

LIVER ON FIRE?

EXPOSURE TO PFAS AND PAHS IN RELATION TO CARDIOMETABOLIC HEALTH (CELSPAC-FIREEXPO STUDY)

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Main Objective

Firefighters are occupationally exposed to PAHs (produced during combustion) and PFAS (FF foams, protective gear), which can lead to adverse health effects such as cardiometabolic syndrome. However, these relationships in occupationally exposed firefighters are investigated very weakly. The ultimate goal of this study is to investigate the associations between exposure to PFAS and PAHs and liver function and serum lipids (biomarkers of cardiometabolic health) with special focus on firefighters (occupational exposure to PFAS and PAHs)

CELSPAC-FIREexpo

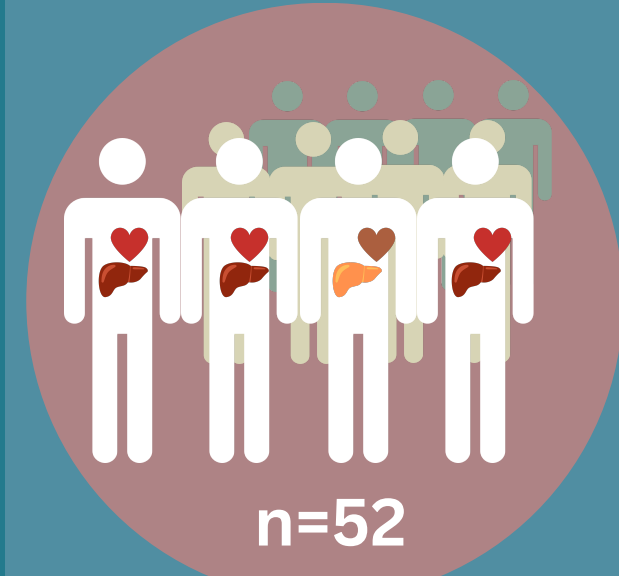


"New FF"

Age: 25 years

FF career: 0.88 years

BMI: 26.31



"PROF"

Age: 28.4 years

FF career: 4.58 years

BMI: 26.14



"CTRL"

