ELIMINATING PAY PHONE TOLL FRAUD AT THE PORT AUTHORITY BUS TERMINAL IN MANHATTAN

by

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Abstract: *During the late 1980s and early 1990s, international toll fraud at the pay phones of the Port Authority Bus Terminal in Manhattan was an entrenched criminal enterprise involving millions of dollars per year. People wanting to call outside the U.S. could make contact with a "hustler" at the terminal who knew how to obtain illegal access to toll lines, and who would connect the callfor themfor a fraction of the usual cost. This business helped to attract many criminals to the building, and toll fraud materially contributed to the terminal's unsavory atmosphere. It proved highly resistant to police action and was only eliminated during a comprehensive effort by the management to rid the building of crime. Various measures recommended by two separate groups of consultants were implemented, including a reduction in the number of pay phones, restricting access to high-risk pay phones outside rush hours, removing the phones' international dialing capacity and disabling the telephone keypads to prevent the routing of fraudulent calls through the exchange systems of private businesses.*

INTRODUCTION

The telephone system has an important dual role in the production of crime, both as crime target and crime facilitator. Its pay phones are the target of theft and vandalism and its long-distance calling facilities are subject to wide-scale "toll fraud." The telephone system facilitates a variety

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of serious offenses, such as kidnapping and criminal conspiracy, and also makes possible a vast number of the more everyday offenses of prostitution ("call girls"), drug dealing and obscene phone calling.

Apart from the usual array of criminal justice responses (police crackdowns, task forces, stiffer penalties and the like), some specific countermeasures have been developed, frequently by the phone companies themselves, to deal with these various crimes. Illegitimate access to toll lines has been made more difficult, and pay phones have been target-hardened to prevent theft and vandalism. To prevent their use in drug dealing, they have also been removed from some neighborhoods, or their capacity to receive incoming calls has been blocked. In addition, "traps" to identify the source of obscene phone calls and wire-tapping equipment to listen into the phone conversations of known racketeers have been developed (Natarajan et al., 1995).

Little of this activity, whether crime or countermeasure, has attracted the interest of criminologists, though some early research was undertaken on specific crimes. This included small-scale studies of obscene phone callers or their victims (e.g., Savitz, 1986; Dalby, 1988) and exploratory work on the environmental correlates (neighborhood characteristics, natural surveillance, usage levels, etc.) of vandalized pay phones (Mawby, 1977; Mayhew et al., 1979).

Stimulated by the development of situational prevention, there have recently been signs of an awakening interest in the effectiveness of some specific countermeasures. Analyses undertaken in Australia (Wilson, 1990; Challinger, 1991) and England (Markus, 1984; Bridgeman, in press) have documented successful measures involving redesign, re-siting and target hardening to reduce theft and vandalism associated with pay phones. In New Jersey, the introduction of Caller-ID (a device that displays the telephone number of an incoming call) was found to have reduced the incidence of obscene phone calls (Clarke, 1990), while an analysis of obscene phone-calling patterns led to the conclusion that such devices would probably also be effective in Britain (Buck et al., 1995). Finally, the introduction of a new computerized phone system on Rikers Island (a New York City jail) was shown to have reduced jail phone costs by half as a result of eliminating fraudulent access by inmates to toll lines (La Vigne, 1994).

The new phone system at Rikers Island also led to fewer fights between inmates because removing the scope for fraud eliminated much of the competition for access to the phone. In addition, as all inmates were issued

personal identification numbers (PINs) linked with their commissary accounts, it was possible to identify any excessive phone use by particular inmates (La Vigne, 1994). The reduction of violence was an unexpected benefit and shows how the previously insecure phone system "created" additional crime beyond the fraudulent use it permitted.

The present study also documents successful efforts made to deal with toll fraud, and the additional problems created, but this time at the pay phones of the Port Authority Bus Terminal at 42nd Street in Manhattan. International toll fraud at the bus terminal was a highly organized business involving millions of dollars and inconveniencing commuters, who often found it difficult to find a phone not in use. More seriously, the fraudsters attracted to the bus terminal — and possibly also some of those using their services — constituted a pool of criminals who preyed upon commuters and other terminal users. In short, the opportunities for toll fraud helped to produce the more general crime problems at the terminal, documented by Felson et al. (this volume) that made it notorious throughout the northeast U.S. (Baehr, 1992; Meier, 1992; Myers, 1992).

The precise nature of the problem involving the telephones was not immediately apparent to management and emerged only in the course of the successful effort to tackle the more general crime problems at the terminal (Felson et al., this volume; Lambert, 1995). This paper describes the efforts made to understand and deal with the pay phone problem, and evaluates the effects of the measures adopted. First, however, the bus terminal is briefly described.

THE PORT AUTHORITY BUS TERMINAL

The Port Authority Bus Terminal (PABT) is the primary ground transportation facility for the New York metropolitan region. Commuter buses arrive at the terminal in midtown Manhattan from New Jersey and the nearby counties of New York State, and travelers can obtain direct bus service between the terminal and the three international airports serving the region. Bus service can also be obtained to the Atlantic City casinos, the Meadowlands sports complex, Monmouth Park and Aqueduct racetracks and the New Jersey shore. In addition, the terminal provides direct and connecting bus travel throughout the U.S., Canada and Mexico. The terminal currently handles about 55 million passengers annually, and on a typical weekday approximately 7,000 buses use the terminal.

