MAPPING IT OUT: REPEAT-ADDRESS BURGLAR ALARMS AND BURGLARIES[1]

by

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Abstract: *While the police are trying to cope with large volumes of false-alarm calls, a new direction in crime prevention asserts that preventing repeat victimization of people, property, places, and situations might be more efficient than other traditional crime prevention doctrines. Using graduated circle maps, this study compares the spatial distributions of alarm calls and burglary incidents across Charlotte, NC, during 1990. Specific comparisons are made regarding the spatial distributions and repeat-address natures of all burglar alarms, all burglaries, burglaries without alarms, and places producing both alarm calls and burglaries. Comparisons of tables indicate that burglaries are more of a single-address phenomenon than alarm calls. Map comparisons imply that the spatial distributions of alarms, and burglaries without alarms are different Inferences are made suggesting that premises with alarms might be responsible for displacing burglars to locations without alarms and that the sheer number of false alarms might subtract from any gains made by targeting places for repeat-burglary victimization.*

INTRODUCTION

A new doctrine for enhancing the efficiency and efficacy of crime prevention measures has been to focus on those that have already

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been victimized, because prior research has indicated they are more likely to be victimized again (Farrell and Pease, 1993). The study of repeat victimization is concerned with precisely identifying the persons, places, properties, and situations that are at higher risk and are more likely to enjoy the benefits of crime prevention measures or techniques.

One of the most popular target-hardening techniques for preventing burglaries has been the installation of burglar alarms (see Reppetto, 1974). This seemingly simple and straightforward way for the public to become more personally involved in the fight against crime has become a nightmare for the police, because alarm calls for service constitute a significant proportion of the total calls-for-service work load. Moreover, what is more problematic is that a majority of the burglary alarm calls are false. Therefore, within a police agency, any improvements in effectiveness and efficiency gained by focusing on repeat-burglary victimizations can be negated by continuously expending the resources for responding to burglar alarms.

The purposes of this study are to numerically examine and cartographically display the relationships among burglar alarms, burglaries, repeat-address alarms, and repeat-address burglaries. The numerical examination involves comparing the magnitudes of the different types of incidents and assessing their degrees of address repetition. The cartographic display involves constructing, interpreting, and comparing maps of the geographic locations of the incidents. This effort will enable one to assess the degree to which the incidents occur in similar or different spaces. This essay demonstrates the first steps one might want to take in conducting a spatial analysis of burglar alarms and burglaries.

THE PROBLEMS WITH BURGLAR ALARMS

Repeat addresses in regard to predatory crime and hot spots have been a research focus for academics and an operational focus for the police (Sherman, 1989; Sherman et al., 1989). In the meantime, the issue of repeat-address burglar alarms has been an operational headache for the police, the private security industry, and the public. Burglar alarm calls cause problems for the police because they are numerous and usually false. Estimates vary from city to city, but one has alarm calls constituting 30% of all police calls with 95% of the calls being false (Daughtry, 1993). Other studies have found similar figures (see Werner, 1993). During the first 11 months of 1994, the Baltimore County (MD) Police Department responded to 63,335 alarm calls, of which 98% were false. The police department estimates the average cost per alarm call is about $67.00, resulting in over $4 million being expended in responding to alarm calls (Funk, 1995). During 1994, the Chicago Police Department, responded to over 300,000 alarm calls, of which only 5,000 were the result of criminal activity. The metric published by the Chicago Police Department to demonstrate cost of responding to false alarms was not an average dollar amount per false alarm, but it was estimated that the equivalent of 195 full-time officers responded to false alarms (Chicago Police Department, 1995). Basically, responding to a large volume of burglar alarm calls is a drain on police resources and essentially makes the police the servant of the private security alarm industry (Moslow, 1994).

Alarms are activated for a variety reasons, besides the obvious one of someone breaking into a building. Weather changes, traffic vibrations, and human errors are three of the general causes of false-alarm activations (see Hakim et al., 1996). Training and technological improvements have been viewed as the potential solutions for reducing false alarms, but these are more long-term in nature. In the meantime, many jurisdictions have sought to partially recover the costs from responding to false alarms by implementing a fine system whereby an alarm user would be charged a certain fee according to the number of false alarms activated during a specified period (see Chicago Police Department, 1995; Werner, 1993). Alarm fines have not been the panacea that its authors had envisioned but rather have created more controversy, pitting the police, public, government officials, and the alarm industry in a never-ending debate.

METHODS

The Data

The alarm and burglary data for this study come from the computer-aided dispatch (CAD) files of the Charlotte, (NC) Police Department for the year 1990. The CAD files are a very rich source of information because recorded with each call for service, when appropriate, is its Uniform Crime Report classification. Therefore, it is possible to ascertain the street-block location and disposition (i.e., false alarm, burglary) for each alarm call. Finally, a great asset of this database is that duplicate calls and multiple calls reporting the same event are eliminated, thus enhancing the reliability that a incident is truly unique and being counted only once.

The pertinent variables for mapping are the total numbers of alarm calls and burglary incidents. The latter is the sum of all forced and attempted burglaries. The variables are modified by ascertaining the number of calls and burglaries at the same address. This produces four different distributions for examining and mapping: (1) repeat-addresses of all alarm calls; (2) the repeat-addresses of all burglaries; (3) the repeat-addresses of all burglaries without alarms; and (4) the repeat-addresses of places producing both alarm calls and burglaries. Therefore, the basic unit of analysis is the incident or call and its street-block address. In this analysis it is not possible to determine the total number of commercial or residential alarms and burglaries.

