

Temperature and Vehicle Thefts

Examining whether outdoor temperature is related to vehicle theft

Agencies: Barrie Police Service (Ont.), Saskatoon Police Service (Sask.), and West Vancouver Police Department (B.C.)

Project Duration: 01/01/2015–10/31/2019

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Context

Although research provides evidence of a relationship between air temperature and crime, no research specifically addressing auto crimes has been conducted. Anecdotal reports of an association between stolen vehicles and outdoor temperature prompted evaluation of existing data to address this relationship.

Key Finding

There was a statistically significant difference in the mean temperature between days in which at least one vehicle was stolen and days in which no vehicle was stolen, for the Barrie site only. No difference was found for Saskatoon or West Vancouver.

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Background

Research suggests that some aspects of weather, such as temperature, may have a substantial effect on conflict and violence. Although most research addressing crime and temperature has focused on violent crime, some studies have found relationships between temperature and crime-related variables such as calls for service, property crimes, and arrests.

Anecdotal reports in several Canadian communities suggest that vehicle thefts increase as the temperature increases, but no research has examined this. Analysis of temperature and stolen vehicles was undertaken using data from three Canadian cities to investigate whether these crimes are related to ambient temperature.

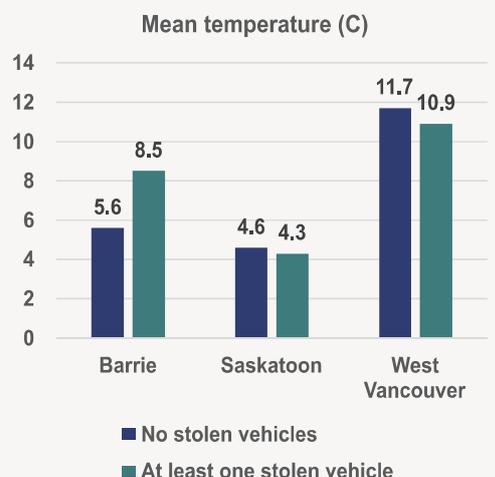
Study Design

Barrie, Saskatoon, and West Vancouver police services participated in this evaluation to assess the relationship between stolen vehicles and temperature. Stolen-vehicle data were gathered for January 1, 2015 through October 31, 2019, along with temperature data for each day of this period.

Results

A total of 577 stolen vehicles were reported in Barrie, 5,245 in Saskatoon, and 114 in West Vancouver during the analysis period. Two analyses were conducted with results varying

by site. A regression analysis to determine whether temperature was associated with stolen vehicles (controlling for precipitation, month, day, and year) did not find statistically significant results for any variable except for Barrie, where days with a stolen vehicle were likely to have higher temperatures ($p < 0.05$), and 2016, which had fewer stolen vehicles ($p < 0.05$, compared to the baseline year of 2015). Hypothesis tests that compared the mean temperature of days with at least one stolen vehicle with the mean temperature of days without a stolen vehicle (see figure below) found that higher temperatures were associated with an increased likelihood only for Barrie ($p < 0.05$). Additional analyses might explore the contribution of explanatory variables posited in routine activities theory, suggesting that opportunity for vehicle theft might be affected not only by temperature but also by the presence of capable guardianship by police and offender motivation.



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