The PABT is a large and complex structure consisting of two wings. The south wing of the building occupies an entire city block between West 40th and 41st Streets, from Eighth to Ninth Avenues. The north wing occupies about half the block between Eighth and Ninth Avenues, from West 41st to 42nd Streets. Above and below street level, the north and south wings are connected by corridors, walkthroughs and bus roadways, and direct underground passageways connect the terminal with the Eighth Avenue and 42nd Street subway station. The terminal has three separate loading levels capable of handling about 220 buses simultaneously. A three-story structure above the terminal roof has more than 1,100 auto parking spaces. Ticket plazas, waiting areas, restrooms, restaurants and other services are located throughout the building.

CRIME AT THE BUS TERMINAL PAY PHONES

While it had been apparent for some years that the PABT pay phones were the locus of criminal activity, the precise nature of the problem was unclear. Despite there being nearly 350 of these phones, they were always busy with people lined up to use them, even on weekends and outside rush hours when few commuters were using the terminal. Police suspected that the people loitering around the phones were drug dealers and prostitutes who used the phones to make contact with their customers. Some phones were clearly "controlled" by particular individuals who were occasionally involved in violent territorial disputes with interlopers.

In addition, from at least 1987, the PABT was widely known to be a place where toll fraud was rife. People who wanted to make calls to anywhere in the world could do so at a fraction of the usual cost by making contact with a "hustler" at the terminal, who would place the call for them. Certain banks of phones were reportedly "reserved" for calls to particular countries, for example, China at one carousel and India at another. According to newspaper reports of the day (e.g., McFadden, 1987), the hustlers were obtaining illegal access to the international lines through two methods. The first was by "shoulder surfing," which involves "hustlers" positioning themselves to hear the number spoken by a legitimate user or to see it entered on the telephone keypad. Many hustlers became very adept at this method of obtaining numbers, which they could then use to gain illegal access to the long-distance lines. A second method

of obtaining these access numbers was by purchasing them from "middle men" who were in contact with hackers who had penetrated the computers of telephone companies to "steal" the calling-card billing numbers issued to customers.

The loitering and criminal activity surrounding the phones contributed to the terminal's threatening and unsavory atmosphere. The Port Authority Police had made various efforts to deal with the problem, but it proved difficult to gather sufficient evidence for an arrest[1] and, when this was possible, the offender was often back in the terminal the next day having been released on bail. Consequently, the police became frustrated and assigned low priority to dealing with the activity which continued unabated, sometimes in the full view of police officers (Holloway, 1992).

Only in 1990, when a task force was created to improve the environment and atmosphere of the bus terminal, did the nature and the scale of the toll fraud really become clear. The activity related to pay phones was specifically targeted by the task force. Resolution of the problem took three years and involved the implementation of recommendations made by two different groups of consultants. The task force received little help from the telephone companies providing service to the pay phones.[2] Moreover, the Port Authority absorbed major losses in pay phone revenue in order to prevent their customers from being victimized from toll fraud. The following sections describe the two-stage process by which toll fraud was eliminated.

STAGE ONE — THE PROJECT FOR PUBLIC SPACES, INC.

The task force first contracted with the Project for Public Spaces, Inc. (PPS) to undertake an analysis of the misuse of pay phones, and to recommend solutions. PPS is a non-profit corporation specializing in the planning, design and management of public spaces. Founded in 1975, the organization grew out of the work of William H. Whyte's Street Life Project, with the objective of improving problematic public spaces so as to make them more attractive, enjoyable and, ultimately, more active. In developing their recommendations, PPS projects employ a variety of observational and survey techniques in analyzing how people use the public spaces concerned.

Analysis

As a first step in their analysis of the problem, PPS located every pay phone in the building. It was found that the PABT had many more of these telephones (347) than the two large railway stations in Manhattan, each of which has considerably more commuter traffic than the PABT. The Pennsylvania Station, with 96 pay phones, serves New Jersey and Long Island rail commuters as well as AMTRAK long-distance travelers, and Grand Central Terminal, with 210 pay phones, serves commuters from Westchester County and Connecticut. PPS also found that the PABT pay phones generated more than twice as much income ($210,954 in April 1990) than the combined revenue ($87,880 for April 1990) from the pay phones at two of the region's major airports, LaGuardia and JFK International.

These findings prompted the following observations:

> "... the current situation at the PABT is such that it functions as a comfortable communications/transportation hub for illegitimate as well as legitimate uses and that a part of the problem is an excess of pay phones... This excess of telephones allows ample telephones for other uses, many of which are not ones the Port Authority wishes to support. This is a clear repetition of an issue found with other aspects of the Bus Terminal; where there is a vacuum of desirable activity, other activities, potentially undesirable, will fill the space" (PPS, 1990:2).