The Mapping

The addresses for each incident or call are entered into a database manager and the number of repeat calls are assessed for each address, thus creating a new database. The addresses are geocoded using a popular off-the-shelf mapping program's version of the Census Bureau's TIGER (Topologically Integrated Geographic Encoding and Referencing) files (see Garson and Biggs, 1992). Then the database containing frequencies is submitted to the mapping program to produce a graduated circle map. This type of thematic map plots circles according to the value of each point (see Monmonier, 1993). The essence of the analysis involves the interpretation and comparison of the thematic maps.

RESULTS

The Efficacy of Burglar Alarms

During 1990, the Charlotte Police Department responded to 382,923 calls for service. Burglary alarm calls, which numbered 48,622, constitute 12.7% of the total calls-for-service work load. While this percentage is lower than that found in other studies, the proportion of alarms that are false agree (see Table 1). The proportion of false alarms encountered by the police is almost 98%. Nevertheless, the second-highest outcome of alarm activations (1.57%) is burglary. During 1990, there were 10,828 residential and commercial burglaries reported to the police. The alarm data indicate that 1.57%

of the alarm calls accounted for 7% of all burglaries. Furthermore, only 117 on-scene arrests (81 for burglary) were made from alarm activation calls, while 130 on-scene arrests were made during burglaries that did not involve alarms. Basically, from these data it can be construed that alarms are neither effective nor efficient.

Table 1: Outcomes of Burglar Alarm Activations

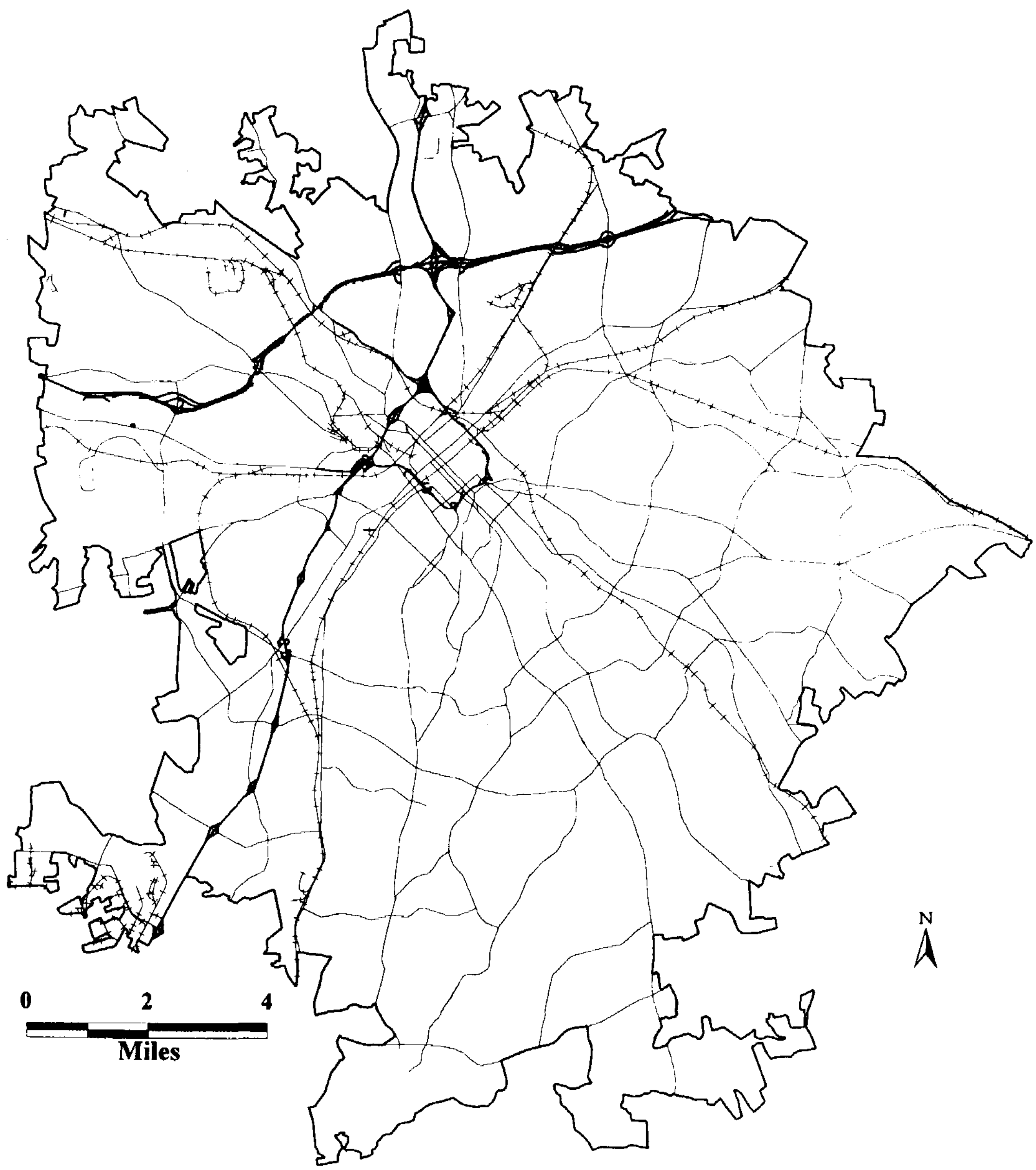
Outcome	Number	Percent
Assault	15	.03
Burglary	762	1.57
False	47,539	97.77
Larceny	55	.11
Robbery	51	.10
Vandalism	158	.32
Other	42	.08
Total	48,622	100.00

Mapping It Out: The Study Site

Figure 1 shows the study site with its major street and rail routes. The darker roads are interstates that run east-west in the northern portion of the city and from the north to the southwest through the western portion of the city. The oddity of Charlotte's street network is the absence of a beltway or restricted-access highways on the east side connecting or leading to other parts of the city.

