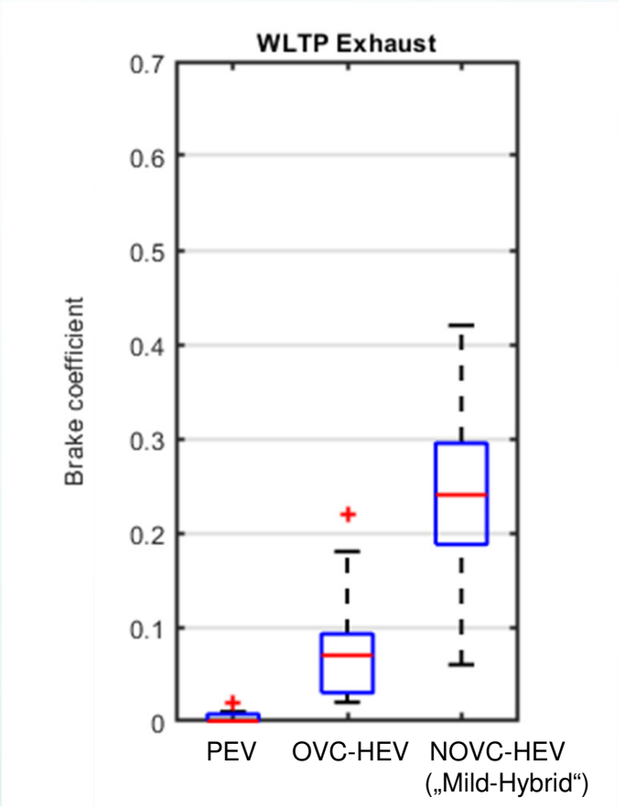
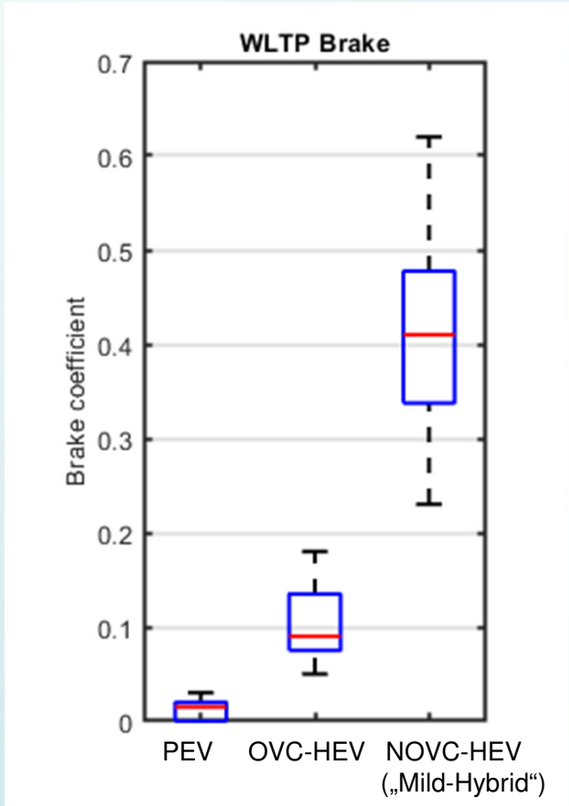
OICA Data Collection and Energy Share statement

- Anonymized data of OICA's data collection
- Measured or calculated friction brake shares during WLTC Exhaust & WLTP Brake
- 6 OEMs anonymized + data provided by JRC are used with 55 different vehicles
- For correlations plots, only data could be used, where pairs of data where available