In order to target pay phones for removal, as well as to identify the precise nature of the misuse, PPS undertook more detailed studies, one of which involved systematic observation of particularly active phones to identify "illegitimate" users. This study proved abortive because there was no reliable way of distinguishing illegitimate from legitimate callers, though the "hustlers" were more readily identifiable. Another study involved a survey of more than 300 commuters waiting in line for buses during the evening rush hours. This research revealed that pay phone use by commuters was largely confined to calling their homes or offices to report on delays and estimated times of arrival. These were usually collect calls or made by coin and were approximately four to five minutes in duration.

This information about commuter calling patterns enabled PPS to identify phones plagued by misuse through examination of revenue patterns for each pay phone for a period of three months. "Hot spots" of misuse were identified by disproportionately large revenues from credit card calls and were found to be "... most heavily concentrated on the floors nearest the ground level, where the heaviest circulation occurs" (PPS, 1990:2). Also, "...clusters of phones appear to facilitate illicit use, allowing for multiple sales without having to move around" (PPS, 1990:2).

Recommendations

Since they believed that no single strategy could resolve the illicit phone use, PPS advocated a multi-dimensional approach (PPS, 1990:5). PPS argued that a comprehensive approach must be adopted and that "...failure to do so may lead to a decrease in one pattern of criminal behavior, and a concomitant increase in another, as criminals try to make up for lost income by re-channeling their efforts" (PABT Internal Memorandum, 1991:2).

Recommended courses of action included (PPS, 1990:5):

(1) Reducing pay phones to the number needed to accommodate legitimate patrons.

(2) Relocating the phones to serve legitimate patrons more adequately.

(3) Centralizing the location of phones in a supervised location.

(4) Limiting phone calls to those reflecting the bulk of legitimate uses to be achieved by (a) allowing only brief, coin calls to specific area codes, and (b) blocking international calls.

(5) Developing a detailed database in order to monitor pay phone activity.

Implementation

By December 31, 1990, the "01" and "Oil" international dialing capabilities of all public pay telephones at the bus terminal had been

blocked. The hustlers left the building but soon returned, apparently having discovered that they could still gain access to international lines by first calling the access codes of individual companies such as MCI and AT&T. Federal regulations prohibited blocks on these codes in the interests of fair competition.[3]

Reducing the absolute number of pay phones and relocating some to serve legitimate users more adequately and to increase supervision was the next course of action. An internal report indicates that between December 1990 and September 1991, 90 telephones were removed from the bus terminal, reducing the total to approximately 250. A memorandum circulated on September 23, 1991 detailed plans to relocate another 77 pay phones, and reducing the total number to 148 — though as of March 1995, 198 pay phones remain at the bus terminal.

Despite these efforts, illicit activity involving the phones continued, and the management resorted to gating-off 110 problematic phones outside rush hour times (PABT Internal Memorandum, Nov. 6, 1991).[4] As will be shown below, this somewhat crude method of restricting access to the phones was highly effective in reducing fraudulent use.

STAGE TWO — TELECOMMUNICATIONS EXPERTISE

Despite its effectiveness, physically blocking access to the pay phones was not satisfactory in the long term, since the gates were unsightly and the labor costs involved in removing and re-erecting them on a daily basis were not insubstantial. Moreover, blocking access to phones violates the pay-phone contracts between the PABT and service providers.

Serendipity played a part in the final solution, which involved more sophisticated changes to the dialing capabilities of the pay phones. Bob Williams, the leader of the task force created to improve the terminal, became aware that a contract was being negotiated with Teleport Communications Group Inc. (TCG) for 48 Elcotel "smart" phones to be installed on a trial basis in the World Trade Center, another large Port Authority facility in Manhattan.[5] Williams realized that if these smart phones were placed instead at strategic locations in the PABT, they could be used to gather better information about ways in which the hustlers were subverting the blocks on international dialing. He succeeded in getting the new phones installed at the PABT.[6] In December 1991, Williams also engaged John Gammino, a telecommunications expert with John Richard As-

sociates, Inc., (a management consulting firm specializing in the communications industry), to analyze the data produced by the "smart" phones, define the precise methods used in committing toll fraud, and develop plausible solutions (Guhl, 1993).

Problem Re-identification

Gammino began by examining calls placed through AT&T, the main long distance carrier connected to PABT pay phones during 1990 (i.e., pre-blocking). He found that calls from these phones were much longer, with an average time of 15-20 minutes, than the four to five minutes that is usual for calls from such pay phones. His examination of call destinations showed an enormous volume of international traffic, with calls to virtually every country from Algeria to Zimbabwe (see Table 1), whereas the commuters serviced by the terminal should have been making very little use of the pay phones for international calls.

In addition to these findings from the AT&T records, 1991 and 1992 data from the smart phones revealed temporal patterns of calling that did not correspond to the travel patterns of PABT's primary users. Of the 185,000 travelers who use the terminal each day, about 65,000 areround-trip commuters who travel during the morning (7 a.m. to 10 a.m.) and evening (4 p.m. to 6 p.m.) rush hours. It might therefore be expected that most pay phone calls would be made during these times. In fact, Gammino found that a substantial proportion of calls were made during evenings and weekends, and, moreover, that many of these calls were being made to individual businesses at times when they were not open. After speaking with the businesses concerned, Gammino confirmed that many unauthorized international calls were being placed during non-business hours through the company's telephone system or "Private Branch Exchange" (PBX).[7] Fraudulent operators were accessing the PBXs through voice mail and other automated systems in order to place long-distance calls. The numbers to access these systems had been purchased from hackers, who had broken into the PBX systems to acquire the dialing codes that permit employees to make long-distance calls through the company's phone system when they are away from the office.

