

## EXECUTIVE SUMMARY

### The Impact of Home Burglar Alarm Systems on Residential Burglaries

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Private security in the United States has a long and rich history. Since 1851, when Alan Pinkerton founded what would become the Pinkerton Detective Agency, market provision of goods and services for private security has grown by 2006 to become a \$150 billion per year industry. In 2004, there were more than 1.1 million private security guards in the United States and the ratio of private security employees to public law enforcement is reported to be 1.5 to 1. The market for alarm systems, sold by the private security industry, is about a \$30 billion annually, growing at a compound annual rate of 7% - 8%.

Despite the substantial size of the private security industry, few scientifically rigorous studies have examined the effectiveness of crime control and prevention by the private security sector. In particular, the deterrent effect of burglar alarms and their impact on crime in residential areas has not been adequately researched. With this in mind, this study examined the impact of home burglar alarms on residential burglaries in Newark, New Jersey during 2001 to 2005. Specifically it examined: (1) the overall relationship between burglar alarms and residential burglaries over these years; (2) the relationships of burglar alarms and residential burglaries to

demographic, socio-economic, and housing character indicators; (3) the spatial relationship between burglar alarms and residential burglaries using autocorrelation and clustering methods; and (4) the possible consequences of burglar alarms in terms of displacement of residential burglaries or diffusion of benefits. Quantitative analyses answer the first two research questions, and spatial analyses answer the two remaining questions.

Prior research on the deterrent effect of home burglar alarm systems indicates that these do deter burglars, but there are many limitations to this work. For example, in most prior research, follow-ups are often short, reliable control groups are generally absent and there is little attention paid to displacement. This present study addresses these methodological issues by using alarm ownership as a denominator, employing advanced statistical tests, using 5 years' worth of data (2001 to 2005), and including the measurement of spatial displacement and diffusion of benefits.

Preliminary inspection of the data found a steady decrease in incidents of residential burglary and an increase in the number of registered burglar alarms during the period 2001 to 2005. The study reported in this dissertation seeks to understand and explain this relationship.

Primary data sources for the study were (1) residential burglar alarm permits records, (2) residential burglaries records, and (3) U.S. Census information. The census information used covered demographic, socio-economic, and housing characteristics indicators for the 90 census tracts in Newark, N.J.

The analyses proceeded as follows:

- ① The addresses for burglar alarm permits and residential burglaries were geo-coded to permit spatial analyses.
- ② Chi-square, bivariate and multivariate statistics were used to examine the overall and correlated relationships between burglar alarms and residential burglaries.
- ③ Advanced multiple regression techniques (e.g., forward selection and hierarchical regression statistics) were used to identify any significant relationships between the increase of burglar alarms in use and the decrease of residential burglary incidents over the multiple years.
- ④ Spatial analyses were conducted to examine the spatial distribution and relationship of both burglar alarms and residential burglaries and to verify earlier quantitative findings. Several methods were used for descriptive spatial analyses (e.g., point and density mappings) and for spatial impact analyses (e.g., spatial centrality and dispersion analyses and spatial autocorrelation and clustering analyses).
- ⑤ In order to study spatial displacement and diffusion of benefits, the recently developed Weighted Displacement Quotient (WDQ) approach with nested buffer and control zones was used, with some modifications made necessary by using a single lot (or land parcel) as the unit of analysis.

Several key indicators explained both the pattern of installed residential burglar alarms (e.g., black population, population ages 12 to 17, unemployment rate, and owner occupancy) and the pattern of residential burglaries (e.g., population ages under 17 and 25 to 34, unemployment, and householder ages 60 to 64). The

increase of burglar alarms did appear to explain the decrease of residential burglaries once the effect of all other independent had been taken into account.

City-wide spatial analyses showed that, (1) dense concentrations of burglar alarms existed, (2) these concentrations were in considerable proximity, and (3) they were isolated from the hotspots of residential burglaries. Such a pattern was taken as evidence of “diffusion of benefits,” suggesting that burglar alarms had a positive impact on the immediate neighborhood by decreasing residential burglaries.

Support for the finding of diffusion of benefits at more micro level was provided by the WDQ analysis. This showed that there was no indication of any spatial displacement of residential burglaries from protected houses to nearby houses and indeed that burglar alarms tended to provide protection to these other houses. In short, a burglar alarm, as a target-hardening measure of situational crime prevention, not only protects the home without displacing burglary to nearby houses, but, in fact, also provides these other houses with protection from burglars.

In conclusion, it was recognized that the results of this study concerning the benefits of burglar alarms need to be replicated in cities other than Newark. If the results hold up in other settings, the use of burglar alarms should be encouraged. One obstacle to their wider use is the high cost of these alarms: though initial and maintenance costs of alarm systems have been reduced, they are still too expensive for most lower-income residents. The possibility is discussed of encouraging alarm ownership through discounts from the security industry and reduced premiums from home insurers.

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