

# ASTHMA AND ALLERGIC RHINITIS PRIMARY AND URGENT HEALTH CARE PRESENTATIONS- THE INFLUENCE OF METEOROLOGY, THUNDERSTORMS AND THE GRASS POLLEN SEASON

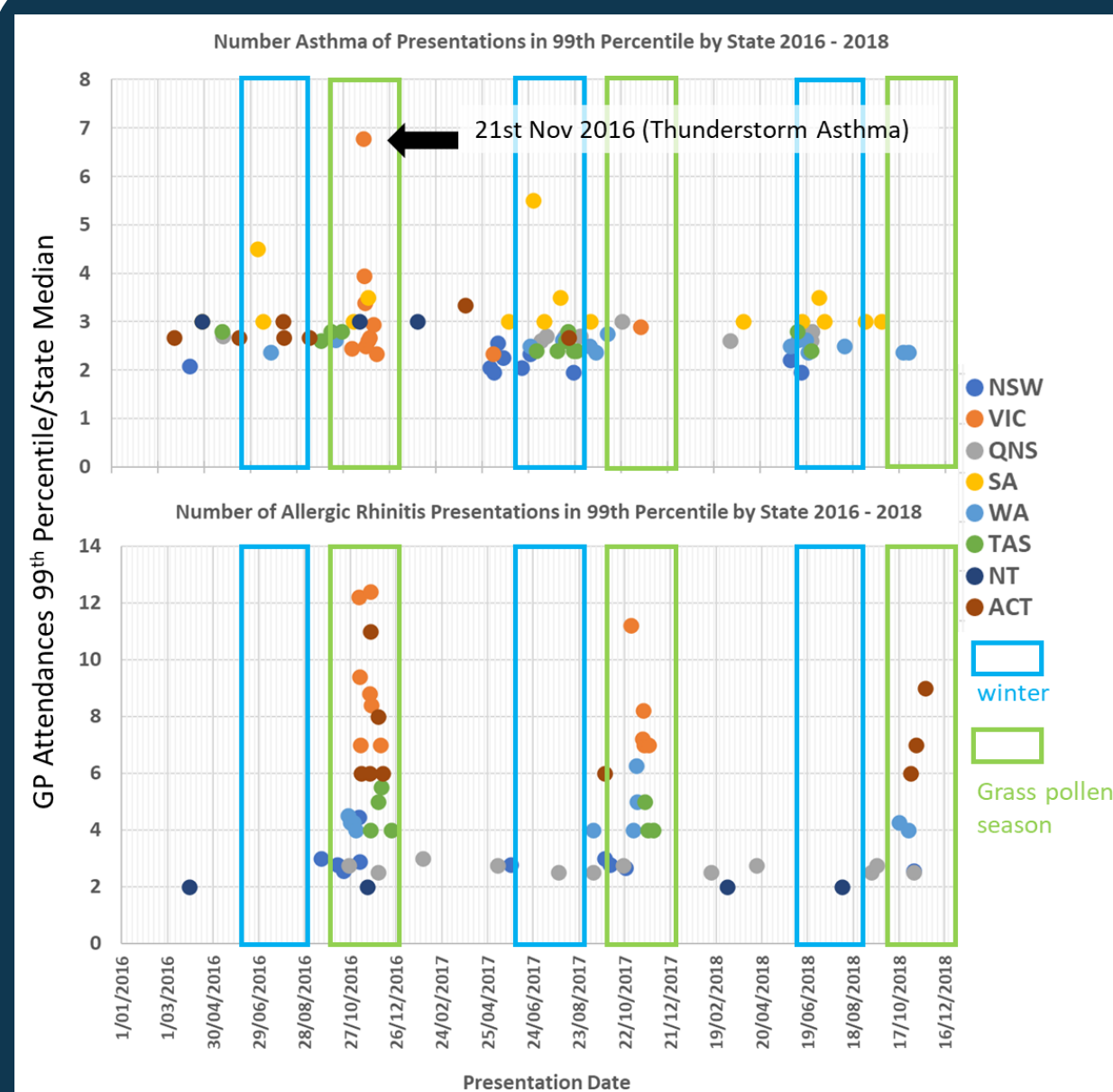
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## INTRODUCTION

Asthma affected 11%, and allergic rhinitis (hay fever) 19% of the Australian population in 2018. Grass pollen is a known trigger for asthma and rhinitis exacerbations, which in addition to causing distressing symptoms, can place additional demand on health care services. We examined the pattern of GP attendances, hospital presentations and emergency ambulance calls in and out of the grass pollen season (generally October through December in the east and south-east Australia) between 2016 to 2019 and their relationship to meteorology. Thunderstorm asthma incidents were identified as three or more hospitals had asthma presentations equal to or above their mean plus 4.5SD. To answer the question: when and what type of health care do asthma and allergic rhinitis patients seek?