Table 1: Destinations of AT&T International Directly Dialed Calls Placed from PABT Pay Phones, 1990

Country	Total Calls	Min. per Call	Revenue	Country	Total Calls	Min. per Call	Revenue
Algeria	5,492	18	$140,855	Jordan	379	49	$22,631
Argentina	531	32	21,749	Kenya	352	18	10,214
Autstralia	1,747	21	50,774	Kuwaiti	1,210	23	37,418
Austria	283	16	4,866	Liberia	591	14	12,786
Bang.	538	70	61,552	Macao	458	28	20,970
Begium	876	26	30,515	Malaysia	577	28	25,669
Belize	1,127	19	24,750	Morocco	437	46	22,101
Brazil	478	37	22,783	Nepal	266	17	9,014
Cameroon	543	16	12,941	Neth.	1,211	19	24,594
C. Verdi	407	19	13,456	Niger	531	15	16,762
Chile	1,541	20	38,410	Norway	538	17	10,315
China	8,255	43	431,581	Oman	293	29	10,462
Colombia	1,495	28	56,087	Pakistan	2,586	58	245,060
Czech.	365	38	15,509	Panama	12,847	18	271,915
Ecuador	1,893	56	125,007	Paraguay	876	25	28,459
Egypt	2,536	72	59,431	Peru	3,445	40	236,204
England	6,465	16	101,780	Phil.	383	23	15,277
Ethiopia	3,785	22	137,401	Poland	24,743	17	516,490
F. Antilles	583	19	12,296	Portugal	268	11	4,588
France	9,942	16	174,982	Quatar	390	23	12,307
Gabon	1,756	13	36,795	Romania	1,438	32	70,344
Gambia	31,404	5	310,195	Sing.	1,579	18	44,569
Ghana	5,096	18	150,403	Spain	1,306	15	24,320
Guinea	2,062	18	72,287	Surinam	4,480	22	141,321
Guatemala	257	30	8,396	Sweden	1,118	18	22,028
Guyana	6,594	30	262,726	Switz.	529	14	8,874
Honduras	651	26	17,464	Taiwan	3,520	19	105,482
H. Kong	7,513	16	120,746	Tanzania	271	18	7,690
India	1,699	50	186,623	Togo	751	15	17,847
Indonesia	9,564	18	291,187	Tunsia	1,433	17	34,733
Ireland	392	14	5,955	Turkey	6,089	18	138,135
Isreal	41,483	8	457,179	Uruguay	2,293	27	73,932
Italy	1,256	14	20,528	W. Germ.	5,368	18	107,628
I. Coast	18,063	14	296,456	Yugo.	558	22	16,654
Japan	1,309	17	31,978	Other	8,069	n/a	284,395
				Total	269,164	n/a	6,456,833

* Countries will less than 250 calls during 1990 have been consolidated into the "Other" category.

** These figures do not include calls placed through 1-800 numbers.

*** Source: Gammino, 1992b.

Gammino's examination of telephone call reports generated by the 24 "smart" phones confirmed that there were three other ways in which toll fraud was being perpetrated. First, instead of dialing directly, many long-distance calls were being made via the 5-digit access codes of major carriers such as AT&T (10288), MCI (10222) and Sprint (10333). The second method of gaining access to the toll lines was through 1-800 carrier numbers (similar in function to the 5-digit access codes) such as 1-800-877-8000 (Sprint) and 1-800 corporate or business numbers.[8] The third method involved gaining access through the 950 (MCI) codes. Once the fraudulent operators gained access to the telecommunications network by any of these routes, they would connect calls using stolen calling card numbers. Many of these numbers were known to be obtained at the bus terminal itself by "shoulder surfing" (Baehr, 1992; Guhl, 1993; Hoey, 1992a, 1992b; Telecom & Network Security Review, 1994).

Recommendations

Gammino's proposed solution involved developing an algorithm to re-program the pay phones in order to: (1) block all international calling capabilities (but not interstate calls, which were prohibited from being blocked by federal regulations and which were not subject to fraud at the PABT), and (2) prevent subsequent redialing by disabling the keypad for calls placed to corporate PBX systems.

In order to block access to PBX systems without blocking access to long-distance carriers using 1-800 or 950 calling programs, Gammino developed a data bank of frequently called 1-800 business numbers, for which subsequent redialing capabilities were blocked. This modification would mean that voice mail systems and beepers at these numbers could be accessed through the pay phones only by using coins. The PABT management was concerned about the loss of these customer services, but the PPS analysis had shown that most legitimate callers used coins or called collect and, after balancing the needs for service and security, the management consented to a trial of the software solution.[9]

Testing the Software

Testing of the disabling software algorithm began in March 1992 on the 24 smart phones selected on the basis of high levels of suspected fraud.