Age: 26.0 years

FF career: 0 years

BMI: 24.99

n=165



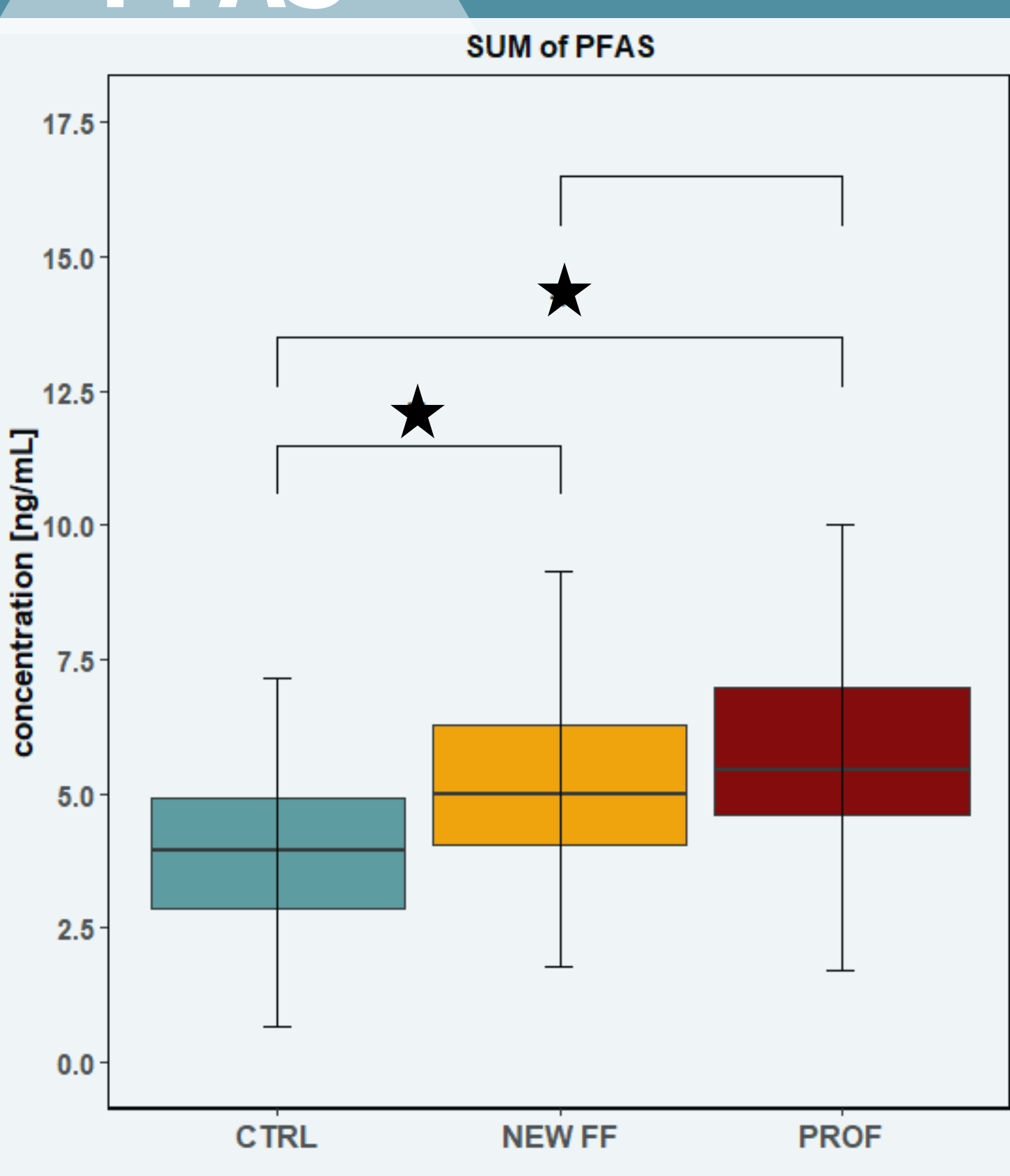
Statistical analysis

- Descriptive statistics
- Multiple linear regression (MLR) (adjusted for age, BMI, smoking, FF career & subcohort; FDR correction)
- Bayesian weighted quantile sum regression (BWQS) (for PFAS+OH-PAHs mixture)
- Sensitivity analysis (excluding NEW FF in BWQS)

Results

- Significantly higher levels of PFAS in FF
- No differences between subcohorts in OH-PAHs
- No significant associations detected in MLR (after FDR correction)
- Significant associations in BWQS with BIL; and with BIL, CHOL and LDL when NEW FF were excluded

