Crime Detection and
Prevention Series
Paper 71

Tackling Car Crime

An Evaluation of Sold Secure

Rick Brown
Nicola Billing

Editor: Barry Webb
Home Office
Police Research Group
50 Queen Anne's Gate
London SW1H 9AT

First Published 1996

Police Research Group: Crime Detection and Prevention Series

The Home Office Police Research Group (PRG) was formed in 1992 to carry out and manage research relevant to the work of the police service. The terms of reference for the Group include the requirement to identify and disseminate good policing practice.

The Crime Detection and Prevention Series follows on from the Crime Prevention Unit papers, a series which has been published by the Home Office since 1983. The recognition that effective crime strategies will often involve both crime prevention and crime investigation, however, has led to the scope of this series being broadened. This new series will present research material on both crime prevention and crime detection in a way which informs policy and practice throughout the service.

A parallel series of papers on resource management and organisational issues is also published by PRG, as is a periodical on policing research called 'Focus'.

ISBN 1-85893-633-0

Foreword

In 1992, two initiatives launched in response to the Home Office car crime prevention campaign were 'Sold Secure', developed by Essex police, and Partnership Against Car Theft (PACT) in Northumbria police. These initiatives, to improve the physical security of cars, were later amalgamated and launched as a national 'Sold Secure' scheme in 1994 by the then Home Office Minister of State David Maclean.

Sufficient data has now been collected by Sold Secure to enable a detailed analysis of its operation, and the results are contained in this report. This paper provides an account of Sold Secure's own monitoring and evaluation procedures and makes a number of recommendations on how these might be improved and the scheme developed generally. The report also provides an initial assessment of the scheme's impact on the risk of theft.

More generally, this paper shows the value of routinely monitoring the performance of crime prevention initiatives such as this for development and 'fine tuning'.

S W BOYS SMITH
Director of Police Policy
Home Office
Police Policy Directorate
April 1996

Acknowledgements

Our thanks go to the staff at Sold Secure for their help in providing much of the data included in this report. We would also like thank Chris Webb from the Police National Computer Service Support Group for providing the stolen vehicle information used for this research.

The Authors

Rick Brown and Nicola Billing are members of the Home Office Police Research Group.

PRG would like to thank Professor Ken Pease of the School of Human and Health Sciences at the University of Huddersfield for acting as independent assessor for this report.

Executive Summary

Sold Secure is an initiative which was developed to enhance general levels of vehicle security and thereby reduce the risk of theft. It was launched on a national basis in 1994 with the support of the Association of Chief Police Officers. The principal aim of the scheme is to provide a list of recognised security devices (which have passed rigorous testing) to police forces and to an associated network of security device and motor vehicle dealers. This list can be used by the latter to recommend suitable vehicle security systems to customers.

This report details the results of work undertaken to help Sold Secure develop a reliable system for monitoring and evaluating their work. This study centred on reviewing the quality of information collected by the organisation and also involved a detailed analysis of the trends arising from the data. Findings include the following:

Security devices evaluated by Sold Secure

- Since its inception, Sold Secure has tested the effectiveness of 246 security devices designed to prevent motor vehicle theft. Of these, 86 (35%) met the requirements of the test procedure and have been included on a list of recognised security devices.
- The list of recognised products issued is continually up dated as products are evaluated. By August 1995, the list had been revised 23 times.
- Of those products passing Sold Secure's testing, well over half (57%) were electronic immobilisers, whilst almost a quarter (24%) were mechanical devices.

Membership of the scheme

- Membership of the scheme occurs on two levels. Firstly, police forces sign up to the scheme. Then, within these forces, security device dealers join the scheme. Sold Secure primarily identify the latter group as 'members'.
- At the time of the research, 24 police forces had joined the scheme in England and Wales. In addition to these, the Royal Ulster Constabulary operates the scheme and Scottish forces have shown interest in joining.
- Within the affiliated police forces, 445 dealers of security devices had signed up to the scheme as members. On average, there were 19 of these members within each police force area, although there was considerable variation between areas, with the number of members ranging from 52 in one area (Essex) to 8 in two others (South Yorkshire and Nottinghamshire).