A comparison of calls made from these phones one month prior to implementation (February) with those made one month post-implementation (April) showed a dramatic change in calling profiles (see Table 2). The number and duration of calls were significantly reduced. Calling patterns became normal for pay phones, with primarily interstate and local calls (four to five minutes in length) made more frequently during rush hours. Additional analyses showed that the numbers of calls lasting more than ten minutes and those lasting more than one hundred minutes had been nearly halved.[10] Police confirmed that the hustlers and their customers had abandoned the re-programmed test phones within a short period of time.

Table 2: Software Trial Results on 24 "Smart" Phones

(Two 12-day periods, pre- and post-implementation)

	Pre-test Period (Feb. 1992)			Post-test Period (April 1992)			Change Between Periods	
	Calls per Day	Minutes per Day	Avg. Call Length	Calls per Day	Minutes per Day	Avg. Call Length	% Change in Calls	% Change in Minutes
All Phone Calls	548	4,900	9	344	1,377	4	-37	-72
Frequently Dialed Calling Card Access Numbers								
MCI access (800-950-1022)	73	918	13	17	82	5	-77	-91
MCI calling cards (212-950-1022)	72	543	8	34	133	4	-52	-76
MCI operator (800-950-1111)	75	1,443	19	10	15	1	-86	-99
Sprint calling cards (800-877-8000)	51	302	6	24	62	3	-54	-79

Source: Gammino, 1992b.

Pull Implementation

Following this successful trial, the software solution needed to be implemented on the remaining pay phones in the terminal. Officials from the telephone company providing the pay phone services initially resisted this action on grounds that it would cost them$350,000 to alter the

phones. They also argued that the only result of changing the terminal's pay phones would be to displace the crime to other locations. However, the officials were persuaded to take action following higher-level intervention, and by June 1992 all the PABT phones had been changed.

Once the solution was implemented throughout the terminal, the fraudulent activity disappeared and there was a dramatic improvement in the atmosphere of the building. Due to the nature of the fraud, any breach of pay phone security would be immediately noticed as the fraudulent operators would undoubtedly return in force, just as they did after discovering ways of subverting the blocks on "01" and "Oil" dialing. Customer surveys conducted after the changes uncovered few complaints regarding inability to access voice mail or pagers (Port Authority of New York and New Jersey, 1994).

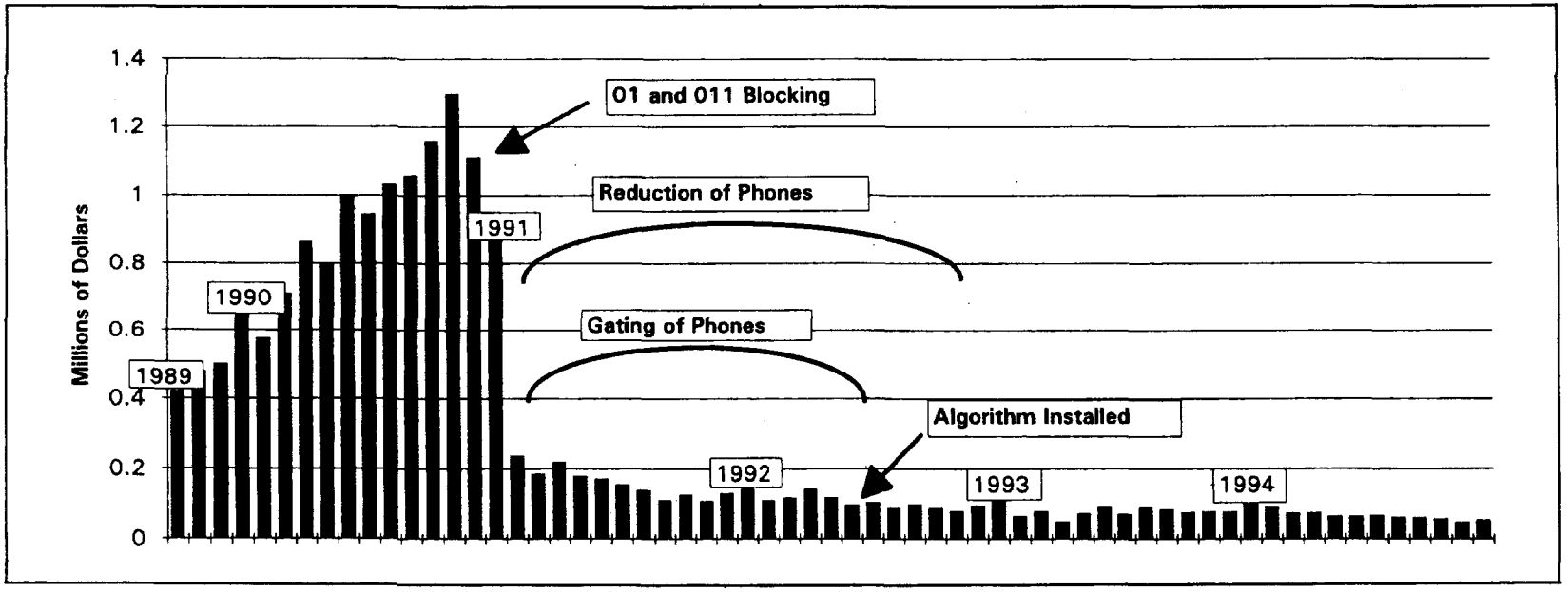
EVALUATIVE DATA

The effectiveness of action taken against toll fraud is reflected in monthly gross revenue data aggregated for all pay phones, from October 1989 to December 1994 (see Figure I).[11]