Two features of the landscape make the central business district (CBD) very conspicuous. First, the CBD is delineated by the interstate highway loop in the upper central portion of the map. Second, the rail lines all converge or pass through this general area, and there are two large rail yards northeast and west of the CBD. Knowing the position of the CBD and the layouts of the street and rail networks is very important, because many of the businesses and industries that depend on access to transportation networks will site their facilities as close as possible to the transportation network. This basic fact of economic geography influences the spatial distribution of many targets for burglars and likely places for alarms.

Figure 1: Charlotte, NC, 1990: Major Street and Rail Routes



Mapping It Out: Repeat-Address Burglar Alarms

During 1990, 48,622 alarm calls came from 10,641 addresses (see Table 1). The one-time-only or single-address alarm calls (4,568) accounts for 42.93% of the addresses, but only 9.39% of all alarm calls (see Table 2). The maximum number of repeat calls to the same address is 144. But it is important to note that, at 10 calls to the same address, the cumulative proportion of alarm addresses is almost 90% while the cumulative proportion of alarm calls is less than 52% (see Table 2). Therefore, the remaining 9% of the addresses produces about 48% of the calls.

Figure 2 is a graduated circle map showing the distribution of repeat-address alarms across Charlotte. At the outset it might appear that there is too much information on the map to extract a sense of spatial pattern and order. But considering the transportation access need for business and industry, it is possible to see that many of the major street and rail lines are almost completely delineated with the layout of alarm calls. Clearly, the incessant addresses are located along the major transportation routes. The most chronic location in the CBD, with 144 alarm calls, is a bank building that houses other business and commercial offices. The majority of the chronic locations on the north side of the CBD are commercial or business locations. Some of the chronic locations in the southeast are an office building, a string of auto dealerships, and other stores. The chronic location south of the CBD is a mall complex, while the chronic address in the southwest is a large wholesale establishment (Figure 2). The majority of the alarms in the blank areas, we can assume, are residential.

Mapping It Out: Repeat-Address Burglaries

Burglary is primarily a single-address phenomenon since 81.52% of all the victimized addresses and 61.1% of all the burglaries involve just one call to a single address (Table 3). At ten calls to the same address, the cumulative proportion of addresses is 99.8% and the cumulative proportion of total burglaries is 97.30%.

Table 2: Repeat Addresses of Burglar Alarms

N of Calls to Same Address	N of Separate Ad-dresses	% of Total Ad-dresses	Cum. % of Ad-dresses	Total Alarm Calls	% of Alarm Calls	Cum. % Of Alarm Calls
1	4568	42.93	42.93	4568	9.39	9.39
2	1670	15.69	58.62	3340	6.87	16.26
3	942	8.85	67.48	2826	5.81	22.07
4	596	5.6	73.08	2384	4.9	26.97
5	493	4.63	77.71	2465	5.07	32.04
6	370	3.48	81.19	2220	4.57	36.61
7	287	2.7	83.88	2009	4.13	40.74
8	218	2.05	85.93	1744	3.59	44.33
9	203	1.91	87.84	1827	3.76	48.09
10	150	1.41	89.25	1500	3.09	51.17
11	143	1.34	90.59	1573	3.24	54.41
12	110	1.03	91.63	1320	2.71	57.12
13	93	0.87	92.5	1209	2.49	59.61
14	90	0.85	93.35	1260	2.59	62.2
15	93	0.87	94.22	1395	2.87	65.07
16	49	0.46	94.68	784	1.61	66.68
17	47	0.44	95.12	799	1.64	68.32
18	36	0.34	95.46	648	1.33	69.66
19	47	0.44	95.9	893	1.84	71.49
20	43	0.4	96.31	860	1.77	73.26
21	38	0.36	96.67	798	1.64	74.9
22	28	0.26	96.93	616	1.27	76.17
23	34	0.32	97.25	782	1.61	77.78
24	24	0.23	97.47	576	1.18	78.96
25	24	0.23	97.7	600	1.23	80.2
26	28	0.26	97.96	728	1.5	81.69
27	12	0.11	98.08	324	0.67	82.36
28	18	0.17	98.24	504	1.04	83.4
29	14	0.13	98.38	406	0.84	84.23
≥30	173	1.63	100	7664	15.76	100
Total	10,641			48,622		

