Supplementary Material

Project: Part 3

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# 1. Supplementary Material

The following document includes some of the results from the exploratory data analysis.

## 1.1 Supplementary Results

[Figure 1](#fig-conc) shows the summary of concentrations for each chemical species categorized by study arm. It is observed a similar pattern observed from the categorization by type of fuel, where Mg, Mn, Ca, K, BC, Ti, Si and S have statistically significant differences in concentrations.

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| Figure 1: Chemical species concentrations by study arm |

In terms of the categorical exposures [Figure 2](#fig-cat) summarizes the responses from all the exposures. It is observed that for the incence and generator variables there were just a few or none observations that recorded being exposed to these sources. Meanwhile, stove usage was the exposure most recorded.

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| Figure 2: Summary of categorical exposures |

The following figures show the distribution of the concentrations of Carbon monoxide ([Figure 3](#fig-co)) and PM2.5 ([Figure 4](#fig-pm)), which were considered as covariates (CO) or independent variables (PM2.5) to be included in the modelling process with the categorical exposures.

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| Figure 3: Carbon Monoxide concentrations by type of fuel |

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| Figure 4: PM2.5 concentrations by type of fuel |

The following tables show the results when conducting the generalized linear models using a single or multiple variables for the chemical species that can be interpreted by sources of exposure.

Rows: 629 Columns: 27  
── Column specification ────────────────────────────────────────────────────────  
Delimiter: ","  
chr (13): filter\_id, arm, stove, smoke, coil, trash, kerosene, incense, gene...  
dbl (14): Mg, Al, Si, S, K, Ca, Ti, Mn, Fe, Zn, BC, pm25, bc, co  
  
ℹ Use `spec()` to retrieve the full column specification for this data.  
ℹ Specify the column types or set `show\_col\_types = FALSE` to quiet this message.

Warning: ! There are new levels in a factor: `NA`.  
! There are new levels in a factor: `NA`.

Warning: `pull\_workflow\_fit()` was deprecated in workflows 0.2.3.  
ℹ Please use `extract\_fit\_parsnip()` instead.

# A tibble: 4 × 5  
 term estimate std.error statistic p.value  
 <chr> <dbl> <dbl> <dbl> <dbl>  
1 (Intercept) 2.45 0.0357 68.8 1.05e-291  
2 kerosene\_Yes 0.880 0.200 4.41 1.22e- 5  
3 stove\_other\_Yes 0.162 0.0659 2.45 1.45e- 2  
4 fueltype\_LPG -0.982 0.0537 -18.3 5.45e- 60

# A tibble: 2 × 5  
 term estimate std.error statistic p.value  
 <chr> <dbl> <dbl> <dbl> <dbl>  
1 (Intercept) -0.907 0.0423 -21.5 4.49e-77  
2 fueltype\_LPG -0.601 0.0665 -9.04 1.87e-18

Warning: ! There are new levels in a factor: `NA`.

Warning: ! There are new levels in a factor: `NA`.

# A tibble: 4 × 5  
 term estimate std.error statistic p.value  
 <chr> <dbl> <dbl> <dbl> <dbl>  
1 (Intercept) 0.363 0.0439 8.28 7.39e-16  
2 smoke\_Yes -0.599 0.270 -2.22 2.69e- 2  
3 stove\_other\_Yes 0.239 0.0808 2.96 3.24e- 3  
4 fueltype\_LPG -1.32 0.0657 -20.1 1.36e-69

Warning: ! There are new levels in a factor: `NA`.

# A tibble: 3 × 5  
 term estimate std.error statistic p.value  
 <chr> <dbl> <dbl> <dbl> <dbl>  
1 (Intercept) -1.94 0.0341 -57.0 1.26e-248  
2 kerosene\_Yes 0.370 0.200 1.85 6.49e- 2  
3 fueltype\_LPG -0.343 0.0537 -6.39 3.27e- 10

# A tibble: 2 × 5  
 term estimate std.error statistic p.value  
 <chr> <dbl> <dbl> <dbl> <dbl>  
1 (Intercept) -3.83 0.0493 -77.7 0   
2 fueltype\_LPG -0.320 0.0776 -4.12 0.0000436

# A tibble: 2 × 5  
 term estimate std.error statistic p.value  
 <chr> <dbl> <dbl> <dbl> <dbl>  
1 (Intercept) -0.817 0.0367 -22.3 2.73e-81  
2 fueltype\_LPG -0.330 0.0578 -5.71 1.79e- 8

Warning: ! There are new levels in a factor: `NA`.

# A tibble: 2 × 5  
 term estimate std.error statistic p.value  
 <chr> <dbl> <dbl> <dbl> <dbl>  
1 (Intercept) -0.554 0.300 -1.85 0.0652  
2 stove\_Yes -0.624 0.302 -2.07 0.0390

# A tibble: 2 × 5  
 term estimate std.error statistic p.value  
 <chr> <dbl> <dbl> <dbl> <dbl>  
1 (Intercept) -0.0997 0.0519 -1.92 0.0551  
2 fueltype\_LPG -0.175 0.0817 -2.14 0.0324

# A tibble: 2 × 5  
 term estimate std.error statistic p.value  
 <chr> <dbl> <dbl> <dbl> <dbl>  
1 (Intercept) -3.16 0.0425 -74.3 4.07e-313  
2 fueltype\_LPG -0.134 0.0668 -2.00 4.54e- 2