Figure 1 shows a sharp increase in gross revenues during the latter part of 1990, peaking in November. The decline in December 1990 coincides with the blocking of "01" and "Oil" calls, while the severe drop between January and February of 1991 coincides with the use of gates to restrict access to 110 problematic phones outside rush hours. Between February 1991 and June 1992 when gating was in force, there was a further slight decline in revenue (with some apparent seasonal fluctuation) , which may have been due to reductions in the number of pay phones.

Following full implementation of the algorithm in June 1992 (and the removal of all gates), there is evidence of a further slight decline in gross revenues.[12] It is quite evident from these patterns that both the gating-off solution and the software solution were effective in dealing with toll fraud. However, the software solution seems to have been somewhat more effective than the gates, as well as having aesthetic and other advantages. That this reduction in revenues is largely the result of the blocks on international calling is supported by data provided by Teleport Communications Group, Inc. (TCG). Results indicate that not a single international call was made from any of the 24 original smart test phones during July 1994 to March 1995.[13]

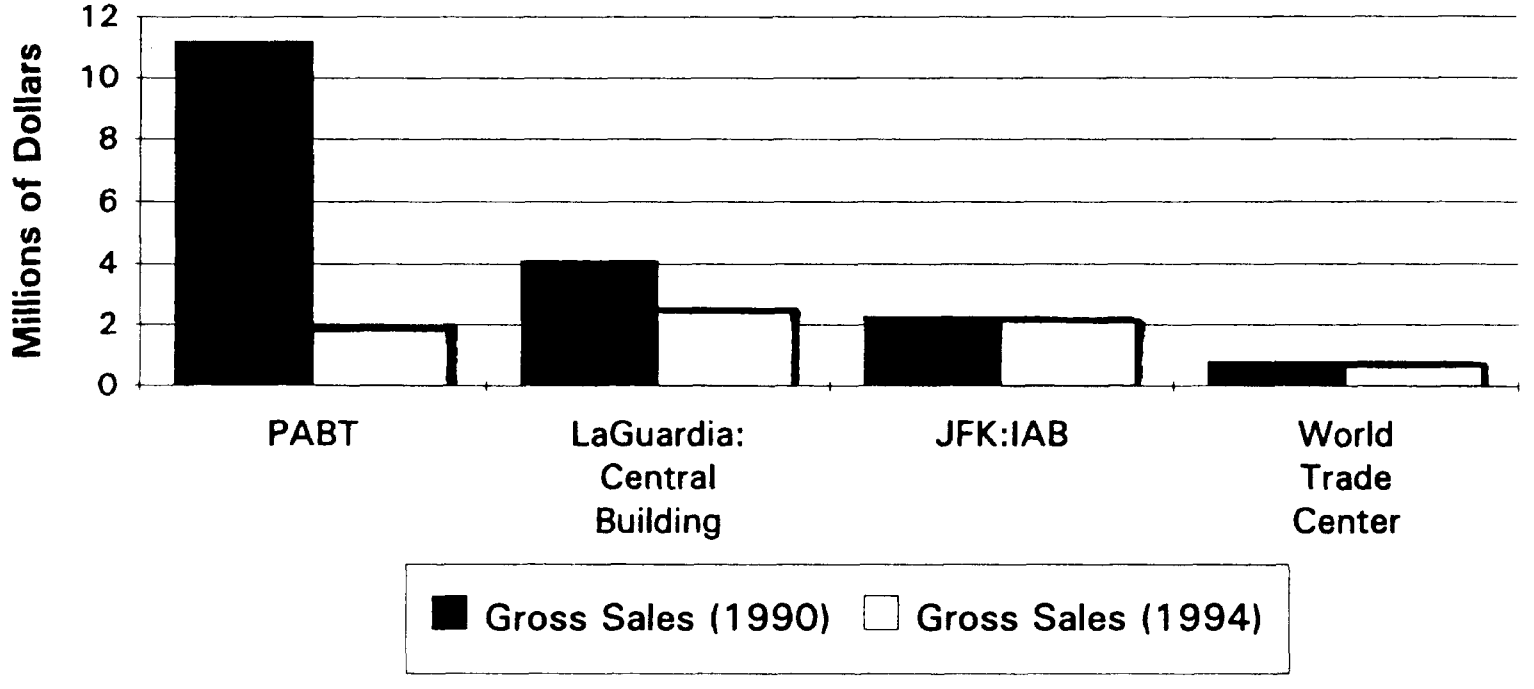
Figure 1: At&T Monthly Gross Revenue for the Port Authority Bus Terminal Pay Phones, October 1989 to December 1994*



* Figures are not adjusted for Inflation.