Figure 2: Repeat-Address Burglary Alarms

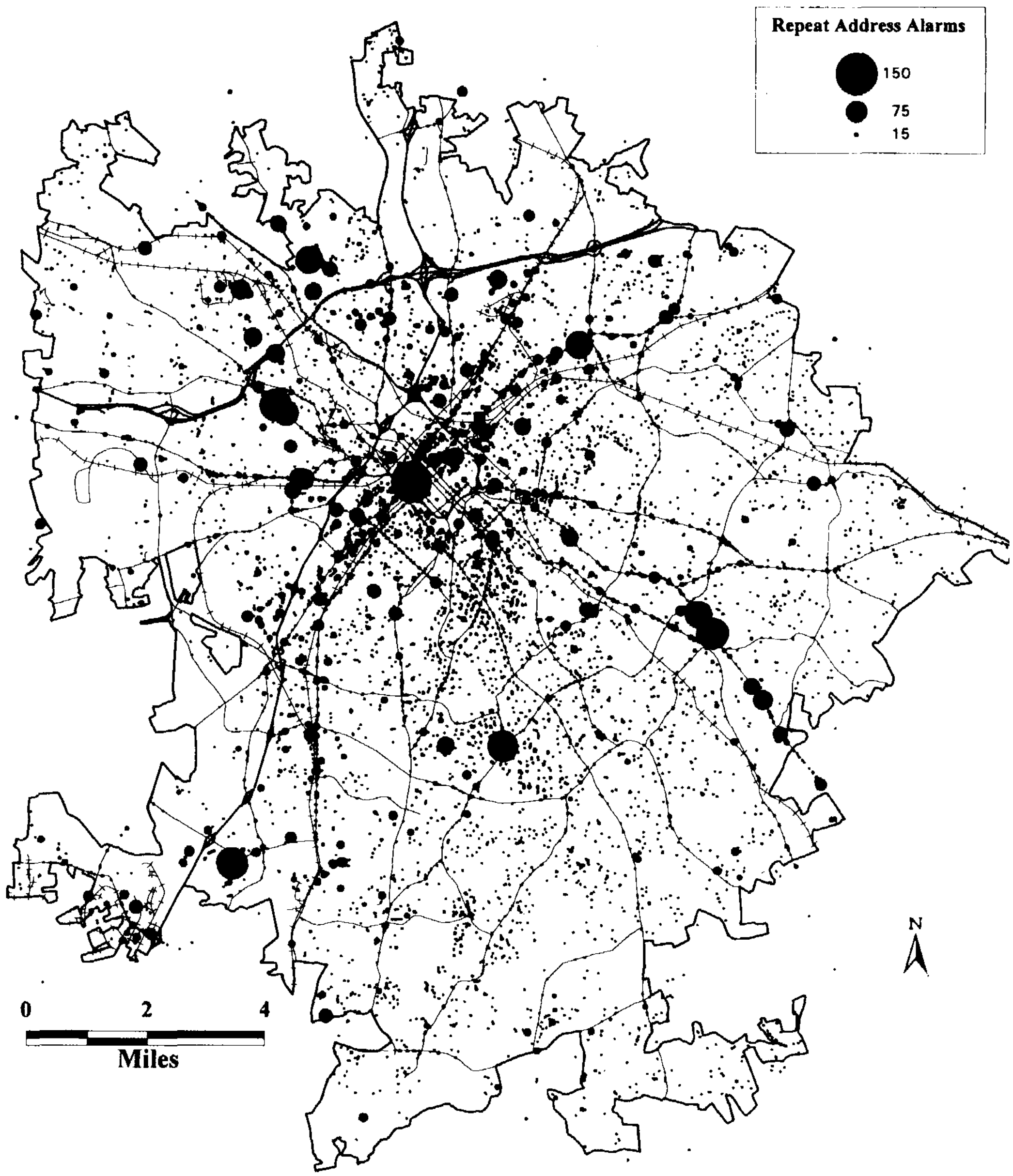
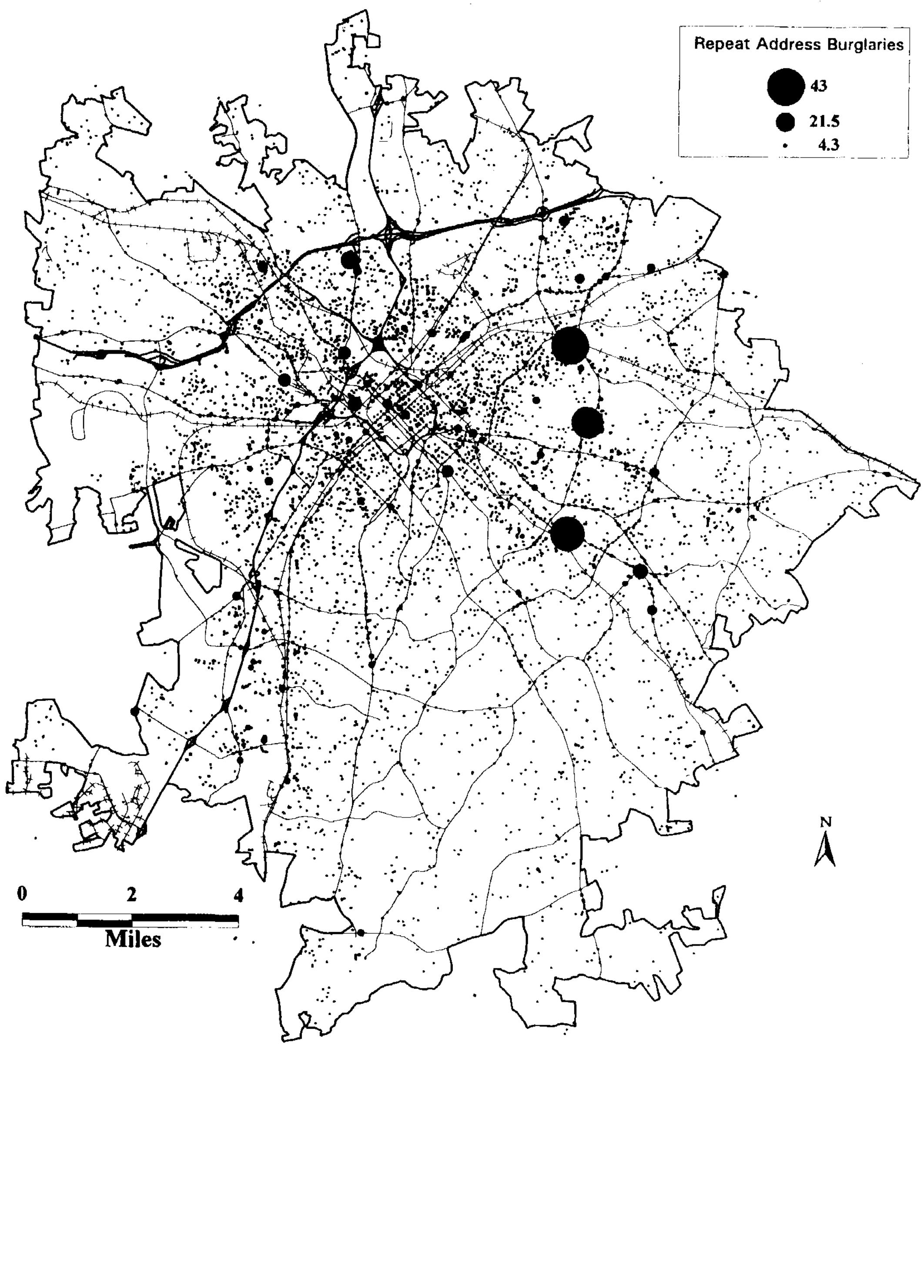


