

2008

Indianapolis Metal Theft Project

Metal Theft Database Pilot Study

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University of Indianapolis
Community Research Center

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November 1, 2008

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ACKNOWLEDGMENTS

This project is truly a collaborative effort. It could not be carried on without the initiative, aid, and support of Maj. David Allender of the Indianapolis Metropolitan Police Department (IMPD) and the staff at the IMPD Crime Analysis Office. Thanks to Lt. Marshall DePew of the IMPD for his help and support; thanks also for his work, along with Jack Bedan of the Indiana Intelligence Fusion Center, on the law enforcement metal theft training seminar held on the University of Indianapolis campus this past July. Funds for this project were provided by the InQuery Collaborative Grant.

EXECUTIVE SUMMARY

Metal theft describes the theft of items for the value of their constituent metals. These thefts include a variety of crimes, such as: stealing catalytic converters from cars for their platinum, rhodium and palladium; and stealing copper wires and cable; plumbing; air conditioners and parts for the copper; aluminum siding and gutters; and so on. It is generally agreed that metal thefts have gone up because of steep increases in the prices of metals, spurred by an increase in world demand for metals and increased speculative investment in base metals.

Jurisdictions across the country are reporting increased concerns over metal thefts. Almost 30 local and state legislatures in the U.S. have enacted, or are considering, metal theft legislation. Yet, few jurisdictions have hard data on the exact numbers and types of metal thefts occurring. Recently, the Indianapolis Metropolitan Police Department (IMPD) and the University of Indianapolis Community Research Center (CRC) began a collaborative effort to collect such data on metal theft in Indianapolis.

The Indianapolis Metal Theft Project seeks to gather and analyze a wide variety of data that will provide a clearer understanding of the incidence, types, costs, and impacts of metal theft in Indianapolis in order to inform and implement strategies to reduce these crimes. This is the first report on a pilot study to establish protocol for collecting, coding, and analyzing metal theft data from IMPD crime reports. It provides some descriptive frequencies of metal theft crimes for January through March of 2008.

A summary of the findings is presented below:

- From January 1 to March 31, 2008, there were 678 metal thefts reported in Indianapolis. This averages out to about 226 per month or about 7 metal thefts each day. Residences accounted for just over half of the crimes. Another 17 percent were automobiles (catalytic converters mostly). Interestingly, churches have been victimized enough to merit their own category.
- Copper was the most stolen metal, with copper pipes and plumbing accounting for more than 17 percent of all items and copper wires accounting for another 8 percent.
- On average, one catalytic converter was stolen every day during this three month time period. Approximately, one-quarter of the vehicles were Jeeps, suggesting they might be at a higher than average risk for catalytic converter theft.
- Twenty-five percent (169) of the crime reports contained estimates, which were provided by the victim reporting the crime, of the values for the stolen items. For those 169 cases, the average value of the stolen items was \$4,314 (median = \$1,500). The sum of the reported values was \$729,112.
- Extrapolating those values to the other 75% of cases suggests the value of stolen metal averaged just under \$1 million per month for January, February, and March 2008.

- The Northeast District had the most residential metal thefts, while the Southeast and Southwest Districts had the most commercial and vehicle related metal thefts.
- Possible steps for moving forward include: 1) participating in the Institute of Recycling Industries, Inc. (ISRI) Theft Alert Program; 2) centralizing responsibility for metal thefts; 3) organizing a Metal Theft Task Force; 4) focusing needs-driven prevention efforts on specific districts; 5) improving crime reporting; and 6) continuing collaboration on the Indianapolis Metal Theft Project.

INTRODUCTION

No metal is sacred: Cemetery memorials are snatched, and so are the roofs of churches. Wherever there is metal – copper in particular but also aluminum, zinc, nickel, and bronze – there is someone stealing metal to sell it for a little cash to support themselves... It is the most significant physical security threat concern today.

