

## Risk Factors of Arson

**Summary of Key Factors:** Residential buildings; Outdoor locations; Vacant and abandoned buildings; Buildings in tax arrears; History of previous fires; Education establishments; Places of worship; Proximity to drug dealing areas.

**Aim:** To assist analysts with the identification of risk factors for the production of risk terrain maps. Specifically, this brief provides an annotated review of the factors related to arson and the settings and times for which some factors may be most relevant. This information should be especially useful to help choose a time period for creating risk terrain maps (i.e., Step 3), to identify aggravating and mitigating risk factors to include in your risk terrain model (i.e., Steps 5 and 6), and to inform the operationalization of your risk factors to risk map layers (i.e., Step 7).<sup>i</sup>

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### Operational Definition

For the purpose of this research brief, arson is defined as any fire of an incendiary or suspicious origin. In the United States, arson is the leading cause of fires totaling approximately 267,000 fires each year. Over 2,000 injuries, 475 deaths, and \$1.4 billion in property loss occur each year.<sup>ii</sup>

### Aggravating/Mitigating Risk Factors Based on a Review of Empirical Literature

#### Residential Buildings

In 2009, 14,693 agencies in the United States reported 51,380 arson fires. Of the 22,867 fires that occurred in structures, 10,859 occurred in single occupancy residential buildings and 3,629 occurred in other types of residential buildings.<sup>iii</sup> Arson fires are frequently set in homes in attempts to defraud insurance companies, attempts to be re-housed, due to arguments, to hide evidence of another crime, or due to children playing with matches or lighters.<sup>iv</sup>

#### Outdoor locations

Seventy-five percent of intentional fires occur outside. Outdoor fires are typically set in open areas such as farmlands or fields (36.9%), wildlands or woods (9.0%), highways, parking lots, or streets (8.5%) and other outside areas (31.1%).<sup>v</sup>

#### Vacant and Abandoned Buildings

Vacant and abandoned buildings are frequent targets for arson.<sup>vi</sup> Between 2003 and 2006, an estimated average of 31,000 structure fires occurred in vacant buildings of which 43% were intentionally set.<sup>vii</sup>

#### Buildings in Tax Arrears

Half of all buildings that experience an incident of arson are in tax arrears with the average period being more than one year.<sup>viii</sup>

#### History of Previous Fires

In accordance with broken windows theory, buildings that are boarded up or partially destroyed by fire or are near buildings that are boarded up or partially destroyed by fire are more likely to become targets of arson.<sup>ix</sup>

#### Education Establishments

Schools may be the target of arson due to vandalism or in order to conceal evidence of a burglary. School buildings appear to be accessible, have little perimeter protection, and are vacant during hours of darkness, possibly increasing the risk of arson.<sup>x</sup> Schools also have large numbers of potential offenders in high-risk age groups.<sup>xi</sup>

#### Places of Worship

Churches, temples, mosques and other places of worship are easy targets for arson due to lax security. Arson fires may also cover up evidence of other crimes such as

burglary or be set by vagrants who use the places of worship as shelter.<sup>xii</sup>

### Proximity to Drug Dealing Areas

Drug use and the illegal drug trade impact the crime of arson because sometimes an arsonist is under the influence of drugs or alcohol when he or she commits the crime, techniques involved in processing drugs sometimes cause explosions or fires, and drug dealers may set fires to property as retaliation when drug payments are not delivered or to intimidate rivals.<sup>xiii</sup>

### Setting Effects

Large metropolitan cities have the highest rates of arson. The number of intentional fires in large metropolitan cities with populations over 250,000 is roughly four times the number of intentional fires in small towns with populations of 2,500 to 4,999.<sup>xiv</sup>

### Temporal Differences

#### Time of Day

The two time periods with the highest percentage of arson fires are 4 p.m. to 8 p.m. and 8 p.m. to midnight.<sup>xv</sup>

#### Day of the Week

Arson fires occur throughout the week, but occur slightly more frequently on Saturdays and Sundays.<sup>xvi</sup>

#### Time of the Year

The occurrence of intentionally set fires peaks in March and April, months with low humidity and high winds, and again in July.<sup>xvii</sup>

#### Holidays

Peak days for building fires are July 4, July 5, October 31, and January 1.<sup>xviii</sup>

Arson fires at schools typically occur when schools are unoccupied (before and after school hours, weekends, and vacations)<sup>xix</sup>

## **Endnotes**

- <sup>i</sup> For steps of risk terrain map production, download the RTM Manual at [www.riskterrainmodeling.com](http://www.riskterrainmodeling.com)
- <sup>ii</sup> United States Fire Administration. (2001). *Arson in the United States*. Washington, DC: Federal Emergency Management Agency, United States Fire Administration.
- <sup>iii</sup> Maguire, K. (Ed.). *Sourcebook of criminal justice statistics*, (3.168.2009) [Online]. Available: <http://www.albany.edu/sourcebook/pdf/t31682009.pdf>
- <sup>iv</sup> Lewis, A. (1999). *The prevention and control of arson*. Borehamwood, UK: Fire Protection Association.
- <sup>v</sup> United States Fire Administration. (2009). *Intentionally set outdoor fires* (Volume 9, Issue 6) Washington, DC: U.S. Fire Administration.
- <sup>vi</sup> United States Fire Administration. (2001). *Arson in the United States* (Volume 1, Issue 8) Washington, DC: U.S. Fire Administration.
- <sup>vii</sup> Ahrens, M. (2009). *Vacant building fires*. Quincy, MA: National Fire Protection Association, Fire Analysis and Research Division.
- <sup>viii</sup> Arson Strike Force. (1980). *Predicting arson risk in New York City: A first report*. New York, NY: Arson Strike Force.
- <sup>ix</sup> Lewis, A. (1999). *The prevention and control of arson*. Borehamwood, UK: Fire Protection Association.
- <sup>x</sup> Lewis, A. (1999). *The prevention and control of arson*. Borehamwood, UK: Fire Protection Association.
- <sup>xi</sup> Dedel Johnson, K. (2005). *School Vandalism*. Washington, DC: Office of Community Oriented Policing Services, U.S. Department of Justice.
- <sup>xii</sup> Lewis, A. (1999). *The prevention and control of arson*. Borehamwood, UK: Fire Protection Association.
- <sup>xiii</sup> United States Fire Administration. (1997). *Arson in the United States*. Washington, DC: Federal Emergency Management Agency, United States Fire Administration.
- <sup>xiv</sup> Hall, J. R. (2010). *Intentional fires*. Quincy, MA: National Fire Protection Association, Fire Analysis and Research Division.
- <sup>xv</sup> United States Fire Administration. (2001). *Arson in the United States*. Washington, DC: Federal Emergency Management Agency, United States Fire Administration.
- <sup>xvi</sup> United States Fire Administration. (2001). *Arson in the United States*. Washington, DC: Federal Emergency Management Agency, United States Fire Administration.
- <sup>xvii</sup> United States Fire Administration. (2001). *Arson in the United States*. Washington, DC: Federal Emergency Management Agency, United States Fire Administration.
- <sup>xviii</sup> United States Fire Administration. (2001). *Arson in the United States*. Washington, DC: Federal Emergency Management Agency, United States Fire Administration.
- <sup>xix</sup> Dedel Johnson, K. (2005). *School Vandalism*. Washington, DC: Office of Community Oriented Policing Services, U.S. Department of Justice.