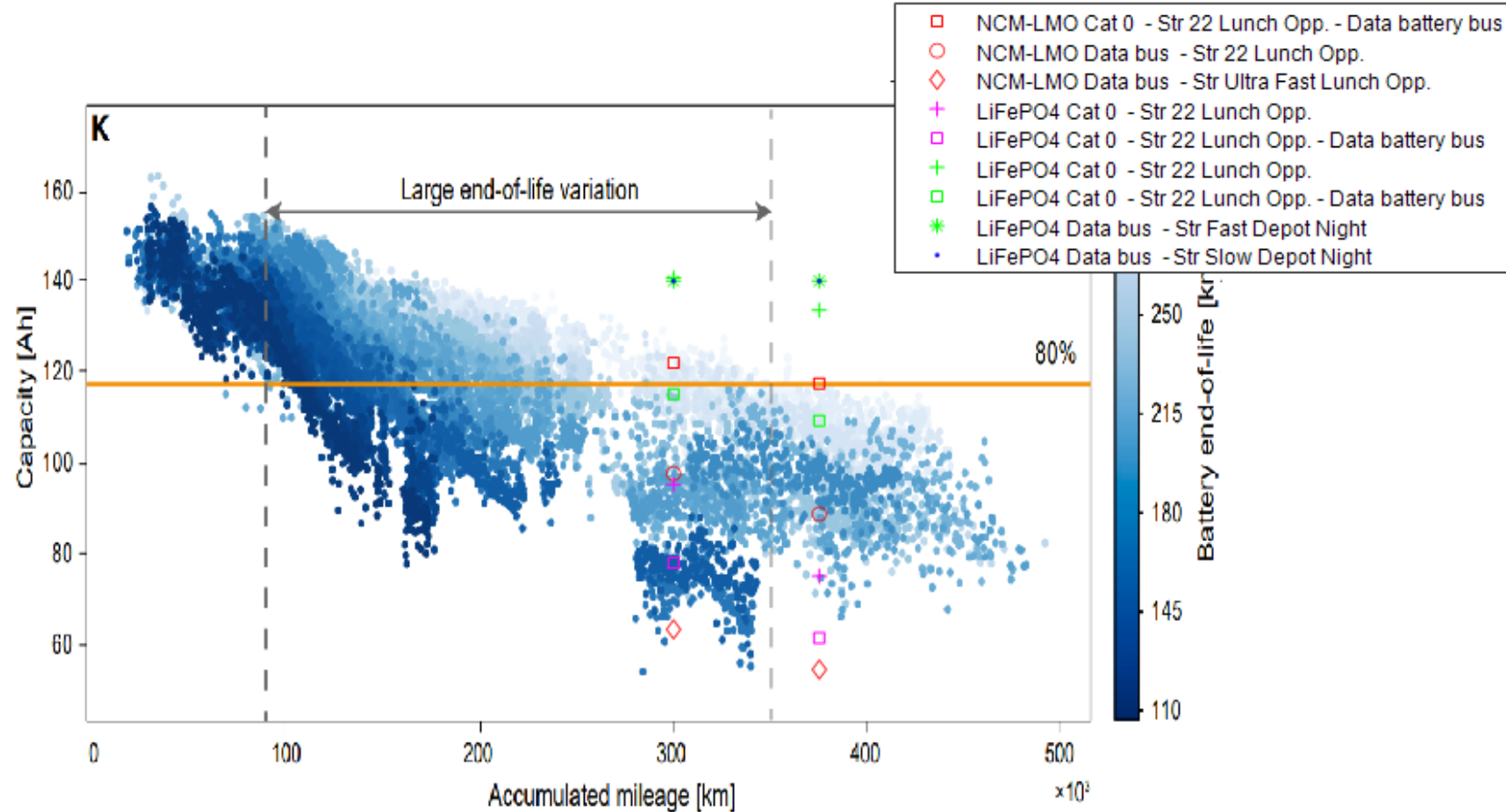
Thank you

Contacts Info:

EC DG JRC DIR-C EMC Sustainable, Smart and Safe Mobility Unit
elena.paffumi@ec.europa.eu, gian-luca.patrone@ec.europa.eu

European Commission