Table 3: Repeat Addresses of All Burglaries

N of Calls to Same Address	N of Separate Addresses	% of Total Addresses	Cum. % of Addresses	Total Burglaries	% of Total Burglaries	Cum. % of Burglaries
1	6616	81.52	81.52	6616	61.10	61.1
2	991	12.21	93.73	1982	18.30	79.40
3	283	3.49	97.22	849	7.84	87.25
4	102	1.26	98.47	408	3.77	91.01
5	45	0.55	99.03	225	2.08	93.09
6	25	0.31	99.34	150	1.39	94.48
7	19	0.23	99.57	133	1.23	95.70
8	6	0.07	99.64	48	0.44	96.15
9	5	0.06	99.71	45	0.42	96.56
10	8	0.10	99.80	80	0.74	97.30
11	5	0.06	99.87	55	0.51	97.81
12	2	0.02	99.89	24	0.22	98.03
13	1	0.01	99.90	13	0.12	98.15
14	2	0.02	99.93	28	0.26	98.41
16	1	0.01	99.94	16	0.15	98.56
17	1	0.01	99.95	17	0.16	98.72
20	1	0.01	99.97	20	0.18	98.90
36	1	0.01	99.98	36	0.33	99.23
40	1	0.01	99.99	40	0.37	99.60
43	1	0.01	100.00	43	0.40	100.00
Total	8,116			10,828		

The burglary incidents appear in Figure 3. This distribution is different from that of the alarms. While both have high concentrations in the CBD, burglaries appear to have higher concentrations in areas contiguous with the CBD in locations to the east, northeast, north, northwest. A rather stark contrast is the relative lower density of burglaries due south of the CBD compared with alarms and the three chronic repeat-addresses east of the CBD (compare Figures 2 and 3). Visually, it appears that while the alarm and burglary distributions overlap in some areas, there are enough departures to feel that the patterns are dissimilar.

Figure 3: Repeat-Address Burglaries



Dissimilarity between the two patterns is tested by using a raster-based geographic information system. In a raster system one can think of a map as a matrix, where the position of each cell represents its relative position in geographic space and the value of the cell corresponds to some feature or phenomenon being mapped. Therefore, it is possible to produce a map or a matrix of alarms and another of burglaries, with the cells in both maps representing the same locations. Therefore, with these matrices it is possible to employ different statistical analyses.

Raster maps of the burglary and alarm distributions are made and subjected to a regression analysis, with burglary serving as the dependent variable. One of the products of this analysis is the coefficient of determination, more commonly known as r square. The resulting r square indicates that 26.9% of the variation of burglaries is explained by the variation of alarms. Therefore, this evidence strongly suggests that the two phenomena only moderately share the same space.

Mapping It Out: Repeat-Address Burglaries Without Alarms

During 1990, there were 9,694 burglaries without alarms across 7,574 addresses (see Table 4). Single-address burglaries account for over 83% of the addresses and over 65% of the incidents. After four burglaries at the same address, 1.00% of the addresses and 3.14% of the burglaries remain. Furthermore, there are three addresses producing 109, or 1.12%, of the burglaries without alarms (see figure 3). These three chronic locations clearly reappear in Figure 4 and dominate the geographic pattern of burglaries, in general, and burglaries without alarms, in particular. Moreover, comparing Figures 2 and 4 reveals that these chronic locations are not in relatively high-alarm activation areas.

Two of the three chronic locations are mini-storage warehouses, while the third is a large apartment complex. All three locations correspond to the routine activity process of suitable targets lacking capable guardianship (Cohen and Felson, 1979). Basically, the storage sites are unattended during the night and the apartment dwellers are absent primarily during the weekdays while pursuing their routine activities. However, these locations must be exceptionally vulnerable

