

San Francisco Thieves Appear to Value Night-Time Sleep More Than Their Seattle Counterparts

Summary

This comparison of crime statistics of Seattle and San Francisco (SFO) focuses on how theft-related incidents are distributed over the course of the day. As the data indicate, thievery in SFO occurs less often during the 1am-7am time period compared to Seattle, and the SFO perpetrators seem to favor the early evening hours more than their “colleagues” in Seattle.

Data Preparation

The data sets of [this challenge](#) contain crime incidents recorded in Seattle and San Francisco in the period from June through August 2014. The crime classification systems of both cities are different from each other and need to be mapped to a common set of categories in order to compare crime rates. Excel’s VLOOKUP makes it easy to apply such a mapping to derive the “type” for each incident; I chose three types for this particular comparison:

1. Car-related thefts
2. Robbery (involving force)
3. Other Theft

All other categories were mapped to “NA”; the mappings are listed in the appendix.

For ease of comparison, I used Excel to derive the hour of the day without minutes, so there are effectively 24 “hour” buckets.

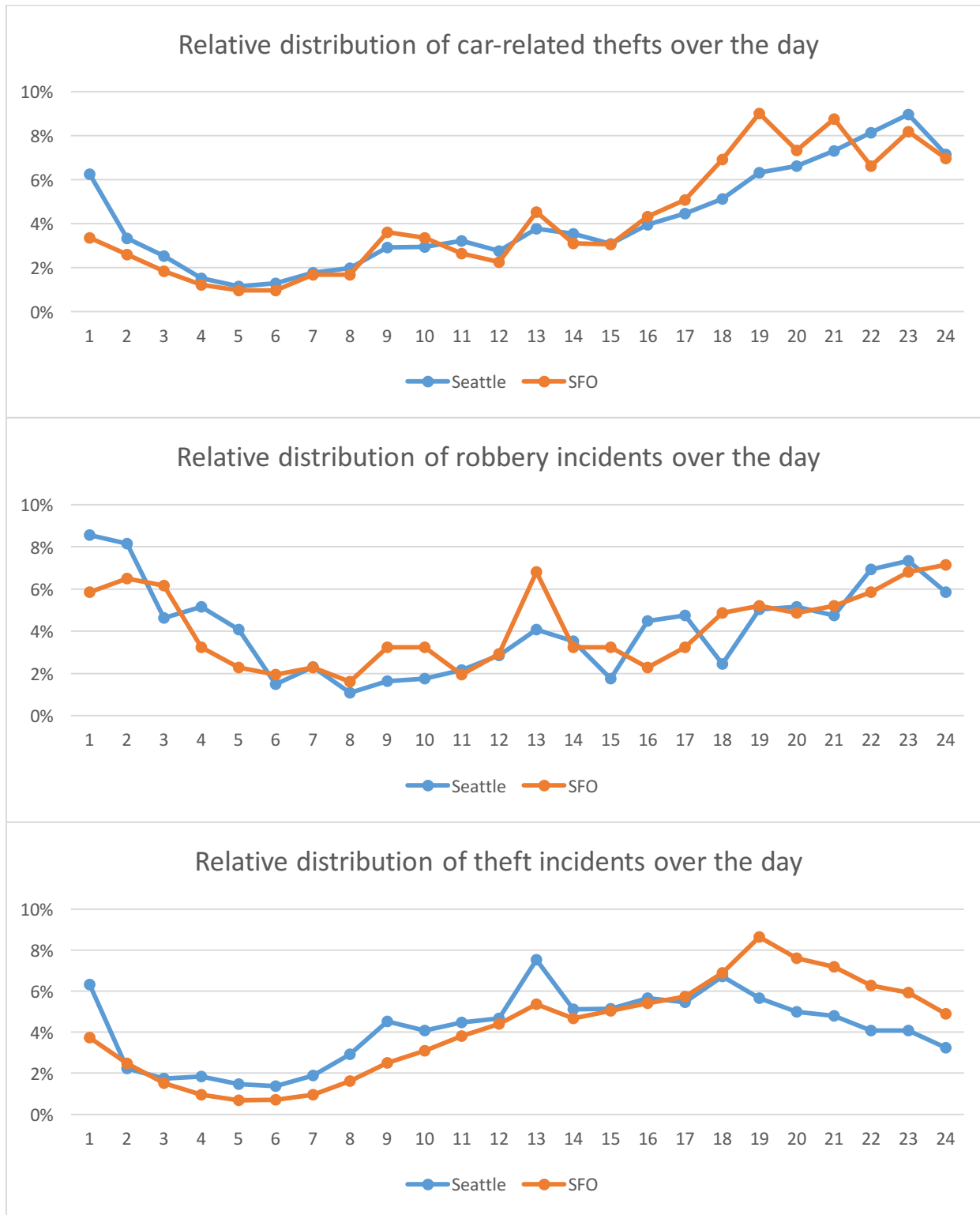
Population Count vs. Theft Count

Population-wise, San Francisco (SFO) is the larger of the two cities. According to the government census Web sites for [SFO](#) and [Seattle](#), it had 852,469 inhabitants in 2014, that is 28% more than Seattle’s 668,342 inhabitants. Aggregating the overall counts by category and city shows however that 76% more theft incidents were reported in Seattle:

Type / City	Grand Total
CAR	11253
Seattle	9287
SFO	1966
ROBBERY	1044
Seattle	736
SFO	308
THEFT	20122
Seattle	10642
SFO	9480

Most / Least Activity Time Periods

For this exercise, I wanted to look at how the crime incidences are spread across the day in the two cities. In the light of the significant difference in incident counts between the 2 cities, it makes sense to compare the *percentages* of crimes rather than absolute values in each category for each hour. I pivoted the data by crime type, city and hour and transformed the values to read as percentages of the total in each type by city.



Overall, the crime rates per hour follow similar up- and downward trends in the two cities, but two observations stand out:

- a) The SFO numbers are fairly consistently below the Seattle percentages from the hours of 1am to 7am, with only a few exceptions in the robbery category.
- b) Contrary to at least my preconception, there were fewer incidents in the night/early morning hours than during the day.

The highest number of unarmed thefts (i.e., excluding robbery) occurs in the evening hours, with a spike around 1pm; in SFO even more so than in Seattle. After 7pm the rate starts to decline in both cities, but Seattle thieves appear to keep going longer than their SFO counterparts, and stay more active which is apparent in their higher percentages from the 1am hour all the way to 7am. Their higher night-time activity applies to the robbery category as well (albeit with a few outliers), which lead me to the conclusion that SFO does not only have a much lower theft crime rate than Seattle, its thieves are also more likely to leave you alone during the hours after midnight.

Appendix

Seattle Crime Category to Type Mapping

ANIMAL COMPLAINT	NA
ASSAULT	NA
BIAS INCIDENT	NA
BIKE THEFT	THEFT
BURGLARY	THEFT
BURGLARY-SECURE PARKING-RES	THEFT
CAR PROWL	CAR
COUNTERFEIT	NA
DISORDERLY CONDUCT	NA
DISPUTE	NA
DISTURBANCE	NA
DUI	NA
ELUDING	NA
EMBEZZLE	NA
ESCAPE	NA
FALSE REPORT	NA
FIREWORK	NA
FORGERY	NA
FRAUD	NA
HOMICIDE	NA
ILLEGAL DUMPING	NA
INJURY	NA
LIQUOR VIOLATION	NA
LOST PROPERTY	NA
MAIL THEFT	THEFT
NARCOTICS	NA
OBSTRUCT	NA

OTHER PROPERTY	THEFT
PICKPOCKET	THEFT
PORNOGRAPHY	NA
PROPERTY DAMAGE	NA
PROSTITUTION	NA
PUBLIC NUISANCE	NA
PURSE SNATCH	NA
RECKLESS BURNING	NA
RECOVERED PROPERTY	NA
ROBBERY	ROBBERY
SHOPLIFTING	THEFT
STOLEN PROPERTY	THEFT
THEFT OF SERVICES	NA
THREATS	NA
TRAFFIC	NA
TRESPASS	NA
VEHICLE THEFT	CAR
VIOLATION OF COURT ORDER	NA
WARRANT ARREST	NA
WEAPON	NA

SFO Crime Category to Type Mapping

ARSON	NA
ASSAULT	NA
BRIBERY	NA
BURGLARY	THEFT
DISORDERLY CONDUCT	NA
DRIVING UNDER THE INFLUENCE	NA
DRUG/NARCOTIC	NA
DRUNKENNESS	NA
EMBEZZLEMENT	NA
EXTORTION	NA
FAMILY OFFENSES	NA
FORGERY/COUNTERFEITING	NA
FRAUD	NA
GAMBLING	NA
KIDNAPPING	NA
LARCENY/THEFT	THEFT
LIQUOR LAWS	NA
LOITERING	NA
MISSING PERSON	NA
NON-CRIMINAL	NA
OTHER OFFENSES	NA

PORNOGRAPHY/OBSCENE MAT	NA
PROSTITUTION	NA
ROBBERY	ROBBERY
RUNAWAY	NA
SECONDARY CODES	NA
STOLEN PROPERTY	THEFT
SUICIDE	NA
SUSPICIOUS OCC	NA
TRESPASS	NA
VANDALISM	NA
VEHICLE THEFT	CAR
WARRANTS	NA
WEAPON LAWS	NA