—Beranito (2007) with CSO (*Chief Security Officer*) Magazine

Jurisdictions across the country are reporting increased concerns over metal thefts. Companies, utilities, railroads, home builders, and homeowners are victimized every day. Thieves steal catalytic converters from cars for the platinum and other metals inside. It takes just a few minutes to saw one out from under a car. Air conditioners are torn apart or taken in their entirety for the copper plumbing, coils, and wires. Aluminum siding is stripped off the sides of houses. Bronze plaques and statues are stolen. The list goes on. The Institute of Scrap Recycling Industries, Inc. (ISRI) calls the growth in metal theft an “overwhelming problem” for communities, police, and scrap metal recyclers.ⁱ Almost 30 local and state legislaturesⁱ in the U.S. have enacted, or are considering, metal theft legislation.ⁱⁱ

There is growing concern over metal thefts in Indianapolis from residents, companies and law enforcement officials. Current knowledge of the thefts, however, is largely anecdotal, spread by word of mouth or newspaper stories covering fantastic crimes, such as the theft of copper pipes from the state’s largest food pantry. In response to the growing concerns and the lack of hard numbers on these crimes, the Indianapolis Metropolitan Police Department (IMPD) and the University of Indianapolis Community Research Center (CRC) recently began a collaborative effort to collect data on metal thefts.

The Indianapolis Metal Theft Project seeks to gather and analyze a wide variety of data that will provide a clearer understanding of the incidence, types, costs, and impacts of metal theft in Indianapolis in order to inform and implement strategies to reduce these crimes and their impacts. This is the first report on a pilot study to establish protocol for collecting, coding, and analyzing metal theft data from IMPD crime reports. It provides some descriptive frequencies of metal theft crimes for January through March of 2008.

ⁱ A list of state metals theft statutes is available at National Conference of State Legislatures’ website, <http://www.ncsl.org/programs/energy/MetalTheftStats.htm>.

Indiana Code 25-37.5-1-2 requires metals dealer to retain copies of government issues photo identification of persons from whom they purchase metals and the price paid for the metals. These records must be kept for two years. The city of Indianapolis further requires that salvage and scrap metal dealers apply for and obtain a license to conduct business.

Defining Metal Theft

Metal theft describes the theft of items for the value of their constituent metals. These metals, such as copper, aluminum, and steel, are extracted from the stolen items, usually at scrap yards, and then sold to foundries and factories to build new products. This crime is distinguished from other thefts of items stolen for the value of the item itself, either “as is” or chopped into parts that are then used or sold “as is,” rather than sold for the raw materials comprising them.

The scrap industry generally classifies the metals into two broad categories: 1) ferrous (containing iron / magnetic), like steel, iron and iron alloys and 2) non-ferrous (no iron content / non-magnetic), like copper, aluminum, and lead. Non-ferrous metals tend to be the primary target of metal thefts. These thefts include a variety of crimes, such as stealing: catalytic converters from cars for their platinum, rhodium (a byproduct of platinum mining, which increased in value by about 1,000% from 2003 to 2007)ⁱⁱⁱ and palladium; and stealing copper wires and cable; plumbing; air conditioners and parts for the copper; aluminum siding and gutters; beer kegs for their stainless steel; and so on.

The Rise in Metal Prices

It is generally agreed that metal thefts have gone up because of steep increases in the prices of metals, particularly copper.^{iv} The recent rise in metal prices has been spurred by an increase in world demand for metals and increased speculative investment in base metals.^v “It’s basic economics: Demand for metal is long and supply is short, making semiprecious metals precious... Investors can’t get enough commodity metal, and neither can the impoverished looking for a quick buck.”^{vi}

In 2000, copper sold for about \$0.80/pound, but by March 2008, it had risen to \$4.00 /pound (an average increase of about 62 percent per year). Aluminum doubled in value from about \$0.70/pound in 2003 to over \$1.40/pound in March 2008. The price of platinum rose from \$750/ounce in 2003 to more than \$2,000/ounce in March 2008.^{vii} In the past few months, however, all these metals have seen rather sharp drops in value.²