Table 4: Repeat Addresses of Burglaries Without Alarms

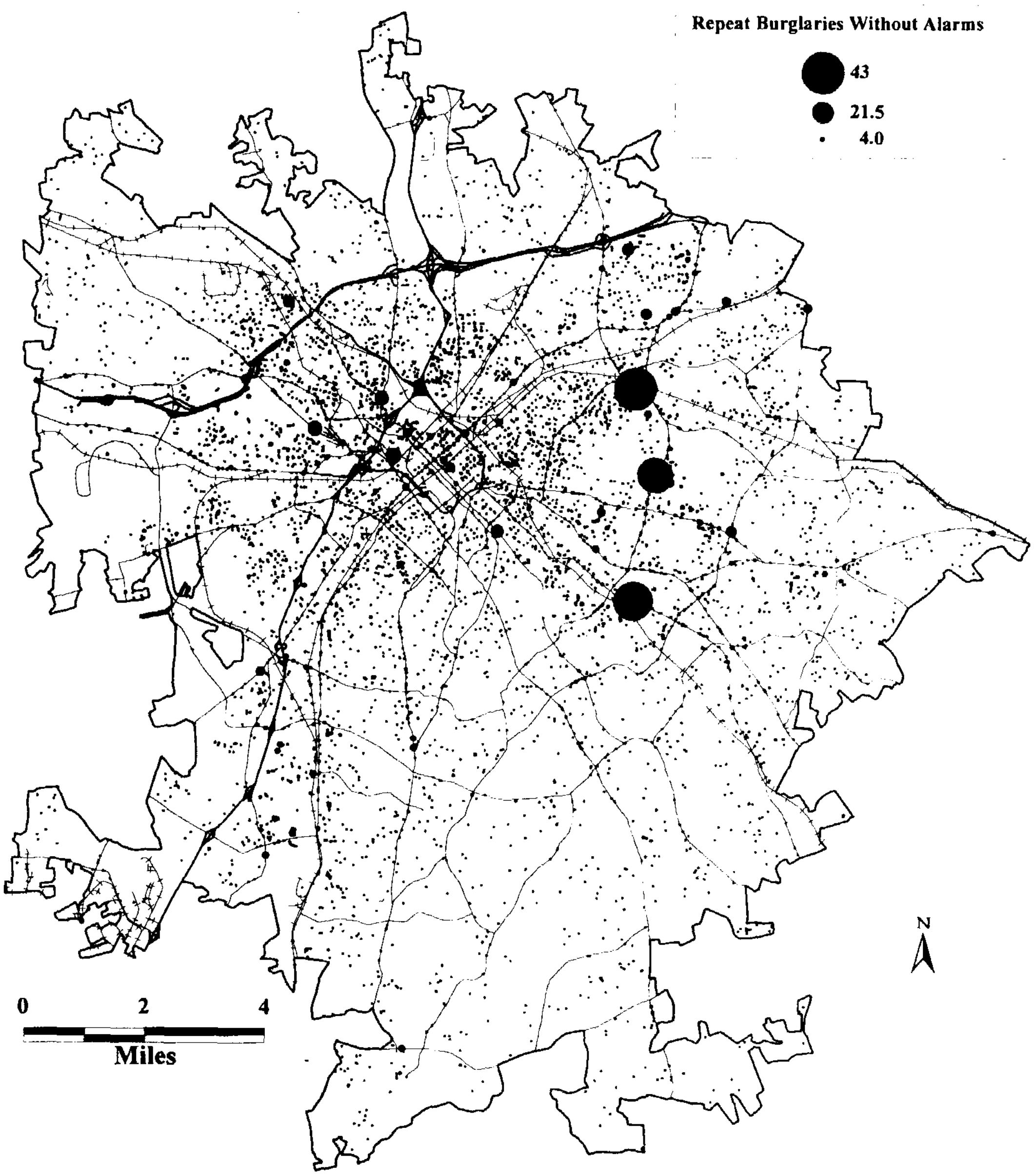
N of Calls to Same Address	N of Separate Addresses	% of Total Addresses	Cum. % of Addresses	Total Burglaries	% of Total Burglaries	Cum. % of Burglaries
1	6316	83.39	83.39	6316	65.15	65.15
2	881	11.63	95.02	1762	18.18	83.33
3	224	2.96	97.98	672	6.93	90.26
4	76	1.00	98.98	304	3.14	93.39
5	26	0.34	99.33	130	1.34	94.74
6	16	0.21	99.54	96	0.99	95.73
7	13	0.17	99.71	91	0.94	96.66
8	4	0.05	99.76	32	0.33	96.99
9	2	0.03	99.79	18	0.19	97.18
10	4	0.05	99.84	40	0.41	97.59
11	3	0.04	99.88	33	0.34	97.93
12	2	0.03	99.91	24	0.25	98.18
13	1	0.01	99.92	13	0.13	98.31
14	2	0.03	99.95	28	0.29	98.60
16	1	0.01	99.96	16	0.17	98.77
36	1	0.01	99.97	36	0.37	99.14
40	1	0.01	99.99	40	0.41	99.55
43	1	0.01	100	43	0.44	100
Total	7,574			9,694		

since none of the other high-frequency repeat-addresses are similar types of properties. The other conspicuous repeat-burglary addresses without alarms are spatially arranged along major transportation routes in and around the CBD.

Mapping It Out: Addresses With Alarms and Burglaries

Assessing the relationship between alarms and burglaries becomes more complicated when one examines the addresses producing both phenomena. Table 5 is organized according to the number of burglaries emanating from the same address. Furthermore, within each address-repetition group, it is possible to distinguish the total number of burglaries, the proportion of burglaries with alarms, total alarm activations, the proportion of false alarms, and the range of alarm activations for each group. The result is 542 addresses generating 5,971 alarms and 1,134 burglaries, of which 762 are with alarms. An important fact revealed by Table 5 is that even though 762,

Figure 4: Repeat Burglaries Without Alarms



or 67%, of all the 1,134 burglaries are alarm-related, the addresses are still generating very high proportions of false alarms.

Two important facts are not revealed by Table 5. First, 23 addresses have more burglaries than alarms. There are only 46 alarm activations, of which 28 are associated with a burglary, but there are an additional 67 burglaries. The latter group is perhaps an example of those who have recently adopted burglar alarms. Second, there are 61 addresses where all the burglaries (62) are related to alarm activations (62); thus, there are no additional burglaries or alarms. This means, then, that there are only 60 addresses to which the police have been summoned only once for either an alarm or burglary. In other words, 11% of addresses account for 7.8% of the burglaries with alarms and 2.5% of all the alarms, making places with alarms and burglaries more of a repeat-address phenomenon than places without alarms.