OICA Data on Friction Energy Share





PMP Meeting 23.11.2022

Initial Conclusions on Friction Energy Share

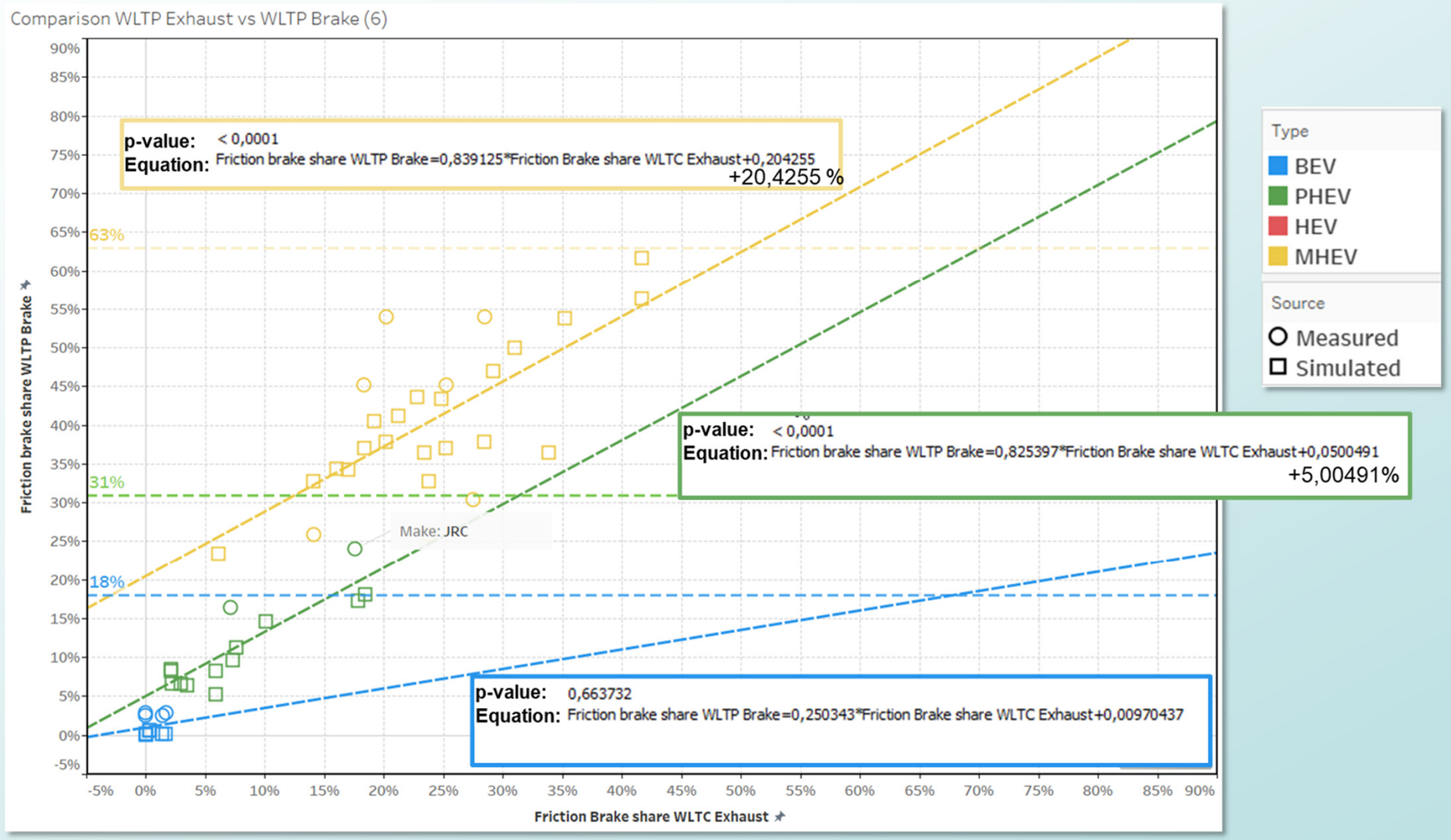
- DRAFT evaluation -

As presented in PMP Meeting, 23.11.2022

Vehicle Category	Observed Energy / Coefficient WLTP Brake median (range)	JRC's initial Coefficients
PEV	0.02 (0.0 - 0.03)	0.17 - 0.19
OVC-HEV	0.09 (0.05 -0.18)	0.30 - 0.32
NOVC-HEV		
NOVC-HEV („Mild-Hybrid“)	(0.23 - 0.62)	0.60 - 0.65

- The observed ratio of WLTP Exhaust / WLTP Brake depends upon P/T concept
- The observed Friction Energy Share is substantially lower than initially suggested by JRC
- There is a large spread of Friction Energy Share – particularly for “mild-Hybrids”
- Individual vehicle specific Energy Shares are needed for JRC Procedure

OICA proposal: Individual correlation lines between WLTC Exhaust & WLTP Brake



- Data shows that individual correlation (WLTC exhaust / WLTC Brake) for P/T concepts exists

OICA proposal on Friction Energy share

- OICA proposal on vehicle individual friction energy share is clearly supported by data
- If the GTR timing constraints do not allow writing for the first version GTR, it was acknowledged to include it for the first revision – drafting to be started immediately
- For the interim, OICA requests a statement to be included in the GTR:

The friction energy shares for NOVC-HEV, NOVC-HEV(<60V), OVC-HEV, PEV are defined in Table xx.
At the request of the manufacturer, and with approval of the responsible authority, individual values of energy share may be determined as described in JRC Method–Data calculation TF4.pdf (14.Nov.2022). The friction brakes energy E(neg, frict.brakes) is determined by the equation

$$E(neg, frict.brakes) = E(neg,wheels) - E(neg\ EMS\ brake, wheels) - E(neg, ICE\ brk, wheels),$$

where E(neg,wheels) is Negative Energy at wheels, E(neg EMS brake, wheels) is Regeneration Energy at wheels, and E(neg, ICE brk, wheels) is Engine motoring energy at wheels.

The ratio of friction brakes energy over the total braking energy, r(friction brk), is obtained as follows:

$$r(friction\ brk) = E(friction\ brakes) / E(neg,wheels)$$

The individual values for front and rear brake shall be provided with the final report.