Uncontrolled Bushfires and Asthma in Western Australia

YP Lee¹,², A Cook¹,³, P Thompson²,³ and P Weinstein¹
1. School of Population Health, The University of Western Australia
2. Asthma and Allergy Research Institute, The University of Western Australia
3. Centre for Asthma Allergy and Respiratory Research, Western Australia

AIMS
1) To investigate the effect of uncontrolled bushfires on asthma exacerbations in local communities
2) To provide policy recommendations to reduce any identified health impacts from uncontrolled bushfires

METHODOLOGY
Part 1: Statistical Analysis
- Poisson Regression Modeling*
- Negative Binomial Regression Modeling*
*Adjusted for Age, Sex, Social Economic Status, Remoteness, Land use and Meteorological variables.

Part 2: Spatial Analysis
- Asthma Hospitalisation Rates Mapping**
- Uncontrolled Bushfires Mapping**
  - Bushfire Density (Perth)
** By Residential Collection Districts (CD)

RESULTS
Part 1: Statistical Analysis
- Presence of any fire (≥1) in the Collection District (CD) during 1999 to 2003 was significant in predicting asthma hospitalisation rates after adjusting for confounders.
- However, the number of bushfires in a CD during 1999 to 2003, was not significant in predicting asthma hospitalisations after adjusting for confounders.

Part 2: Spatial Analysis
- Asthma hospitalisation rates were highest in rural areas.
- Asthma hospitalisation rates in the Perth metro were lower than in rural areas.
- The majority of bushfires occurred in the south west region of the state.
- Bushfire density maps of the greater Perth region show high density outside of central metropolitan areas.

CONCLUSIONS
- The significance of uncontrolled bushfires in a CD in predicting asthma hospitalisation may be due to the vegetation type in the CD. Some vegetation may release more allergenic components than other vegetation during a bushfire.
- Further analysis will be conducted using point asthma data from asthma hospitalisations and emergency department.