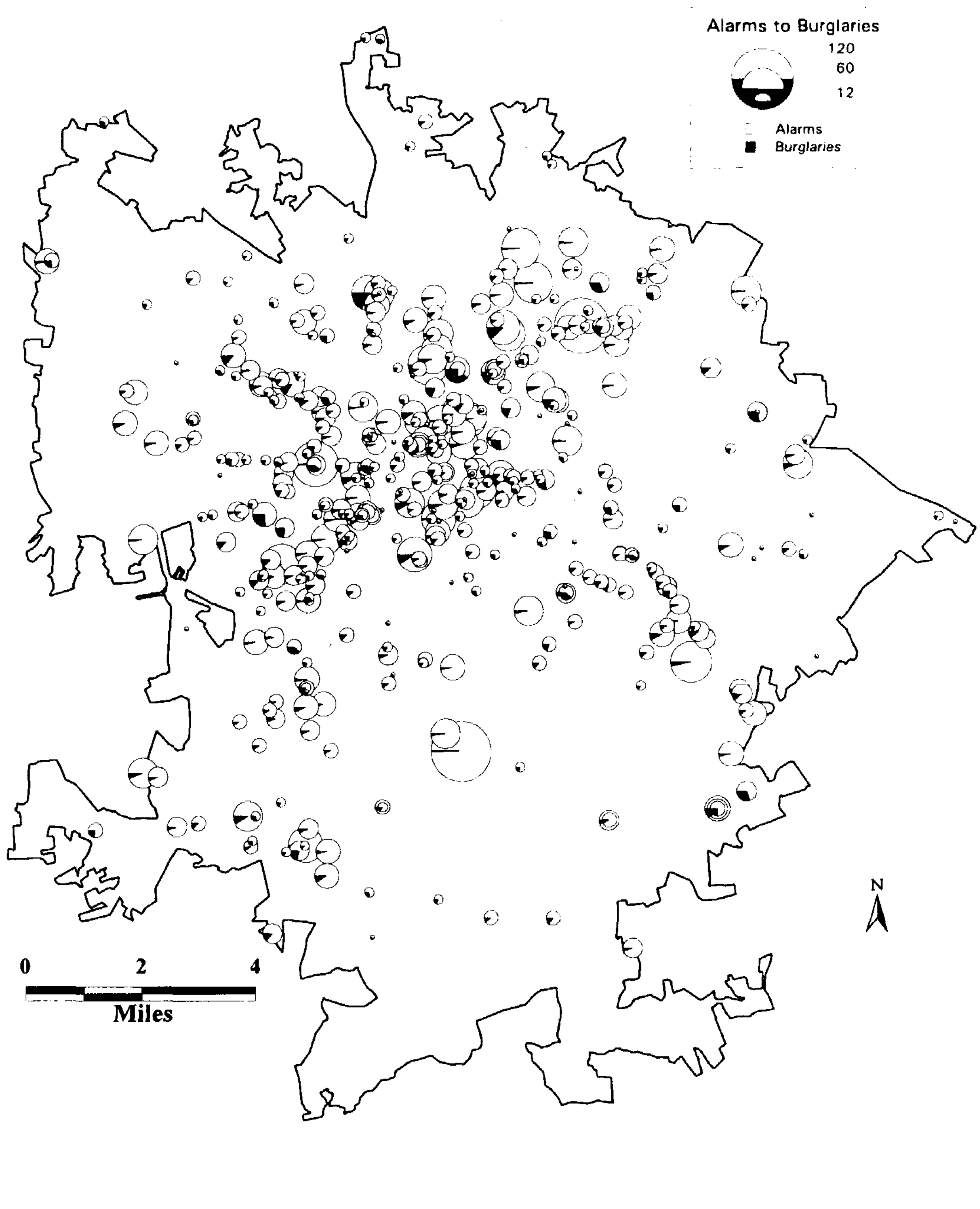
Mapping the addresses with repeat alarms and burglaries requires a modification to the graduated-circle technique, since two phenomena are being plotted. Therefore, the ratio of burglaries to alarms is calculated and subjected to a thematic mapping routine that creates graduated circles in the form of pie charts. Moreover, another modification to the mapping methodology, made to enhance visualization, is to remove from the base map the major street and rail routes. After presenting four maps of the same site with the same scale and projection, the reader should now have a mental image or template of the layout of the city.

In Figure 5, the distribution of addresses with repeat alarms and burglaries plainly delineates the CBD and major street and rail routes (compare Figure 1 and 5). Moreover, if a line is drawn from the southwest to the northeast corner of the map, a spatial bias is clearly revealed because a majority of the locations would lie on the northwest side of this line. However, the place producing the most alarms (113) with only five burglaries lies south of this line. This is the same mall complex that appears in Figure 2 and that was mentioned in the discussion of incessant alarm activation places. In Figure 5, there are many isolated repeat-alarm and burglary places or addresses, especially around the periphery of the city. However, the overall impression is that many of the repeat-alarm and burglary places are contiguous, and that their combined experiences and propinquity produce areas or regions of repeat alarms and burglaries.

Table 5: Addresses With Alarms and Burglaries

N of Burglaries at the Same Address	N of Addresses	Total Burglaries	Total Burglaries with Alarms	% Burglaries with Alarms	Total Alarm Calls	% False Alarms	Min. - Max. Alarms
1	300	300	300	100.00	2410	87.55	1-69
2	110	220	150	68.18	1305	88.50	1-52
3	59	177	101	57.06	731	86.18	1-39
4	26	104	58	55.77	473	87.73	2-26
5	19	95	45	47.37	432	89.58	2-113
6	9	54	32	59.26	134	76.11	1-33
7	6	42	22	52.38	170	87.05	1-51
8	2	16	6	37.50	60	90.00	23-37
9	3	27	21	77.78	56	62.50	15-23
10	4	40	13	32.50	73	82.19	3-31
11	2	22	4	18.18	61	93.44	8-53
17	1	17	1	5.88	25	96.00	25
20	1	20	9	45.00	41	78.04	41
Total	542	1,134	762		5,971		

Figure 5: Addresses With Repeat Alarms and Burglaries



IMPLICATIONS AND NEW DIRECTIONS

What Do The Numbers Tell Us?