A Widespread Problem

In 2006, the theft of beer kegs alone, which are made of stainless steel, cost breweries more than \$52 million.^{viii} The following year, a single insurance company in the U.K. received more than 1,300 metal thefts claims worth £4.4 million just from Anglican churches.^{ix} Thefts of copper wires have resulted in power outages and decreased grid functioning.^x A recent news story in Baltimore claimed metal theft there rose 623% between 2005 and 2007.^{xi}

² Local scrap yards are now paying roughly \$1.10-1.65/pound for copper (a drop from more than \$3/pound just a few months ago), about \$1/pound for insulated wire, and radiators from air conditioning units fetch about \$0.75/pound.

Across the nation, newspaper stories roll out laundry lists of thefts, like this one from a May 11, 2008 article in the *Washington Post*:

In Colorado Springs, at least two ballparks and an in-line skating rink lost electric wiring from their lights; and sprinkler caps worth as much as \$1,200 a piece were swiped. In Hot Springs, Ark., 2,000 customers, a hospital, a mall and a Wal-Mart lost power when copper thieves hit an electric substation on April 27. During a two-week period in April, there were six copper thefts in churches around Birmingham, Ala. The renovation of a 96-year-old church was halted by flooding after basement water pipes were ripped out for their copper content. Three large, bronze outdoor sculptures have been stolen in the past year and a half in Brea, Calif., each one valued at tens of thousands of dollars.^{xiii}

An article from *CSO Online*, a publication for Chief Security Officers, provides this list:

Thieves yank down live power lines and remove grounding wires from electrical substations, rail lines and wind farms. They snatch wire and plumbing from new housing and business park construction sites, or sometimes existing houses. In Detroit, the Kronk Gym, a legendary boxing basement where heavyweight champion Tommy Hearns once sparred, was already on the ropes financially; when thieves stripped it of all its copper pipes, The Kronk closed for good. A statue known as a Battle Cross, commemorating the war on terrorism, was snatched from its stand in Yakima, Wash. "Reclining Figure," a 2.1-ton sculpture by artist Henry More, was stolen from a museum in England. At auction, the sculpture was worth \$5 million. As scrap metal, it would fetch maybe \$10,000.^{xiii}

Indianapolis

Indianapolis has its share of newsworthy thefts as well. This past spring, catalytic converters were stolen from 44 vehicles at an ice cream distribution business.^{xiv} In November 2007, thieves stole more than 100 bronze flower vases, each costing about \$240 (worth about \$6 each as scrap), from a local cemetery.^{xv} In the summer of 2007, thieves stole copper pipes from the state's largest food bank, shutting down the organization's 30,000-cubic-foot cooler room and two 40,000-cubic-foot freezers and costing an estimated \$20,000 in damage and more than \$400,000 in lost food.^{xvi} Some area scrap yards have been repeatedly burglarized for their scrap,^{xvii} and in 2007 a scrap yard operator was charged with knowingly purchasing stolen copper cable.^{xviii}

Yet, Indianapolis, like most jurisdictions across the country, has had little hard data providing specific numbers on the extent of these thefts. Metal thefts have not been treated separately from other thefts. This report is the first to provide statistical information on metal thefts specifically.

THE DATABASE

A new database of metal thefts in Indianapolis was started in the winter of 2008 and is maintained by the University of Indianapolis CRC in cooperation with IMPD, as part of the CRC's Indianapolis Metal Theft Project. After a crime report has been filed by an officer, a copy goes to the IMPD Crime Analysis Office. The office sorts through the reports to prepare the Uniform Crime Report (UCR) data for the FBI. Personnel at the office read each report. When they identify a report that contains a metal theft crime, a copy of the report is put aside in a separate file. Since these reports are used for the UCR, they are fairly reliable, as sufficient time has elapsed to allow the elimination of unfounded cases and other potential problems with the data.³

These cases are then provided to a major with the IMPD who provides them to researchers with the CRC. Research assistants code the information from the reports and enter the data into a spreadsheet. This spreadsheet is used for the analysis presented here.

