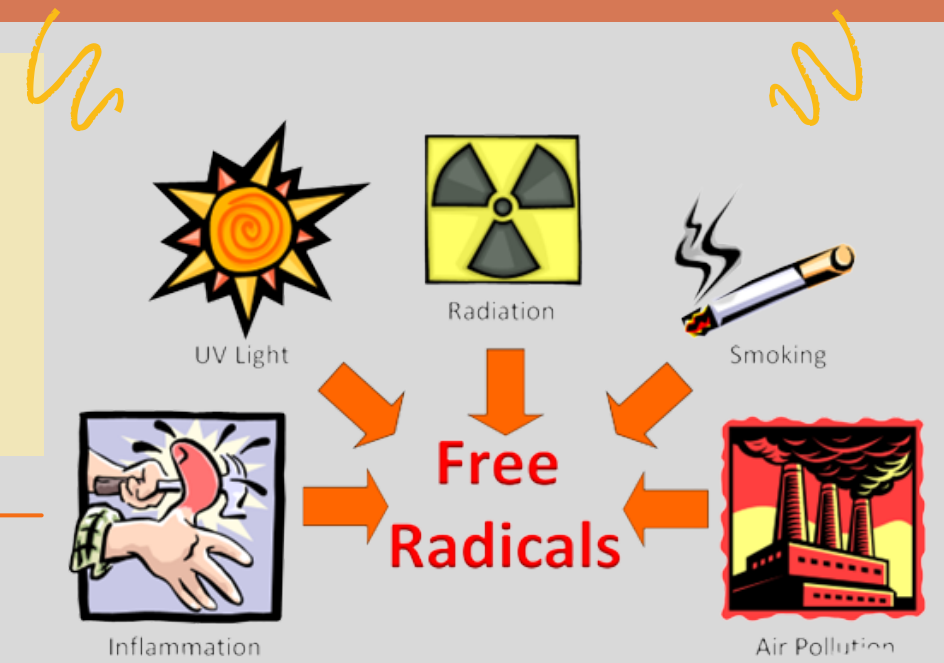


Environmentally Persistent Free Radicals (EPFRs) by-products of air pollution in Australian Households

What are EPFRs?

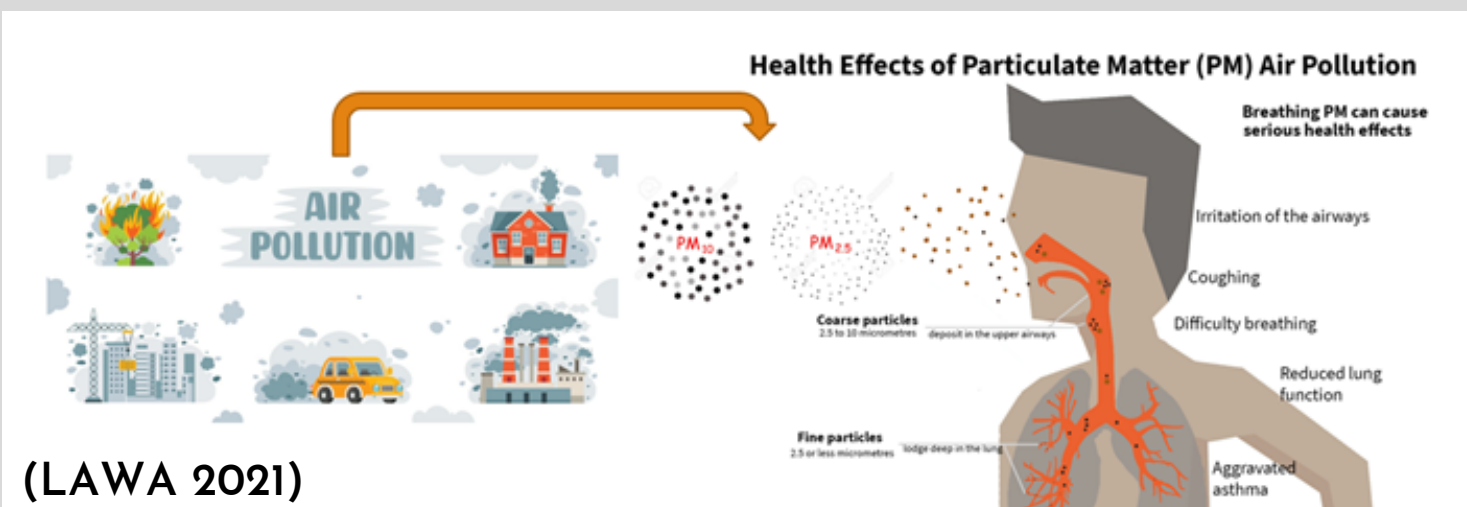
- EPFRs are free radicals that can persist in the environment and in biological systems for long periods of time
- A typical free radical has a short lifetime of a few picoseconds but EPFRs can last up to several months
- One study conducted in China discovered that EPFRs risk exposure in Beijing's ambient air was equivalent to 23-73 cigarettes per day