** SOURCE: PA of New York and New Jersey- Comptroller's Dept.

Figure 2: Comparison of Gross Sales from Pay Phones at Specific Port Authority Facilities between 1990 and 1994*



* Figures were not adjusted for inflation.

** Source: Port Authority of New York and New Jersey Comptroller's Department.

Displacement of toll fraud to other Port Authority facilities was not a particular concern to management. This was because the World Trade Center had also been equipped with "smart" phones, while the three airports were not thought to be conveniently enough located for fraudulent operators to develop a profitable trade there, even though the international clientele prevented blocks on international access codes for the pay phones. Analysis of gross revenue by facility confirms these assumptions; Figure 2 shows there has been no increase in revenue at the other facilities.[14]

It also seems unlikely that there was significant displacement of pay phone toll fraud to the nearby Times Square area (where pay phones have been altered to prevent fraud), or to the other large commuter terminals in Manhattan. A search of Lexis/Nexis for 1992 through 1995 found a dramatic decline in coverage of toll fraud at the PABT, Grand Central Station and Pennsylvania Station. Furthermore, the focus of the coverage was on the efforts that had been made to rid each terminal of the problem. In 1994, only one story was uncovered by the search relating to toll fraud at Pennsylvania Station. In addition, a number of news reports indicated that several New York businesses had adjusted their PBX systems so as not to accept calls from the PABT and the other terminals.

CONCLUDING REMARKS

Brantingham and Brantingham (1993) distinguish between hot spots of crime that are "crime generators" and ones that are "crime attractors." The former are places such as shopping malls or parking lots that become hot spots simply because so many people pass through them, of whom a proportion will be offenders. The latter, which may include red-light districts or drug markets, become hot spots because the many opportunities for crime they provide attract the presence of predatory offenders. It is clear from the analysis of calling patterns that the PABT pay phones were crime attractors. The hustlers preying upon them and the customers availing themselves of cheap calls were mostly not the commuters who comprised the bulk of the bus terminal's legitimate users, but instead those who came specifically to the terminal because of the opportunities for toll fraud. Moreover, the criminals attracted to the phones seem to have engaged in a number of other crimes, such as purse-snatchings and muggings, that further contributed to the lawless and unsavory atmosphere in the terminal.

Why the PABT became a principal venue for toll fraud in New York City is unclear, but the large concentration of pay phones and the fact that these went unused for much of the day must have played a part. The terminal is also well known in the region, close to centers of poor immigrant populations and easy to reach via the subway and bus lines. In addition, it provides a comfortable environment for the hustlers who must hang around for long periods of the day because it gives them shelter from the weather, and access to restrooms and fast-food outlets. It also provides them with many entertainment opportunities, both on-site (where there was a bowling alley and an off-track betting office) and nearby (with a concentration on 42nd Street and Times Square of liquor outlets, drug markets and porno movie theaters).

Whatever the terminal's "attractive" properties, it is clear that the hustlers were not much deterred by the regular presence of large numbers of police. While the police were understandably frustrated by their inability to deal with the problem through conventional means of surveillance and arrest, they missed the opportunity to take the lead in finding more creative solutions to the problem by applying the principles of problem-oriented policing (Goldstein, 1979, 1990). It was only when the building managers decided that the problem must be solved were solutions identified and a spectacular crime prevention success achieved. This is reminiscent of another notable crime prevention project in New York — the successful effort to rid the subway of graffiti (Sloan-Howitt and Kelling, 1990). Here again, management stepped in to develop solutions to a problem that the police had failed to control by conventional patrolling and investigative methods. This is further evidence of just how much the police must change if they are to take advantage of the potential afforded by problem-oriented policing.

Despite this potential, the difficulties of this kind of problem-solving work should not be underestimated. These have less to do with developing solutions (two very different solutions were found to the toll fraud problem, though with different costs and benefits) than with implementing them. The PABT management received little cooperation from the major telephone service providers who, in general, were not bearing the costs of the fraud since they passed these onto customers, either directly or in the form of increased charges. Indeed, solving the problem of toll fraud resulted in a substantial loss of revenue from the pay phones for the Port Authority.[15] What appears to have motivated management to improve the situation is not profit, but pride. Recognizing that travelers deserved a

better facility, management was humiliated to be responsible for so notorious a crime location as the bus terminal.

This suggests, finally, that there might be other occasions when corporate pride could be tapped in the interests of preventing crime, especially when the responsible institution is large and important enough to be susceptible to public "shaming." There are many corporations and businesses, such as the automobile manufacturers and insurance companies, that fit this definition and that could do more to prevent crime by eliminating the opportunities provided by their products and services. "Shaming" these institutions into action may provide large dividends for criminal justice policy.

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NOTES

1. The work of the police in arresting offenders was hampered by cumbersome and inadequate technology. Pen registers (that record all calls made on a particular phone line) were available, but could only be effectively used when it was possible to match pen register records with the results of direct surveillance of the phone concerned.