Sales of recognised security device products

- In 1994, 4,113 vehicles were fitted with recognised security devices by members of the Sold Secure scheme.
- Almost a third of all devices fitted under the Sold Secure scheme were sold in the Northumbria area.
- Over 60% of all devices fitted under the scheme were installed in just four police force areas - Northumbria, Greater Manchester, Avon and Somerset and Nottinghamshire.
- The Mul-t-Lock was the single most frequently fitted device, accounting for over a fifth of all products installed by Sold Secure dealers.
- Overall, electronic immobilisers were the most popular type of security, constituting two thirds of all devices fitted under the scheme.
- Over half of the devices installed by Sold Secure members were fitted to vehicles manufactured by either Vauxhall or Ford. Indeed, the Vauxhall Astra, Vauxhall Cavalier and the Ford Fiesta were the three most popular models fitted with such products.

The effectiveness of Sold Secure as a crime prevention initiative

- Every vehicle registered with Sold Secure was checked against police records to identify whether it had subsequently been reported stolen. Only 13 vehicles were found to have been stolen.
- Of the 13 registered vehicles which were stolen, 8 had been fitted with mechanical devices, whilst the remaining 5 had been fitted with electronic immobilisers.
- Vehicles fitted with Sold Secure recognised products were found to have a likely risk of theft of between 2.8 and 18.5 vehicles per 1,000 registered. These figures were below the national rate of 21 thefts per 1,000 vehicles registered. However, it was not possible to ascertain the degree to which the behaviour of people who bought such devices were different from the general population of vehicle owners.

On the basis of these findings, a number of conclusions and recommendations were drawn. These focus on the 'fine tuning' of the organisation's internal monitoring procedures. Recommendations included possible changes to the existing security device certificate, improvements to the security device database and increases in the output from the monitoring through regular management reports.

Contents

List of figures

List of tables

1. Introduction

Background

Sold Secure is an amalgamation of two vehicle crime prevention initiatives - 'Sold Secure' and 'Partnership Against Car Theft'. 'Sold Secure' was an initiative originally introduced by Essex Police, whilst 'Partnership Against Car Theft' was developed by Northumbria Police.

> 'Sold Secure' was launched in June 1992 with the aim of encouraging motor traders to supply and fit a security package to all vehicles at the point of sale. Both new and used vehicle dealers were included in the scheme, with three types of security package being offered, which were broadly in proportion to the retail price of the vehicle. Buyers at the cheap end of the market would be offered manual steering or handbrake locks, whilst, at the more expensive end, alarms and electronic immobilisers were offered.
>
> 'Partnership Against Car Theft' was also established in June 1992. The purpose of this scheme was to enable specially trained staff in car dealerships and security device retail outlets to give expert advice on vehicle security and to recommend and install suitable and effective security devices. A technical sub-committee, including members of the Master Locksmiths Association and vehicle security specialists, evaluated and tested individual devices, with the aim of eventually grading all security devices on the market.

Together, these two schemes were joint winners of the Home Office Car Crime Prevention Initiatives in 1992. The schemes were combined in June 1993, with the support of the Association of Chief Police Officers (ACPO). The current, combined scheme is known as 'Sold Secure' (previously known as SS-PACT). The scheme works by requiring dealers registered with the scheme to offer for sale and to fit security devices recognised by Sold Secure. When a customer wishes to purchase a vehicle security device, the dealer should recommend a Sold Secure recognised device before attempting to sell other products. Dealers who have become members of the scheme include security products specialists, vehicle accessory dealers and car dealers. The test facilities provided by the Partnership Against Car Theft element now enables dealers to recommend products from a wider list of 'approved' security systems.

In the first year of combined operation, Sold Secure grew on a force by force basis and by September 1994, 21 police forces had the initiative operating in their area. In October 1994 the scheme was launched on a national basis by Minister of State for the Home Office the Rt Hon David Maclean MP, at the Birmingham Motor Show.

The aim of Sold Secure

The Trust Deed for Sold Secure outlines the object of the trust. This is identified as being:

"...to reduce the chances of vehicle theft or criminal damage."

To achieve this objective, Sold Secure established five goals, which define the scope of the organisation's work:

1. To promote good practice within the field of auto crime prevention.
2. To supply the public with lists of auto crime prevention centres which are able to provide high quality advice and service.
3. To continually evaluate auto security products.
4. To ensure that no private vehicle is sold in an unprotected state.
5. To publicise the importance of protecting all vehicles against crime.