Since this is a report on the pilot phase of a new project, a few cautions regarding the data discussed below are in order.

- 1) These are estimates. We cannot know for sure that everything listed in the database was in fact sold for scrap. It is possible that some of the items might have been simply resold to be used in their current form. It is most likely, however, that the crimes identified as metal thefts (i.e., the items are sold as scrap) by the Crime Analysis Office, are in fact metal thefts.
- 2) Some unknown number of thefts undoubtedly go unreported (the "dark figure" of crime). Some thefts go undiscovered for quite some time, since vacant structures are common targets (this is probably why churches seem to be targets). So, the data might actually underestimate the extent of metal thefts.
- 3) The numbers and estimates provided in this report represent a starting point. This is a pilot study to work out the kinks in identifying, measuring, and categorizing metal thefts. (As such, our experience could be valuable for other jurisdictions considering the task of measuring metal thefts.)

³ This also explains the time lapse between the dates of crime reports and the completion of this report. Whatever is lost in timeliness, is made up for in increased validity of the data.

FINDINGS

The Number of Thefts

According to the data, from January 1 to March 31, 2008, there were 678 metal thefts in Indianapolis. This averages out to about 226 per month or about 7 metal thefts each day.⁴ Table 1 provides the properties from which items were stolen. Interestingly, churches have been victimized enough to merit their own category.

Table 1 **Thefts by Property Type**

Property Type	Frequency	
Vehicle	102	15.0%
Residence	369	54.4
Commercial	163	24.0
Church	33	4.9
Other	11	1.6
Total	678	100.0

One of the biggest challenges for this project has been grouping the myriad and diverse items that are stolen into a more manageable number of categories suitable for analysis. Table 2 provides the results of the current attempt. According to the data, the 678 incidents involved the theft of approximately 1043 items. Copper is the most stolen metal, with copper pipes and plumbing accounting for more than 17 percent of all items. The “Copper Pipe” category includes plumbing, tubes, and copper coils. These are usually found in air conditioning units and other appliances and in a building’s plumbing. Other copper includes copper sheet metal, downspouts, and copper that is not specified as pipes or wiring but most likely one or the other. This is a category that will be further investigated and improved for future reports.

Table 2 **Categories of Items Stolen**

Items	Frequency	
Copper Pipe	181	17.4%
Copper Wire	84	8.1
Copper Other	69	6.6
Catalytic Converter	91	8.7
Auto Other	23	2.2
Aluminum Siding	22	2.1
Aluminum Other	42	4.0
A/C Unit	180	17.3
Appliance	111	10.6
Other	240	23.0
Total	1043	100.0

⁴ Phoenix, AZ police reported 2,732 cases of copper theft worth \$7.2 million in losses in 2007 (Ferraresi, 2008). In 2006 Dallas, TX counted 1,500 cases of metals theft from January through August, or 188 per month (Berinato, 2007). Given the perceived fast growth of these thefts, it seems likely Dallas’ 2008 numbers are considerably higher. These numbers provide support for the reliability of the numbers presented for Indianapolis.

On average, one catalytic converter was stolen every day in the first three months of 2008. The make of the car was provided in the crime reports for 73 of the vehicle thefts. Interestingly, 27 percent (n = 20) of those vehicles were Jeeps, suggesting they might be at a higher than average risk for catalytic converter theft.

Most likely, there are more aluminum thefts than the table indicates. Some aluminum has ended up in the “Other” category, because the item was not specified in the report as aluminum. Initially, if the metal was not specified, the item has generally been put into the “Other” category. This issue will be revisited before the next report. Regardless, the theft of aluminum siding 22 times in 3 months (or once every four days) still seems significant.