CURRENT RESEARCH

HYPOTHESIS

Recent findings propose that EPFRs are the missing link between air pollution and adverse respiratory health effects



RESEARCH AIM

Aim to measure the level of EPFRs in household dust and identify what household characteristics predict the presence of EPFRs in Australian household

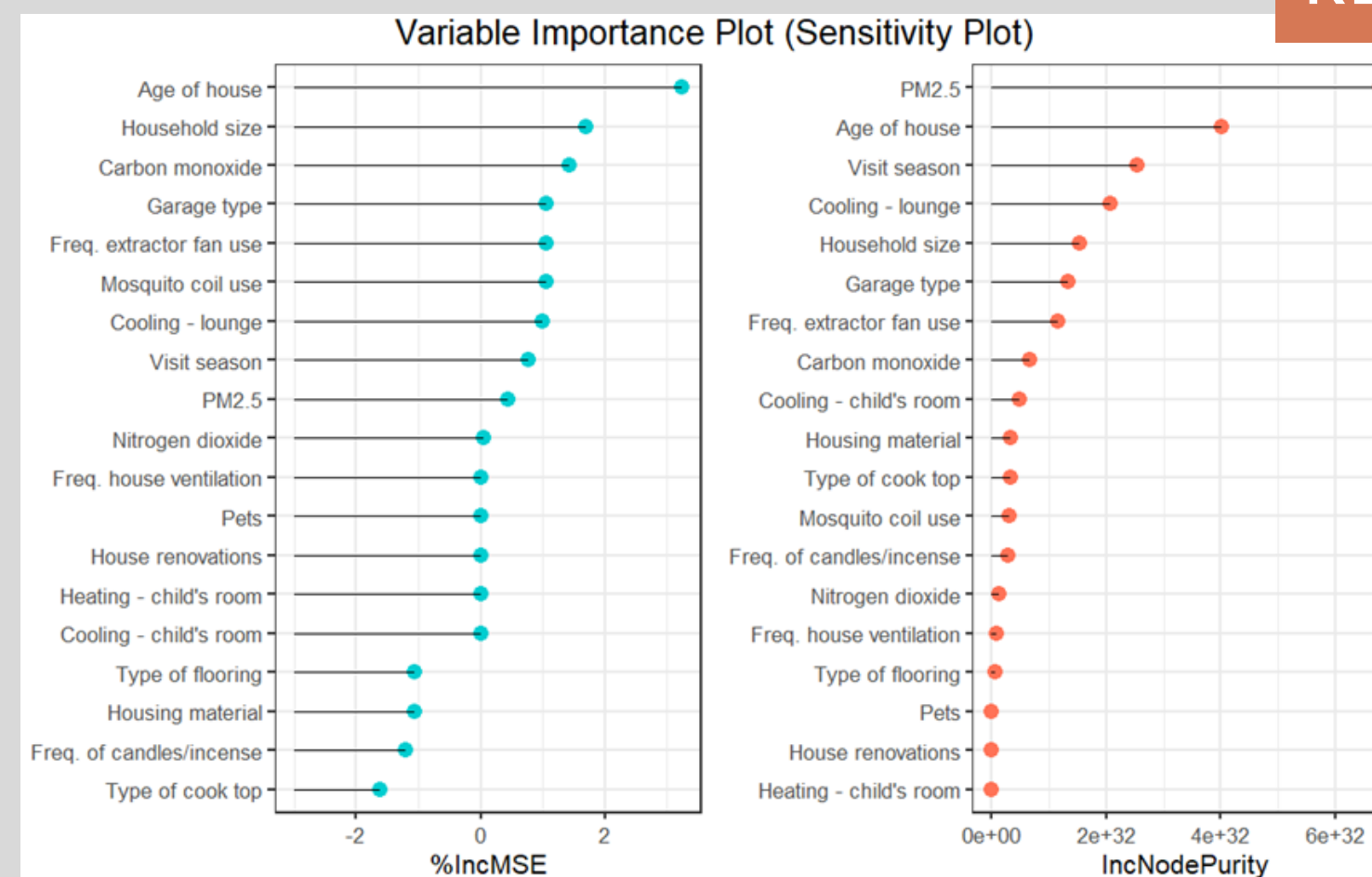
METHODOLOGY

We visited 23 homes on four different occasions over two seasons, summer and winter. In each household, we:

1. Installed gaseous monitors to monitor levels of CO and NO₂
2. Installed DustTraks to monitor PM_{2.5} levels
3. Ensured participants completed their household characteristics survey
4. Ensured participants completed their 24-hour activity diary
5. Collected dust samples from their vacuum



Random forest



• Variables arranged from most to least important

RESULTS & CONCLUSION

The household characteristics that are most predictive of EPFRs concentration in Australian households are:

- Age of house
- Number of household members
- Indoor CO and PM_{2.5} levels
- Use of extractor fan
- Type of garage
- Season of the home visit
- Type of cooling method used in the living area

%IncMSE = Mean Decrease Accuracy
IncNodePurity = Mean Decrease Gini