How the scheme works

The Sold Secure scheme is run nationally from a head office based in the grounds of Northumbria Police headquarters. This office deals with the day to day administration of the scheme - introducing new members to the scheme, distributing publicity material, updating the list of approved products - as well as co-ordinating the testing of the security devices.

Sold Secure is managed by a Chief Executive and employs four staff to help run the scheme, including a police officer seconded from Northumbria Police. These staff liaise with police officers responsible for the scheme within individual forces. When a police force adopts the scheme, an officer from that force (usually a crime prevention officer) will be designated as a local co-ordinator for Sold Secure. This person will be responsible for the development of the scheme within the force area, encouraging security product dealers to join the membership.

There are two basic elements to the Sold Secure scheme - product evaluation and scheme membership. Product evaluation involves an assessment of the security devices endorsed by the scheme, whilst the membership provides the structure for disseminating information on Sold Secure products and for selling them to the public. These two elements will now be described in further detail.

Product Evaluation

The essence of the scheme lies in identifying high quality security devices from the wide range of products currently marketed. The aim of this is to provide the consumer with an assurance that a security device bought under the scheme will provide the protection required.

Sold Secure regularly publishes a list of devices which have achieved the required standard of protection. To be considered for inclusion on the list, a manufacturer must submit the product to Sold Secure for evaluation. This appraisal involves a two stage process:

> Stage 1: Initial Evaluation. This stage involves an assessment of the device to identify any obvious inherent weaknesses in the product and will usually involve the assistance of a member of the Master Locksmiths Association. If the product fails this stage, it is returned to the manufacturer with recommendations for improvement. This process is kept confidential between the manufacturer and Sold Secure and the fact that a product fails testing is not made public. If the security device passes this test, it is submitted for 'attack testing'.
>
> Stage 2: Attack Testing. Before being accepted as a Sold Secure product, the device must withstand a five minute attack test from vehicle security experts. If a device cannot be overcome or removed within this time period the product passes the testing. This work is carried out at testing facilities provided by the Home Office Police Scientific Development Branch. The test time period of five minutes was chosen because it is believed most car thieves will spend less than this in attempting to steal a car. Products involving a remote control will also be tested by a specialist in signal encryption to ensure that the signal being used is not too easy to replicate. Again, if the product fails this stage, it is returned to the manufacturer with recommendations for improvements.

Once accepted, the product will remain on the Sold Secure list for one year. At the end of this time, manufacturers must re-submit them for testing. The rationale behind this is that a product can undergo design changes during its lifetime which could result in it falling below the required standard. Regular re-testing therefore serves to ensure the integrity of the Sold Secure list.

Membership of Sold Secure

The second element of the Sold Secure scheme is based on a system of membership for dealers offering security devices. Potential members may be drawn from a range of outlets, including car showrooms, specialist security device outlets and car accessory fitters. To become a member, the security device dealer must be based in an area where the local police force has adopted the scheme. Often, the dealer will join following an approach from the Sold Secure liaison officer based in the local police force.

Security device dealers in affiliated force areas may register with the scheme by paying an introductory fee to Sold Secure. The dealers must then attend a one day training event which introduces the philosophy of the scheme and the process of using the list of recognised products. They must also purchase a pack of fifty certificates, one of which is given to the customer each time a Sold Secure product is sold.

The objectives of the research

Prior to this study, there had been no formal evaluation of Sold Secure, although anecdotal evidence had suggested that it was effective as a crime prevention initiative. However, the organisation recognised that such evidence could not be relied upon to provide a definitive statement on the scheme's success. Research was therefore undertaken in order to help Sold Secure develop a reliable system for monitoring and evaluating their work. This work focused on reviewing the current monitoring procedures and data available from that process.

The objectives established for this research were threefold:

1. To carry out a detailed analysis of the monitoring system used by Sold Secure and to assess its reliability.
2. To identify trends in membership and the type of device installed.
3. To provide an initial analysis of the effectiveness of Sold Secure based on existing data.

Methodology

The data upon which this report is based was obtained during fieldwork conducted at the Sold Secure head office during March 1995. This fieldwork included interviews with Sold Secure staff about how their internal monitoring worked and files relating to the monitoring were also examined. In addition, a copy of the security device database was obtained and subjected to off-site analysis. As a major part of the existing monitoring system relied on this database, a significant amount of time was devoted to this source of information.