The current categories still need improvement, as the “Other” category comprises 23 percent of the total number of stolen items. Given the wide variety of items stolen for scrap, such as metal lawn furniture, water meters, and even soccer goal posts, it is necessarily a large category. Nevertheless, it is a current priority for the research project to refine the groupings into categories with more even distributions. As the database gets more cases, it should be easier to identify categories of items that are not as evident this early in the project. The “Other” category has also served as a catchall for items not well-defined in the crime report. For example, some items are identified as simply “metal.” Rather than risk miscategorizing, we have simply placed such items into the “Other” group. More specific reporting will help alleviate some of the problems with item groupings as well.

The Value of the Stolen Property

Twenty-five percent (169) of the crime reports contained estimates of the values, which were provided by the victim reporting the crime, for the stolen items. For those 169 cases, the average value of the stolen items was \$4,314 (median = \$1,500⁵). The sum of the reported values was \$729,112.

Remember, this is only 25% of the cases. If there is no bias in whether or not victims provide an estimated value, say by property type (e.g., victims of vehicle [catalytic converter] thefts might be less likely to provide an estimate of the value than commercial victims⁶), and we assume these values are roughly reflective of the overall population of metal thefts, we can estimate the total value for all the metal thefts. This can be done by simply multiplying the sum by four. Doing so results in an estimated value of \$2,916,448 in metal thefts for January, February and March 2008 – or \$972,149 per month.

Alternatively, we can multiply the mean (\$4,314) by the total number of thefts (678), which produces an estimated total value of \$2,924,892 for three months – or \$974,964 per month. Future reports will provide a more detailed analysis by stratifying the thefts into property types and items, computing values for each stratum, then multiplying those totals by their percentage of the overall population of thefts. Preliminary analyses, however, suggest that

⁵ The median is the midpoint of a set of values; the point at which half of the values fall above and half fall below. A large difference between the median and the mean (average) indicates the mean is skewed by a few extreme values. In this instance, three cases had reported values over \$80,000, which skews the mean higher than the median.

⁶ Analyses not shown here failed to find a significant difference between property types and whether or not an estimated value was provided, suggesting no bias, by property type at least.

even with such stratification the estimates remain roughly the same. But the categories are, as mentioned, in need of some refinement. Regardless, for purposes of this report, it seems that for January, February, and March of 2008, the value of stolen metal averaged just under \$1 million per month.

Importantly, when discussing these values/costs and attempting to extrapolate them to the entire population of metal thefts, one must be cautious. The cautions discussed above apply to these data, and there are a couple more caveats that need to be stated. It is not clear if victims are giving their estimates of the current value of the stolen items, the cost of new items, or the cost of new items plus repairs. For example, five victims of catalytic converter theft estimated the value of the stolen item at \$300 or less. While that might be an accurate price for a limited number of older domestic sedans and pickups, that does not include labor. Other victims do seem to be providing estimates of the total loss and damage.

This is an important issue, because metal thefts seem to have a relatively high level of collateral damage associated with the thefts. The cost of replacing an air conditioner can be much higher than simple parts and labor when there is damage to the property, and there often is.⁷ Other collateral costs that do not seem to be included in the estimates include costs from the loss of services (in the case of electrical wires being cut or electricity being interrupted), lost productivity, or the loss of other goods (such as in the 2007 case at the large food pantry).

Additionally, victims simply may not have good estimates of the value of the lost items. So, these estimates are not perfect, but they do represent a good approximation based on the current data available.

