

## Risk Factors for Auto Theft

**Summary of Key Factors:** Vehicle Availability, Locations of Older Vehicles Parked, Locations of Most Frequently Stolen Vehicles Parked, Land-Use Type, Proximity to High Schools and Bars, Parking Lots, Nighttime Entertainment Venues, Property Value, Household Income, Single-family Households.

**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 auto theft 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).

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### Operational Definition

Auto theft is defined for the purposes of this brief as the completed theft of passenger vehicles (including sedans, station wagons, coupes, convertibles, sport utility vehicles, minivans, and pickups). Auto theft may be used interchangeably with the following terms: car theft, vehicle theft, and motor vehicle theft.

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

**Vehicle Availability:** Rates of auto theft in an area (census tracts/cities) increase as the number of vehicles per square mile in the area increases.<sup>2</sup>

**Locations of Older Vehicles Parked:** Risks of vehicles being stolen increase as they become older.<sup>3</sup> About two-thirds of stolen vehicles in the U.K. and Australia are more than 10 years old when stolen. These vehicles also dominate as the most stolen vehicles in the U.S.<sup>4</sup> This implies that an area where older cars prevail is likely to be at the most risks of auto theft.

**Locations of Most Frequently Stolen Vehicles Parked:** Similar to older vehicles, certain model of vehicles are far more likely to be stolen than others,<sup>5</sup> suggesting that

identifying an area where such vehicles are parked would lead to an area of higher risk for auto theft.

**Land-Use Type:** Street blocks with more vacant lots, restaurants/bars, youth hangouts (theaters, arcades, and schools), retail stores, manufacturing/storage facilities, or apartments tend to have higher auto theft rates.<sup>6</sup>

**Proximity to High Schools:** Areas within one block of high schools tend to have more auto thefts.<sup>7</sup>

**Proximity to Bars:** Areas within one block of bars tend to have more auto thefts.<sup>8</sup>

**Parking Lots:** Large parking lots tend to be a hotspot of auto theft. These include (1) parking lots with over 100 stalls,<sup>9</sup> (2) trolley station lots, and (3) the lots of "big box" retail stores and shopping malls.<sup>10</sup>

When taking into account the size of lots and the length of time parked, risks of auto theft at trolley lots or long term (commuters/transit) parking lots and lots close to a freeway are especially higher than other parking lots. At the micro level, parking lots with high levels of security (perimeter fencing, exit bars, CCTV, and good lighting) have been found to have fewer auto thefts.<sup>11</sup>

**Nighttime Entertainment Venues:** An area with such facilities as theaters, restaurants, and bars/night clubs, especially where they are found grouped together in busy night districts, experiences higher rates of auto theft.<sup>12</sup>

**Property Value:** Areas (census tracts/blocks) with higher median property values tend to have more auto thefts or higher theft rates,<sup>13</sup> perhaps because more attractive vehicles are found in these places. On the other hand, the median owner-occupied property value has been found to act as a mitigating factor of auto theft at the census block group level, meaning that the higher the value in a census block group, the lower the auto theft rate or fewer auto thefts in that area.<sup>14</sup>

**Household Income:** Areas (census tracts/block group) with lower median household income tend to have higher auto theft rates.<sup>15</sup>

**Single-family Households:** This variable, often used as a proxy measure of family disruption, has been found to act as an aggravating risk factor of auto theft at the census tract, blockgroup, and street block level.<sup>16</sup> Areas with higher percent/number of single-family households tend to have higher auto theft.

## Setting Effects

The risk factors of auto theft described above have been tested in different settings (both rural and urban regions) at different units of analysis (i.e. census tract, blockgroup, and street block level). However, it should be recognized that the nature of auto theft can vary by geographic region, state, and city, and that auto theft is not a uniform offense. It includes a number of subtypes (e.g., theft for joyriding, transportation, use in commission of other offenses, stripping for parts, export, etc.), each involving different risk factors. For example, five of the top 10 states with the highest auto theft rates per vehicles registered in 2007 were adjacent to the U.S.-Mexico or U.S.-Canadian borders. In these states, a risk factor such as proximate to U.S. border, which can facilitate the theft for export, might play a bigger role than other factors. Auto theft in a city characterized by homogeneity in low income levels or property value might be less likely to be influenced by socio-economic factors.