Structure of the report

This report is structured into five sections as follows:

- Section 2 provides a detailed analysis of the current monitoring systems.
- Section 3 analyses the quality of data on the Sold Secure security device database.
- Section 4 of the report assesses the effectiveness of Sold Secure as a vehicle crime prevention initiative.
- Section 5 sets out the conclusions from the research. These include suggestions for possible improvements to the monitoring system.

2. The current monitoring system

Monitoring undertaken by Sold Secure falls into three broad types:

- monitoring the product evaluation system;
- monitoring the membership; and
- monitoring the devices installed.

Each of these monitoring systems in operation will now be reviewed.

Monitoring the product evaluation system

Of all the systems considered, this is the easiest to monitor as all the information is collected into a single file. When a product is submitted for testing, a test report is completed on it. This provides a detailed paper record of how the product performed against each of the criteria set by Sold Secure. If it subsequently meets the required standard, it is entered on to the recognised list, which is sent to members. For each device, a record is kept of the date upon which it was submitted, whether the device passed or failed the testing and the reason for its failure.

Records held by Sold Secure indicated that, up to 1 August 1995, Stage 1 tests had been conducted on 246 security devices. This figure includes new security devices and those submitted for re-testing after being on the list for one year. Of these, 158 passed the Stage 1 testing and 88 failed. At stage 2, 86 successfully passed the testing and were included on the list. This suggests that there are a considerable number of sub-standard products on the market, which would fail to prevent a vehicle from being stolen. Indeed, based on the above figures, only 35% (86 out of 246) of Stage 1 tests resulted in a product being approved by Sold Secure.

Table 1: Distribution of product types on the Sold Secure recognised list

Product Type	Number	Percent
Electronic immobilisers	49	57.0
Mechanical Products	21	24.4
Alarms/electronic immobilisers	15	17.4
Electro mechanical products	1	1.2
TOTAL	86	100.0

By August 1995, the list of products recognised by Sold Secure had been updated 23 times. As Table 1 shows, the products passing the test fall into four main categories: mechanical products, electro mechanical products, alarm/electronic immobilisers and electronic immobilisers. The most common among these were electronic immobilisers, which accounted for over half of all products recognised. Mechanical devices, which included a range of instruments designed to restrict the use of the steering wheel, gear lever and/or pedals, were the second most frequent type of

product to pass the testing. By contrast, only one electromechanical product was on the list, although it was unclear whether this reflected the availability of such products on the market.

Monitoring membership

Membership of the scheme can be examined on two levels: from the number of police forces and from the dealers registered to distribute Sold Secure products. These will now be considered in turn.

Police forces

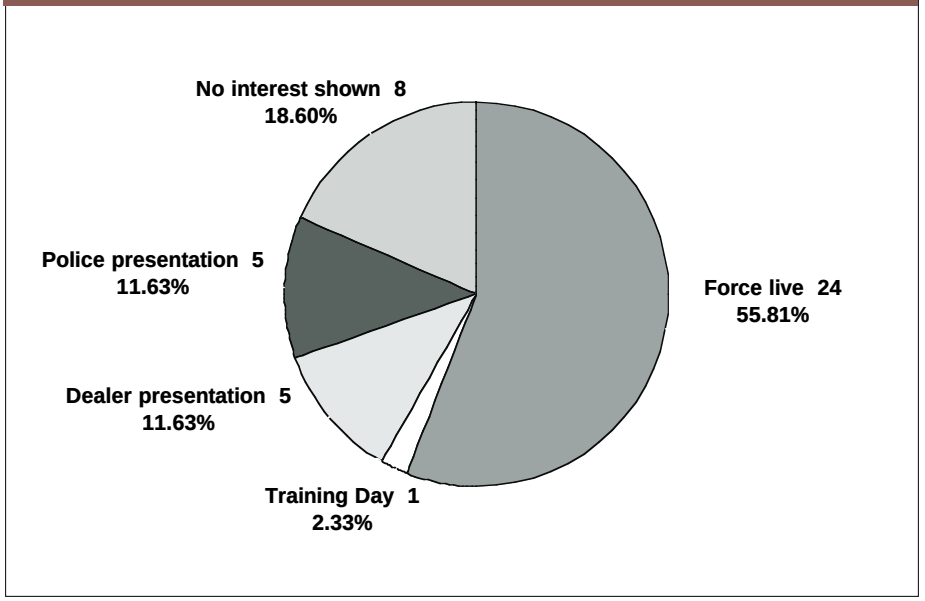
The monitoring of police force involvement undertaken by Sold Secure is a fairly simple, but effective, procedure. This involves recording the current status of each force on a wall chart, providing a graphical representation of the stage each force is at.

