CrimeRisk

APPLIED GEOGRAPHIC SOLUTIONS
Powering Smarter Market Decisions™

Version

Release 2015B,
November 2015

Purpose

CrimeRisk is intended to provide an assessment of the relative risk of seven major crime types and their summarization to the block group scale. Relative crime rates are very important in real estate applications, insurance underwriting, shopping center and stand-alone retail facilities.

Content

CrimeRisk is a block group and higher level geographic database consisting of a series of standardized indexes for a range of serious crimes against both persons and property. It is derived from an extensive analysis of several years of crime reports from the vast majority of law enforcement jurisdictions nationwide. The crimes included in the database are the "Part 1" crimes and include murder, rape, robbery, assault, burglary, theft, and motor vehicle theft. These categories are the primary reporting categories used by the FBI in its Uniform Crime Report (UCR), with the exception of Arson, for which data is very inconsistently reported at the jurisdictional level. Part II crimes are not reported in the detail databases and are generally available only for selected areas or at high levels of geography. In accordance with the reporting procedures using in the UCR reports, aggregate indexes have been prepared for personal and property crimes separately, as well as a total index. While this provides a useful measure of the relative "overall" crime rate in an area, it must be recognized that these are unweighted indexes, in that a murder is weighted no more heavily than a purse snatching in the computation. For this reason, caution is advised when using any of the aggregate index values.

Variables

CRMCYTOTC	Total Crime
CRMCYPERC	Personal Crime
CRMCYMURD	Murder
CRMCYRAPE	Rape
CRMCYROBB	Robbery
CRMCYASST	Assault
CRMCYPROC	Property Crime
CRMCYBURG	Burglary
CRMCYLARC	Larceny
CRMCYMVEH	Motor Vehicle Theft

Detailed

The primary source of CrimeRisk is a careful compilation and analysis of the FBI Uniform Crime Report databases.

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Methodology

On an annual basis, the FBI collects data from each of about 16,000 separate law enforcement jurisdictions at the city, county, and state levels and compiles these into its annual Uniform Crime Report (UCR). The latest national crime reports can be obtained from the FBI web site in Excel format. While useful, the UCR provides detailed data only for the largest cities, counties, and metropolitan areas.

Recently, some large cities have begun posting very detailed crime reports to their websites that are available for download. These data have very specific locations which is useful for matching against specific block groups. If the data is detailed enough and is available for the last five years, we use it alongside the FBI UCR data. Currently only data for Chicago and Baltimore fits this criteria, but hopefully more cities will qualify as time goes by. We are now using UCR data from 2008-2012.

A considerable effort was made to correct a number of problems that are prevalent within the FBI databases, including:

- The standardization of jurisdictional names: the FBI does not employ Census bureau codes in its databases and the jurisdictional names contain numerous typographical errors and format discrepancies which needed to be manually corrected

- Reporting by individual jurisdictions can be inconsistent from year to year, in that data for some jurisdictions is missing for one or more years and required handling

- Reporting for some crime types is inconsistent between jurisdictions. The FBI handles this by simply suppressing the statistics entirely for those areas. This primarily affects the rape category for Illinois, where statistics are suppressed for all but the largest jurisdictions. These missing values were handled via the modeling process, in which rape estimates were prepared for these jurisdictions by using a model which related rape incidence to other crime types

- The standardization of the database to account for jurisdictional overlaps. For example, the California Highway Patrol has jurisdiction over only state and interstate highways in urban areas.

- Crime rates in general have been declining over the past several years, so it was necessary to adjust the historical data to reflect current crime rates.

Once this correction and standardization effort was completed, the database consisted of a time series of five years of data covering:

- All cities and towns which have their own police agency
- All cities and towns where policing for the local jurisdiction is contracted to a higher level agency but which tracks statistics separately (e.g. the city of Thousand Oaks, California contracts with the Ventura County Sheriff's Department for police services, but the incident reports are separately compiled)
- A record for each state which covers the population not covered by either of the two cases above. This is normally a combination of County Sheriff (or equivalent) and State level jurisdictions. For a very limited number of areas, such as New York City, the local jurisdiction spans several counties.