Locations of the Thefts

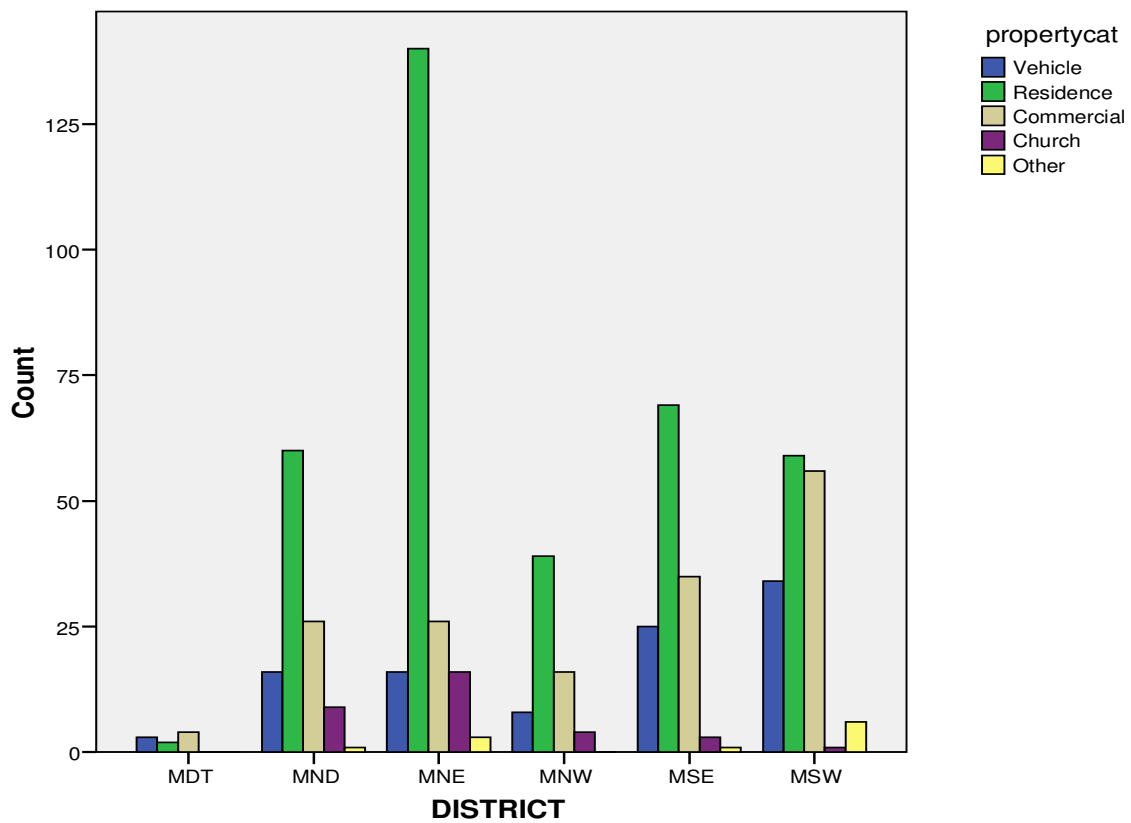
Table 3 presents the number of thefts for each of the six police districts. The Northeast and Southwest Districts have the highest overall number of metal thefts. Interestingly, though, the districts vary by type of theft, too. Figure 1 below provides a bar graph clustering all five property types for each district. The Northeast District has by far the most residential metal thefts, but it has fewer commercial and vehicle thefts than either the Southeast or Southwest. This can be useful information, as it can help officials focus prevention efforts for specific type of thefts in specific districts.

⁷ In fact, Arizona recently amended its aggravated criminal damage statute to include metals theft. The statute now includes “intentionally or recklessly...defacing, damaging or tampering with any utility or agricultural infrastructure or property, construction site or existing structure for the purpose of obtaining nonferrous metals” (Arizona Senate Research Staff, 2007).

Table 3 Thefts by District

District	Frequency	
DT	9	1.3
ND	112	16.5
NE	201	29.6
NW	67	9.9
SE	133	19.6
SW	156	23.0
Total	678	100.0

Figure 1 Property Type by District



MOVING FORWARD

The finding that metal theft might involve almost \$1 million worth of property each month indicates a problem of some significance. The ideas presented below are the product of discussions with local law enforcement professionals and research into how other jurisdictions and industries are addressing the problem. Given the limited data available for the current analysis, it is best to think of these as simply directions worth considering.

