

The connection between socioeconomic disadvantage and bushfire arson

Some communities have a higher propensity for arson than others, and the demographic characteristics of each community seem to contribute. For some time, research has endeavoured to uncover those demographic variables associated with bushfire arson to inform the targeting of community-based programs to combat firefighting as well as the content of those programs.

A study based on five high arson locations in Florida using data gathered between 1994 and 2001 has found a relationship between socioeconomic conditions and bushfire arson (Prestemon & Butry 2005). Three measures of socioeconomic conditions were used: the poverty rate, which is defined as the percentage of people whose family income falls below the poverty line; the retail wage (the wage paid to shop assistants in the retail industry), used as a typical low wage; and the unemployment rate. The poverty and unemployment rates vary over time, region and group membership. The retail wage varies over time only.

A time series analysis considered the effects on the number of bushfire arson ignitions per year of: number of police per capita, the unemployment rate, the retail wage, the number of acres of bush burnt by fire in each of the preceding 12 years, the number of acres burnt in prescribed hazard reduction burns in the year of interest and the preceding two years, the total pulpwood harvest volume in each of the preceding three years, two dummy variables associated with El Niño, two variables related to population and aggregate urban growth, and the poverty rate.

Both the poverty rate and retail wage significantly predicted the number of bushfire arson events; the unemployment rate was not significant. The relationship found between poverty and bushfire arson events is positive; increasing poverty is associated with more bushfires. To gauge the size of this effect, the average variation (maximum subtract minimum) in poverty rate over the five locations was 4.5 percent. This equates to about six bushfires, in comparison with the average number of bushfire arson events of around 78 per year in each of the five locations. Therefore, the largest changes observed in the poverty rate can lead to about an eight percent change in the number of arson events. Although significant, this is not a large effect.

The relationship found between the number of bushfire arson events and retail wage rate is negative (i.e. higher number of arson events equates to lower wage rate). The variation in the retail wage rate over the study was close to \$1,000 per year. To gauge the size of the effect of wage on arson, consider a wage increase of \$500 per year. This equates to a decrease in the number of bushfire arson events of 66 percent, or a decline from an average of 78 to 51, which is a large effect.

In summary, this study has found that communities with higher levels of poverty will have modestly higher numbers of bushfire arson events and that communities with large numbers of residents on minimum wages will experience large decreases in bushfire ignitions if those wages show even modest increases.

Reference

Prestemon JP & Butry DT 2005. Time to burn: modeling wildland arson as an autoregressive crime function. *American journal of agricultural economics* 87(3): 756–770