### GENERAL PRACTICE CARE



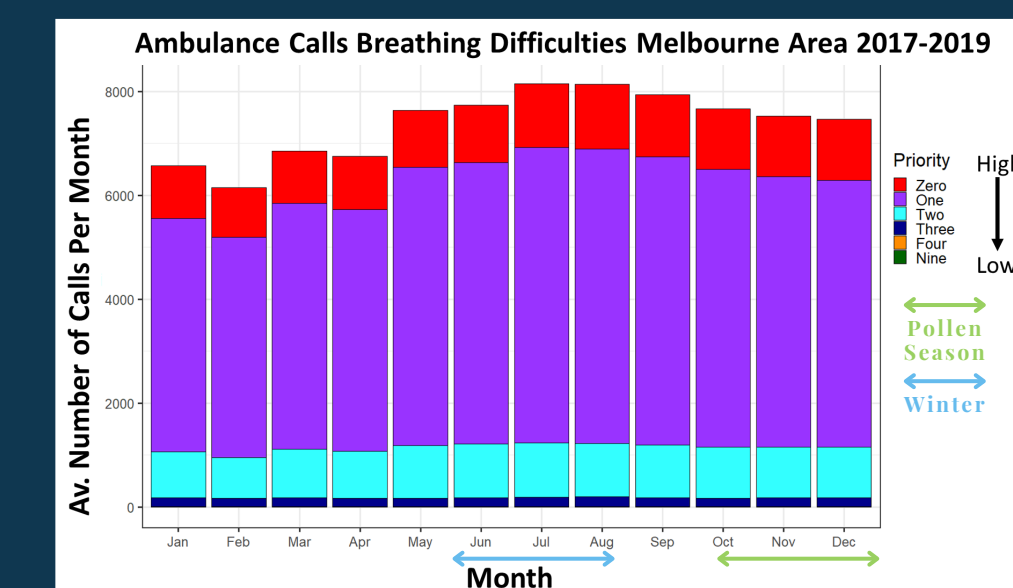
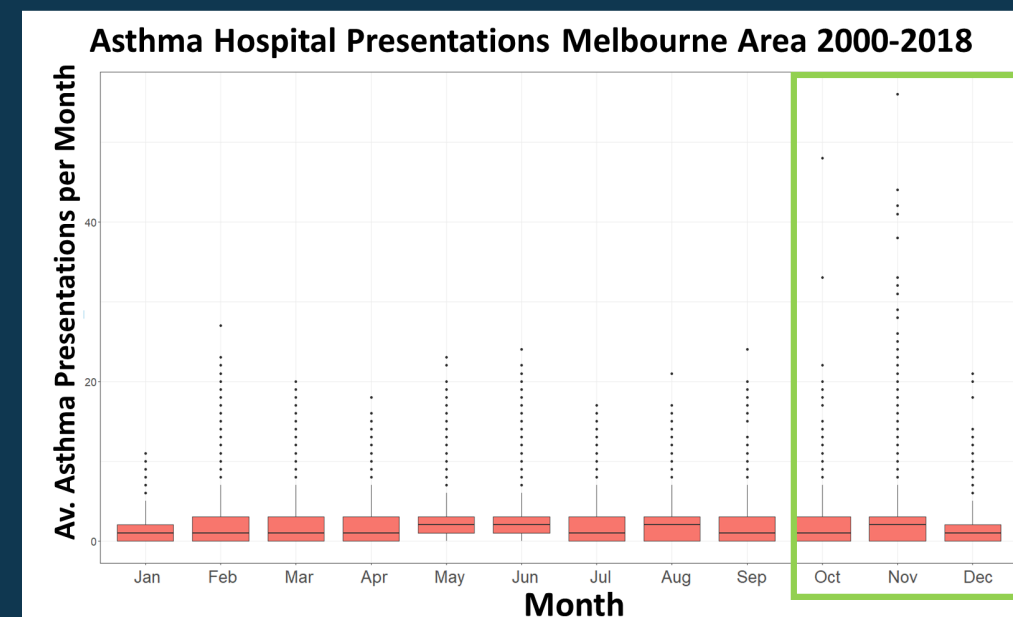
#### Main Points

78% of extreme asthma GP attendance days (99th percentile/state median) occurred outside of the grass pollen season unless a thunderstorm incident occurred.

72% of extreme allergic rhinitis GP attendance days occur during the grass pollen season in the same six-week period in middle of grass pollen season.

Most states and territories followed a similar pattern.

### URGENT HEALTH CARE



#### Main Points

60% of Victoria's public hospitals received more asthma presentations; and a significantly higher number of extreme presentation days were observed during the grass pollen season.

Thunderstorms and extreme grass pollen concentrations are associated with a high number of presentations.

A higher number of ambulance calls per month were received during winter than the grass pollen season.

Although thunderstorm asthma incidents can increase demand for ambulances, the association of emergency calls with temperature and mean sea level pressure was stronger.

## CONCLUSIONS & IMPLICATIONS

Special thanks to NPS MedicineWise MedicineInsight, the Department of Health Victoria and the Emergency Services Telecommunications Authority for providing the health data. Melbourne University for the pollen data and the Bureau of Meteorology for the weather data used in this study.

Extreme general practice asthma attendance days tended to occur during the winter, whereas allergic rhinitis attendance was strongly associated with the grass pollen season. Hospital asthma presentations were associated with grass pollen levels and thunderstorm conditions. However, emergency ambulance calls were more sensitive to synoptic conditions such as high temperatures and low mean sea level pressure with a 0 to 1-day lag. Thunderstorm asthma incidents increased the demand for primary and secondary care simultaneously for one to two days. Understanding the relationship between seasons, meteorology, and their associated time lags can help providers better prepare for sudden demands on healthcare resources.