

The time of day of bushfires in Australia

Natural bushfires are governed by the forces of nature: although lightning strikes potentially at any time of the day, most natural fires occur from midday to 6 pm, coincident with the hot conditions conducive to thunderstorm activity. In contrast the timing of human-caused bushfires largely reflects the activities and movements of people within their local environment, be that the day-to-day activities of work, school, shopping etc, or personal and social activities that take place after hours. Analysis of a range of data across Australia reveals fundamental and consistent differences between the timing of deliberate and non-deliberate human-caused fires, as follows:

- 6 am to 6 pm fires: the majority of all fires occur during daylight hours, peaking during the afternoon. In most jurisdictions, peak deliberate fire frequencies typically occur between 3 and 6 pm, somewhat later than the 1 to 4 pm peak noted for non-deliberate fires. Many fires within the 3 to 6 pm window are anecdotally attributed to children, juveniles or young adults. Where fires have been directly attributed to children 16 year or younger the timing of the fires commonly peaks between 3 and 6 pm on weekdays but earlier on weekends. The 3 to 6 pm window is significant in that it is a period during which younger persons often travel through their local environment, en route to or from for example, school, friends' houses and home.
- 6 pm to 6 am fires: a higher proportion of deliberate fires occur between 6 pm and 6 am compared with non-deliberate fires. This is observed for land management agencies, rural fire services and urban fire services alike, although the highest proportion of night time fires occurs in urban or semi-urban environments. On average, 48 percent of all deliberate vegetation fires recorded by urban or regional fire brigades occur between 6 pm and 6 am, compared with 30 percent of non-deliberate fires. Moreover, 24 percent of all deliberate bushfires occur between 10 pm and 6 am. In many jurisdictions, night time fires are principally a feature of Friday night–Saturday morning and Saturday night–Sunday morning, but the timing of fires is highly location dependent, apparently linked to different social and cultural patterns of human activity within individual areas. Differences are also noted between jurisdictions, with states with a high proportion of their population being located at more southerly latitudes commonly having a higher percentage of fires within the 6 pm to 6 am window.

The distribution of both daytime and night time deliberately-lit fires is consistent with the routine activities theory of criminology (Cohen & Felson 1979), which states that crime, in this case arson, typically takes place within the everyday patterns of movement and activity. All it requires is a motivated offender (idle, bored, tempted, provoked), suitable targets (ease of access, some reward, ease of escape) and the absence of capable guardians (parents, neighbours, authorities, friends, surveillance etc).

Reference

Cohen LE & Felson M 1979. Social change and crime rate trends: a routine activity approach. *American sociological review* 44: 588–608

Note: Analysis based on data kindly supplied by the NSW Fire Brigade, Qld Fire and Rescue Service, Melbourne Metropolitan Fire Brigade (1997–98 to 2001–02), NT Police Fire and Emergency Services (1999–00 to Nov. 2004), Forestry Plantations Queensland (1975–76 to 2003–04), Country Fire Service [SA; 1997–98 to 2003–04], SA Metropolitan Fire Service (2000–01 to 2005–06), Country Fire Authority (Vic; 1999–00 to 2003–04), Fire Emergency Services Authority (WA; 2000–01 to 2001–02), Department of Environment and Conservation (WA; 1999–00 to 2002–03).