## Temporal Differences

The majority of auto thefts (61 percent) occur at night between 6:00pm and 6:00am, with more than one-third of thefts occurring between 12:00am and 6:00am (BJS, 2010). Statistics shows that 75 percent of near-home thefts occur between 6:00pm and 6:00am. Auto thefts in public parking and work/office parking lots are 4 times and 8 times more likely to occur during the daytime than nighttime, respectively.<sup>17</sup>

## Recommended (Publically Available) Readings

Maxfield, M.G. and R.V. Clarke (2004). *Understanding and Preventing Car Theft*, Crime Prevention Studies, Vol. 17. Monsey, NY: Criminal Justice Press. Available:

[www.popcenter.org/library/crimeprevention/volume\\_17/introduction.pdf](http://www.popcenter.org/library/crimeprevention/volume_17/introduction.pdf)

Keister, T. (2007). *Thefts of and from Cars on Residential Streets and Driveways*. Washington, DC: U.S. Department of Justice, Office of COPS. Available:

[www.popcenter.org/problems/pdfs/residentialcartheft.pdf](http://www.popcenter.org/problems/pdfs/residentialcartheft.pdf)

Clarke, R.V. (2002). *Thefts of and from Cars in Parking Facilities*. Washington, DC: U.S. Department of Justice, Office of COPS. Available: [www.popcenter.org/problems/pdfs/Theft of and from Cars.pdf](http://www.popcenter.org/problems/pdfs/Theft_of_and_from_Cars.pdf)

## Endnotes

<sup>1</sup> For steps of risk terrain map production, download the RTM Manual at [www.riskterrainmodeling.com](http://www.riskterrainmodeling.com)

<sup>2</sup> Copes (1999). Routine Activities and Motor Vehicle Theft: A Crime Specific Approach. *Journal of Crime and Justice* 22:125-145.

<sup>3</sup> Brown, R., and N. Thomas (2003). "Aging Vehicles: Evidence of the Effectiveness of New Car Security from the Home Office Car Theft Index." *Security Journal* 16(3):45-54.

<sup>4</sup> National Insurance Crime Bureau (2005-09). *Hot Wheels*. Des Plaines, IL: The Bureau.

<sup>5</sup> National Highway Traffic Safety Administration (2008). "Final Theft Data; Motor Vehicle Theft Prevention Standard." *Federal Register* 73(199): 60633-60638. / Highway Loss Data Institute (2006). *Injury, Collision, & Theft Losses: By Make and Model, 2003-05 Models*. Arlington, VA: The Institute.

<sup>6</sup> Rice, K. J., & Smith, W. R. (2002). Sociological models of automotive theft: Integrating routine activity and social disorganization approaches. *Journal of Research in Crime and Delinquency*, 39(3), 304-336. / Weisel, D. L., Smith, W. R., Garson, G. D., Pavlichev, A., & Wartell, J. (2006). *Motor vehicle theft: Crime and spatial analysis in a non-urban region*.

<sup>7</sup> Roncek, D. W., & Maier, P. A. (1991). Bars, blocks, and crime revisited: Linking the theory of routine activities to the empiricism of "hot spots". *Criminology*, 29(4), 725-753.

<sup>8</sup> Roncek, D. W., & Maier, P. A. (1991). Bars, blocks, and crime revisited: Linking the theory of routine activities to the empiricism of "hot spots". *Criminology*, 29(4), 725-753.

<sup>9</sup> Fleming, Z. (1999). "The Thrill of It All: Youthful Offenders and Auto Theft." In Cormwell, P. (ed.), *Their Own Words: Criminals on Crime*. Los Angeles: Roxbury, pp 71-79.

<sup>10</sup> Plouffe, N. and R. Sampson (2004). "Auto Theft and Theft from Autos in Parking Lots in Chula Vista, CA." In M.G. Maxfield and R.V. Clarke (eds.), *Understanding and Preventing Car Theft* Crime Prevention Studies, vol. 17. Monsey, NY: Criminal Justice Press.

<sup>11</sup> Poyner, B. and B. Webb (2006). *Crime Free Housing in the 21st Century*. London, UK: UCL Jill Dando Institute of Crime Science.

<sup>12</sup> Henry, L.M. and B.A. Bryan (2000). *Visualizing the Spatio-Temporal Patterns of Motor Vehicle Theft in Adelaide, South Australia*.

<sup>13</sup> Miethe, T. and R. Meier (1994). *Crime and Its Social Context: Toward an Integrated Theory of Offenders, Victims, and Situations*. Albany, NY: SUNY Press. / Rengert, G. (1996). "Auto Theft in Central Philadelphia." In R. Homel (ed.), *Policing for Prevention: Reducing Crime, Public Intoxication and Injury*. Crime Prevention Studies, vol. 7. Monsey, NY: Criminal Justice Press.; Weisel et al. (2006)

<sup>14</sup> Walsh, J.A. and R.B. Taylor (2007). "Community Structural Predictors of Spatially Aggregated Motor Vehicle Theft Rates: Do They Replicate?" *Journal of Criminal Justice* 35:297-311.

<sup>15</sup> Walsh and Taylor (2007). / Miethe and Meier (1994).

<sup>16</sup> Miethe and Meier (1994) / Weisel et al. (2006) / Rice & Smith (2002).

<sup>17</sup> Kinshott, G. (2001). *Vehicle Related Thefts: Practice Messages from the British Crime Survey*. London: Home Office.