The process of introducing the Sold Secure scheme into a police force area is broken down into a number of stages. When a police force shows interest in joining the scheme, members of Sold Secure will give a presentation to officers outlining the benefits of the scheme. If they then decide to adopt the scheme, a presentation will be made to security device dealers within the area to gain their support. Following this, a training day will be held in the area for dealers who wish to participate in the Sold Secure scheme. Once these stages are completed, the force area is ready for the scheme to be launched. The scheme is then generally launched in the force as a whole, rather than on a divisional basis.

As Figure 1 shows, at the start of August 1995, there were 24 police forces operating the scheme in England and Wales. These accounted for over half of all forces (Appendix A provides details of the status of individual forces). In addition to these, the scheme was also operating in Northern Ireland under the auspices of the Royal Ulster Constabulary (RUC) and Scottish forces have shown interest in joining.

There would appear to be some scope for the growth of Sold Secure as almost a fifth of forces have yet to show any interest in the scheme. As Figure 2 indicates, there were two broad geographical bands which had not shown any interest. One of these formed part of the North of England (including West Yorkshire, North Yorkshire and Lancashire), whilst the other was in the South East, stretching from Sussex up to Hertfordshire. Together, the areas showing no interest accounted for 17.3% of thefts and unauthorised takings of motor vehicles in 1994. Discussions with Sold Secure staff revealed that they were beginning to target each of the forces who had yet to sign up to the scheme.

Figure 1: Overview of membership status of police forces in England and Wales



On a geographical basis, 'live' areas generally fell into four main groups. These included Wales and the South West, the Midlands, Cumbria/Northumbria and a band running from Surrey up to Suffolk. Analysis was undertaken to see whether there was any relationship between the level of vehicle crime in an area and whether Sold Secure had targeted them for involvement in the scheme. Forces which were fully operating the scheme tended to be based in the areas with high levels of vehicle theft. Indeed, seven of the ten force areas with the highest numbers of vehicle thefts were operating the scheme (Avon and Somerset Constabulary, Greater Manchester Police, Metropolitan Police, Northumbria Police, South Wales Constabulary, South Yorkshire Police and West Midlands Police). Kent County Constabulary, Merseyside Police and West Yorkshire Police were also in the 'top ten' but were not yet operating the scheme at the time of this research. Overall, almost two thirds of all vehicle crime (63.3%) occurred in the 24 (55.8%) forces operating the Sold Secure scheme.

Levels of vehicle crime may, however, simply reflect the differing geographic or population sizes between police force areas. Vehicle thefts per 1,000 head of population were therefore calculated for each police force area in order to examine whether Sold Secure had targeted areas with the highest rates of vehicle theft. This analysis found that areas with Sold Secure had a slightly lower rate of vehicle theft

(9.34 thefts per 1,000 population) than areas without Sold Secure (9.83 thefts per 1,000 population), although the difference was not statistically significant. As Figure 3 shows, three of the ten areas with the highest rate of vehicle theft were not in areas operating the Sold Secure scheme. One of these - Cleveland - had the highest rate among all 43 forces in England and Wales. It is apparent that Sold Secure still has room for growth on a national scale, with a number of high vehicle crime areas yet to adopt the scheme.