If we compare Tables 2, 3, 4, we see that address repetition is more of a problem for alarms and that burglary is mainly a single-address or low-frequency repeat-address phenomenon. As noted earlier, the exceptions are the places generating both alarms and burglaries, but their numbers are minor compared to the places experiencing burglaries without alarms.

Where Do The Numbers Lead Us?

At the citywide level, efforts focusing on reducing repeat victimization might be inefficient since burglary is primarily a single-address crime. Furthermore, the sheer mass of the alarm calls will indirectly subtract from any organizational gains made by focusing on the prevention of repeat burglaries. The direction to take, then, is one of implementing polices for better managing or controlling alarm calls. Levying fines for false alarms has already been discussed; other policies include: lowering the dispatch and response time priority for alarm calls, taking alarms off 911 phone lines, and requiring alarm company personnel to be on the premises of an activation before police respond (see Hakim et al., 1996). Most of these policies have been recently implemented in different cities, thus we can assume that evaluations for their effectiveness are forthcoming. As a matter of fact, Charlotte is in the process of implementing a fine system.

What Do The Maps Tell Us?

The graduated circle maps do an excellent job of highlighting the most chronic addresses and enhancing pattern recognition. Specifically, these maps help delineate the spatial biases of alarms and burglaries, and distinguish between their spatial patterns.

Where Do The Maps Lead Us?

Basically the maps lead us to making more and different maps. The problem with using graduated-circle maps is that they detract the untrained map observer's attention away from what might be the more complex patterns and pertinent problems. Specifically, attention is paid to the large circles aligned along the major street and rail routes, while the vast number of small-repetition addresses scattered across the landscape are ignored. There is a very high probability that these burglaries and alarms activation are residential simply because a vast majority of the land use in an urban area is residential (see Knox, 1994). Therefore, differentiating between residential-commercial alarms and burglaries, and changing the scale of the map to allow for the examination of smaller areas, may provide more insight into the distribution of the phenomena.

Changing the map scale, aggregating the locations of the alarms and burglaries into areal units (i.e., Census tracts and Census block-groups), and defining these areal units in terms of their socioeconomic, demographic, and land-use characteristics may answer questions about the differential effectiveness of alarms and their relationships with burglaries (see Buck et al., 1993). Furthermore, employing socioeconomic and demographic variables allows one to construct residential burglary and alarm activation rates, thus making it possible to compare differential rates by social class.

Making use of the maps, along with incorporating the temporal dimension, have great potential for measuring two properties or outcomes of crime prevention activities, namely, displacement and the diffusion of benefits. It was previously determined that the coefficient of determination between the alarm and burglary distributions is moderate (26.9%). Yet the relationship between the two might be stronger and more interdependent. Recent ethnographic studies have revealed that burglars generally prefer to avoid targets with alarms (Cromwell et al., 1991; Rengert and Wasilchick, 1985; and Wright and Decker, 1994). Therefore, the potential for displacement becomes the focus of the relationship between alarms and burglaries. This proposition might be better tested with different types of data (e.g., interviews with suspects). Nevertheless, there is some cartographic evidence suggesting that the process is taking place.

Comparing Figures 2 and 4, it is possible to observe spaces where repeat-address alarms along major streets are contiguous with areas that have large concentrations of burglaries without alarms. One such area is on the west side of the city, north and west of the CBD. The eastern boundary is the interstate running from north to southwest. The northern boundary is the interstate running from west to east, and the southern boundary is a major street with a parallel rail line originating and lying west of the CBD. The city limit is the western boundary. Figure 2 shows many chronic-alarm addresses along the major street and rail routes. However, spaces between the routes in this area are riddled with burglaries without alarms (see Figure 4). The problem is determining the degree that the alarmed premises influence the victimization of others without alarms. To accomplish this, it will be imperative to incorporate temporal information in order to assess the time order of alarms and burglaries and to determine if there are significant lead lag relationships between the two.

Assessing the diffusion of benefits (Clarke and Weisburd, 1994) or free-rider effects (Miethe, 1991) involves mapping the precise locations of alarms and burglaries on parcel maps. These are maps that delineate the areal extent of specific properties or land holdings. Such a window will allow one to view the spatial relationships among alarmed, burglarized, and non-victimized, or free-rider, premises. This might be a more optimal unit analysis than the Census block (see Miethe, 1991).

DIRECTIONS FOR ETHNOGRAPHIC RESEARCH

Future ethnographic studies of burglars should include questions about the deterrent effect of alarms. If burglars are reluctant to enter alarmed premises then the following questions should be posed: How can you tell that a place has an alarm? If a place has an alarm what are the principle criteria for selecting another? Will a burglar switch to different types of targets? In other words, if a burglar finds that a warehouse or a school has an alarm will he or she switch to a residence?

The Most Difficult Direction To Follow

Finally, there is a need for a comprehensive study of false alarms. Such a study would examine the types of alarms, by function and brand, and the reasons for activation. Such a study would be controversial since it involves grading or evaluating the products and marketing the practices of the private security industry. Presently, the alarm industry is profiting in a product whose purchase provides hope for the consumer, but its high frequency of false activations may lead the police to become dangerously complacent.

NOTES

1. The inspiration for the title of this chapter emanates from *Mapping It Out: Expository Cartography for the Humanities and Social Sciences* by Mark Monmonier, 1993, The University of Chicago Press.

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