I. Participate in ISRI's Theft Alert Program

Collaboration with the scrap industry is vital. Scrap yard operators are law enforcement's most important ally in the fight against metal theft. The Institute of Scrap Recycling Industries, Inc. (ISRI), a member of the National Crime Prevention Council, maintains a Theft Alert System that allows law enforcement to notify scrap yards when metal theft is reported. This tool is available free of charge to any law enforcement agency and helps recyclers identify stolen material brought to their location. Police simply provide the estimated date and time of theft, location of theft, and a detailed description of the materials, including serial numbers and measurements if possible, the investigating jurisdiction, a contact phone number, and the name of the investigating officer, when possible. The Theft Alert System then sends this information via email to local scrap yards, allowing operators to identify stolen material. More information can be found on the ISRI website at <http://www.isri.org/theft/>.

II. Centralize Responsibility for Metal Thefts

It might prove beneficial to dedicate one officer, perhaps at a sergeant's rank, to metal theft cases. This officer could gather information, lead investigations in metal theft cases, and more generally coordinate resources to battle metal thefts. The specialized knowledge such an officer would gain in the field could help in both prevention and prosecution efforts.

III. Organize a Metal Theft Task Force

A metal theft task force might help further coordinate, devise, and implement strategies to reduce metal thefts. Such a task force could be modeled on current narcotics and violence task forces and might include the officer dedicated to metal thefts, a representative from the prosecutor's office, a U.S. Marshall, perhaps additional police officers from the most affected districts, a representative from the Indiana Intelligence Fusion Center, state police, and a member of the Metal Theft Project research team.

IV. Focus Needs-Driven Prevention Efforts on Specific Districts

The data show that types of thefts are not evenly distributed across districts. The Northeast District has the most residential thefts, but the Southwest seems to have the most commercial and vehicle thefts. Scarce resources for prevention efforts, therefore, can be best spent in focused campaigns driven by the specific needs of each district. For example,

efforts to educate residents and churches about their vulnerability to metal theft and ways to prevent it can be piloted and implemented in the Northeast, where, say, a five percent reduction in residential thefts would be more substantial in real numbers than a five percent reduction in the Northwest. Meanwhile, efforts to prevent catalytic converter thefts might best be focused in the Southwest District where vehicle related thefts are highest. Other organizations, including ISRI and insurance companies, have already created educational flyers and posters, which may be used in local prevention efforts at little cost.

V. Improve Crime Reporting

Some of the problems with the new data set are the result of crime reports that are unclear or that provide little specific information. This is certainly not the case for a large number of the reports. Nevertheless, increased officer cognizance of the importance of collecting accurate, clear, and a little more specific information could go a long way in improving future analyses. This in turn increases our understanding of the problem, allows us to measure the effects of prevention and prosecution efforts, and enhances evidence-based practices.

VI. Continue Collaborating on the Metal Theft Research Project

Following up the points just listed above, continuing the collaboration between the University of Indianapolis Community Research Center and the Indianapolis Police Department on the Indianapolis Metal Theft Project is also recommended. The pilot study has already provided information useful for getting a better handle on this somewhat new and growing problem. Data from the second quarter of 2008 are already being entered into the data set by research assistants.

Researchers with Crime Control Research, Inc., privately contracted analysts who provide mapping, real-time data, and other analysis to IMPD, have expressed an interest in using the data set to produce geographical maps of the thefts, which can be used to identify metal theft “hot spots.” The CRC has also secured a small grant to conduct exploratory interviews with law enforcement and other professionals concerned with metal theft to identify possible environmental consequences of metal thefts, perceived needs to reduce the crimes, and related issues. The findings from this project will be shared with interested law enforcement officials elsewhere. Additionally, the project facilitated a metal theft training seminar for Indiana law enforcement, which was sponsored by the IMPD, the Indiana Intelligence Fusion Center, and OmniSource, and held on the University of Indianapolis campus this past July.

Finally, as mentioned above, the database provides valuable baseline data that can be used to measure any effects prevention and prosecution efforts might have on metal theft rates. This project represents a dedication to the principles of evidence-based practice and demonstrates the value of institutional collaboration.

Endnotes

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