Figure 2: Membership status of police forces by geographical location

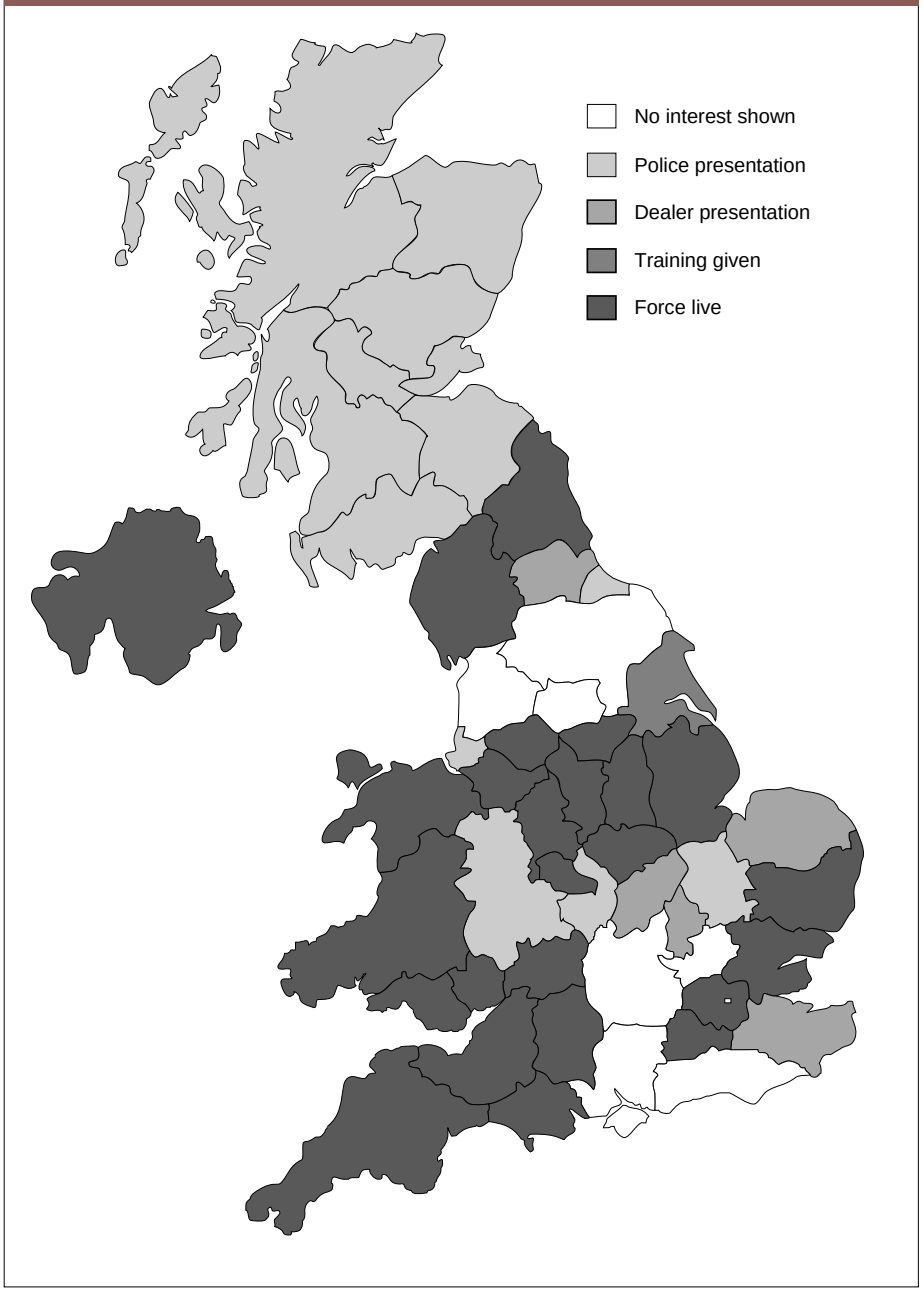
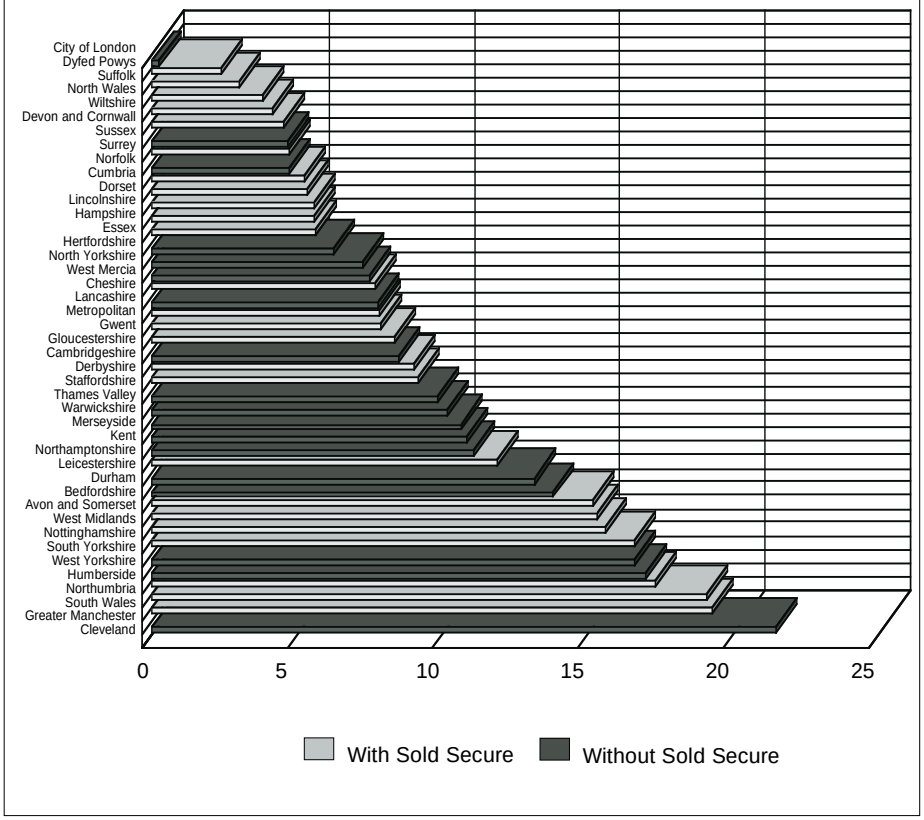