PFAS

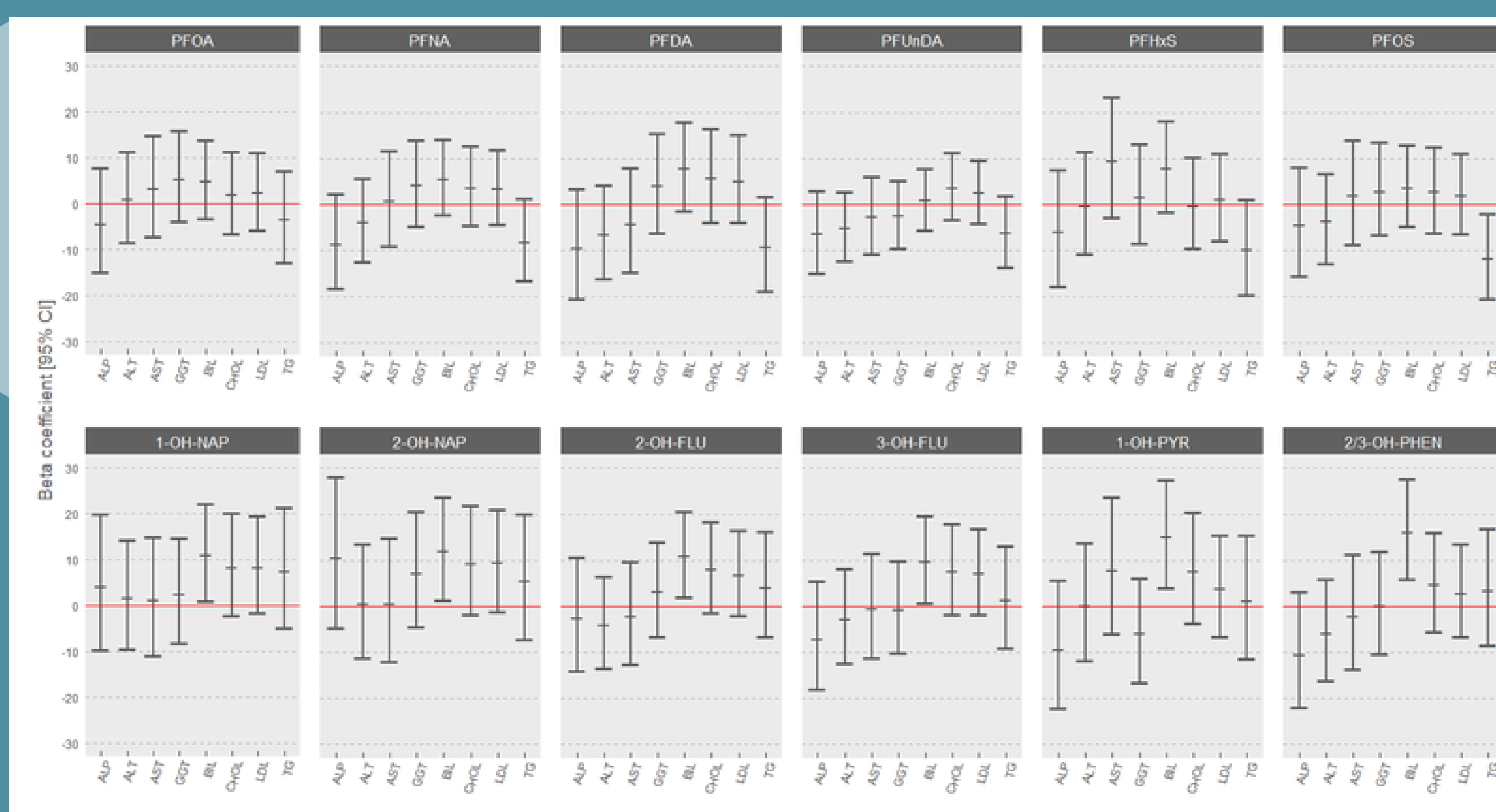


BWQS

	Full mixture (n=165)			Full mixture (n=106) *		
	β	95% CrI		β	95% CrI	
ALP	-10.2	-24.4	7.5	-10.8	-32.4	17.1
ALT	-7.5	-20.2	7.2	-0.5	-18.0	19.7
AST	-3.2	-17.7	14.3	4.7	-15.2	27.3
GGT	6.4	-7.2	22.4	15.5	-5.0	40.5
BIL	28.6	14.6	45.7 ★	25.8	7.8	48.2 ★
CHOL	10.8	-3.0	27.8	29.5	10.3	53.6 ★
LDL	9.9	-4.0	24.2	26.7	8.3	48.5 ★
TAG	-11.2	-24.9	5.8	-1.8	-27.9	30.8

* just PROF and CTRL (NEW FF excluded)

MLR



Summary

↑ PFAS in firefighters

Exposure to PFAS/PAHs mixture is associated with:

↑ BILIRUBIN ($\beta=28.6\%$)

↑ TOTAL CHOLESTEROL ($\beta=29.5\%$)

↑ LDL CHOLESTEROL ($\beta=26.7\%$)

↑ Risk of CVD in FF