The initial models were undertaken using a subset of this database. In the smallest cities, a single murder will have a profound effect on the crime rate per 100,000 population that would severely distort the resulting models. A wide range of Census and current year demographic attributes were extracted from AGS' databases for the remaining areas (approximately 10,000 separate "jurisdictions"). This database was then used as the primary modeling database and was used later for scaling purposes. Each of the seven crime types was modeled separately, using an initial range of about 100 socioeconomic characteristics taken from the Census and AGS' current year estimates.

The models constructed typically accounted for over 85% of the variance in crime rates at this "jurisdiction" level, although it should be noted that the results for property crimes were generally more reliable than for personal crimes.

The results of these models were then applied to the block group level using the same demographic attributes compiled at the block group level. The resulting estimates were then scaled to match the master database of

jurisdictions. The block groups within each jurisdiction were scaled to match the crime totals for that jurisdiction. For block groups outside of these areas, results were normalized to match the state totals minus the jurisdiction totals within each state.

The final crime rate estimates were then weighted by population and aggregated to the national totals. The results were then scaled to match the 2012 preliminary estimates (at a state level) and converted to indexes relative to the national total.

Sources

Federal Bureau of Investigation, Uniform Crime Report, 2008-2012 and 2015 Preliminary
Applied Geographic Solutions, 2015B Estimates and Projections.

Definitions

Source: Federal Bureau of Investigation, Uniform Crime Report, 2009

The Uniform Crime Reporting (UCR) Program divides offenses into two groups, Part I and Part II crimes. Each month, participating law enforcement agencies submit information on the number of Part I offenses that become known to them; those offenses cleared by arrest or exceptional means; and the age, sex, and race of persons arrested for each of the offenses. Contributors provide only arrest data for Part II offenses. The UCR Program collects data about Part I offenses in order to measure the level and scope of crime occurring throughout the Nation. The program's founders chose these offenses because they are serious crimes, they occur with regularity in all areas of the country, and they are likely to be reported to police.

The Part I offenses are:

Criminal homicide – a) Murder and nonnegligent manslaughter: the willful (nonnegligent) killing of one human being by another. Deaths caused by negligence, attempts to kill, assaults to kill, suicides, and accidental deaths are excluded. The program classifies justifiable homicides separately and limits the definition to: (1) the killing of a felon by a law enforcement officer in the line of duty; or (2) the killing of a felon, during the commission of a felony, by a private citizen.
b) Manslaughter by negligence: the killing of another person through gross negligence. Deaths of persons due to their own negligence, accidental deaths not resulting from gross negligence, and traffic fatalities are not

included in the category Manslaughter by Negligence.

Forcible rape
The carnal knowledge of a female forcibly and against her will. Rapes by force and attempts or assaults to rape, regardless of the age of the victim, are included. Statutory offenses (no force used—victim under age of consent) are excluded.

Robbery
The taking or attempting to take anything of value from the care, custody, or control of a person or persons by force or threat of force or violence and/or by putting the victim in fear. Aggravated assault—An unlawful attack by one person upon another for the purpose of inflicting severe or aggravated bodily injury. This type of assault usually is accompanied by the use of a weapon or by means likely to produce death or great bodily harm. Simple assaults are excluded.

Burglary (breaking or entering)
The unlawful entry of a structure to commit a felony or a theft. Attempted forcible entry is included.

Larceny-theft (except motor vehicle theft)
The unlawful taking, carrying, leading, or riding away of property from the possession or constructive possession of another. Examples are thefts of bicycles, motor vehicle parts and accessories, shoplifting, pocket-picking, or the stealing of any property or article that is not taken by force and violence or by fraud. Attempted larcenies are included. Embezzlement, confidence games, forgery, check fraud, etc., are excluded.

Motor vehicle theft
The theft or attempted theft of a motor vehicle. A motor vehicle is self-propelled and runs on land surface and not on rails. Motorboats, construction equipment, airplanes, and farming equipment are specifically excluded from this category.

Further Information

Contact customer service at 877-944-4AGS or email support@appliedgeographic.com.