2. Dated tariff legislation regulating the industry limits the common carriers' liability for fraud, thereby distorting normal market incentives to

resolve the problem. In particular, the current legislation absolves from liability those with the ability to prevent fraud — equipment manufacturers, vendors, carriers and customers. For example, AT&T has a clause in its contract stipulating that any breach of security and the associated costs are the responsibility of the company on whose property the PBX switch is located. Major components of the industry are currently trying to sort out liability concerns in the courts (Federal Communications Commission Hearing, Oct. 9, 1992).

3. Each phone company offering long distance calling in the U.S. has a 5-digit access code or carrier identification code. These codes were not disabled by the block on "01" and "Oil" calling. This meant that fraudsters at the PABT could simply dial the access code, then 0 + area code + number sequence. By blocking the "01" and "Oil" calls, only directly dialed calls were being prohibited (01+country+city+number).

4. All phones in the ticket-hall area and six units next to the parcel check were gated-off all day on Sunday, and from Monday to Saturday between 10 a.m. and 6 p.m. and between 8 p.m. and 6 a.m. In addition, all phones adjacent to the bowling alley were gated-off from 8 p.m. Friday to 6 a.m. Monday.

5. "The 'Smart Phones' (Elcotel units) are programmable units capable of logging and manipulating a variety of data such as: area codes accessed, telephone numbers accessed, duration of calls and time of calls. The units can identify calling patterns, block calls by individual phones and alert the responsible party if the unit has been damaged. The information the unit captures can either be downloaded to Teleport, Big Apple (the Teleport service provider) or to the client (PA)." (PABT Internal Memorandum, Sept. 1991:3).

6. Elcotel smart phones were installed during September 1991 at the following sites, determined largely on the basis of the PPS analysis (PABT Internal Memorandum, Sept. 23, 1991:1-2):

North Wing:

Subway Level

a) on tenant storage wall across from M.P. Cozzoi Co. 7

b) on wall next to doors leading to south wing 2

Main Concourse

a) next to 42nd St. exi 6

b) on M.E.R. Wall	5
Second Floor — by escalator and newsstand	6
Total North Wing	26
South Wing:	
Main Concourse — next to escalator	12
Second Floor	
a) fronting poppers	5
b) opposite escalator near bowling center	2
Fourth Floor	
a) opposite gates 403, 41 land 420	3
Total South Wing	22
Grand Total of Smart Phones	48

7. PBXs are "private" switches that are purchased by businesses and located on their property. A recent service offered by the telecommunications industry to market these switches allows traveling employees to access messages, and to punch in an access code to get a second dial tone upon which they can place another call. While this system saves money by consolidating all long-distance traffic, it provides hackers with an avenue into the PBX system. Hackers use "auto-dialers" or "war-dialers" to uncover corporate telephone access codes. Auto-dialers randomly call various numbers, and when answered by a PBX system the hacker's computer generates different combinations of digits until it gets a second dial tone, whereupon it prints out the circuit number.

8. 1-800 calling had provided many options for calling international and interstate available to the business community. Businesses bought into these two options en masse without realizing how insecure the systems were.

9. Apart from the new algorithm, Gammino suggested some other possible countermeasures, including: the installation of credit card phones that allow international calling with a card only; the installation of debit cards or cash cards where individuals prepay for calls and use the card as credit cards at the phone; and the construction of a centralized long distance phone facility equipped with attendants and security so that legitimate users could access the phones.

10. In a period of 12 days pre-implementation, there were respectively 713 calls over ten minutes in duration and 92 over 100 minutes, compared with 388 and 48 in a comparable post-implementation period.

11. During 1992, the Port Authority changed the telephone carrier serving the pay phones, though this change seems to have had little effect on gross revenues because the difference between gross revenue and net revenue remained constant throughout the period. Another factor complicating interpretation of Figure 1 is that the Elcotel "smart" phones choose the most profitable route for each call. This may have resulted in some small increases in revenue for the pay phones that were masked by drops resulting from the interventions.

12. Some uncertainty exists regarding the full implementation of the algorithm. By June 1992, all the pay phones had the algorithm in place, but not all had been replaced by "smart" phones until the end of 1992. (Internal reports also indicate that the contract with Teleport Communications Group Inc., was not finalized until January 1993). In addition, tests of the blocking capabilities in August 1992 found inconsistencies; some international calls were still being connected. Given this extended period of implementation, it is possible that the full effects of the algorithm were not obtained early in 1993.

13. It should be noted that the gross revenue data in Figure 1 include only revenue from AT&T and not that from TCG because monthly data for the latter were unavailable. However, estimates of the monthly values for 1993 and 1994 on the basis of annual TCG totals did not significantly alter the curve in Figure 1.

14. The drop in overall pay phone revenue at the PABT between 1990 and 1994 was significantly greater than the decline in revenue from AT&T international calling alone (see Figure 1). This apparent discrepancy may result from a combination of other circumstances, including a decline in fraudulent international calls made through long-distance carriers other than AT&T, fraudulent interstate calls, local calls to PBX and voice mail systems, local calls made in furtherance of drug-dealing and prostitution, and in the number of pay phones: and a very large reduction in the homeless population (see Felson et al., this volume).

15. Net profits accruing to the PABT from its pay phones in 1990 were $2,556,458; in 1994, the net profits were $748,183 (figures not adjusted for inflation).

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