Figure 3: Theft of vehicles per 1,000 head of population by involvement in Sold Secure



Security product dealers

Each of the police forces affiliated to Sold Secure will aspire to recruit security product dealers within their area to become members of the scheme. Before they can join the scheme, the dealers will be vetted by the police to ensure only reputable dealers are recruited. The details of these security product dealers joining the scheme are held on a computer database at the Sold Secure head office. The information is ordered so that all the dealers within a police force area are recorded on a single file, with separate files for each area. This means that the details of a particular dealer are easy to find if the area where they are located is known.

The records for each of the dealers hold four key pieces of information: the company name, address, telephone number and a contact person. Maintaining a contact person in each dealership simplifies communication with a company as a particular person will be responsible for liaison with Sold Secure.

Table 2: Number of Sold Secure members in each police force area

Police Force	Number	Percent
Essex	52	11.7
West Midlands	41	9.2
Metropolitan	37	8.3
Avon and Somerset	35	7.9
Greater Manchester	27	6.1
Leicestershire	27	6.1
Cheshire	25	5.6
Northumbria	23	5.2
Suffolk	21	4.7
Devon and Cornwall	19	4.3
Staffordshire	16	3.6
Surrey	15	3.4
Wiltshire	15	3.4
Gloucestershire	15	3.4
Wales[1]	15	3.4
Derbyshire	13	2.9
Cumbria	12	2.7
Lincolnshire	12	2.7
Dorset	9	2.0
South Yorkshire	8	1.7
Nottinghamshire	8	1.7
TOTAL	445	100.0

Within the 24 police forces operating the scheme in August 1995, there was a total of 445 dealers who were members of the scheme at the time of the research.[2] This suggests there were, on average, 19 members in each police force area. However, as

1 The figure for Wales includes all Welsh forces together - Dyfed Powys, Gwent, North Wales and South Wales.

2 In addition to these, a further 27 members operate within the area covered by the RUC.

Table 2 shows, there was considerable variation between areas with, for example, 52 members in Essex and 41 in West Midlands, whilst there were only 9 in Dorset and 8 in South Yorkshire and Nottinghamshire. It is also clear that a large proportion of members were situated in a small number of forces. Indeed, six forces accounted for almost half of all members.

To some extent this uneven distribution reflects the maturity of the scheme. Those areas which were amongst the first to introduce the scheme generally had a higher number of members than areas establishing the scheme more recently.

Monitoring the devices installed

The most detailed record keeping undertaken by Sold Secure is reserved for the monitoring of the devices installed by members of the scheme. For each recognised device sold / installed by a Sold Secure member, a certificate is completed in triplicate. (See Appendix B for an example of a certificate.) The dealer gives one copy to the customer; one is retained by the security product dealer for reference purposes and one is returned to the Sold Secure head office.

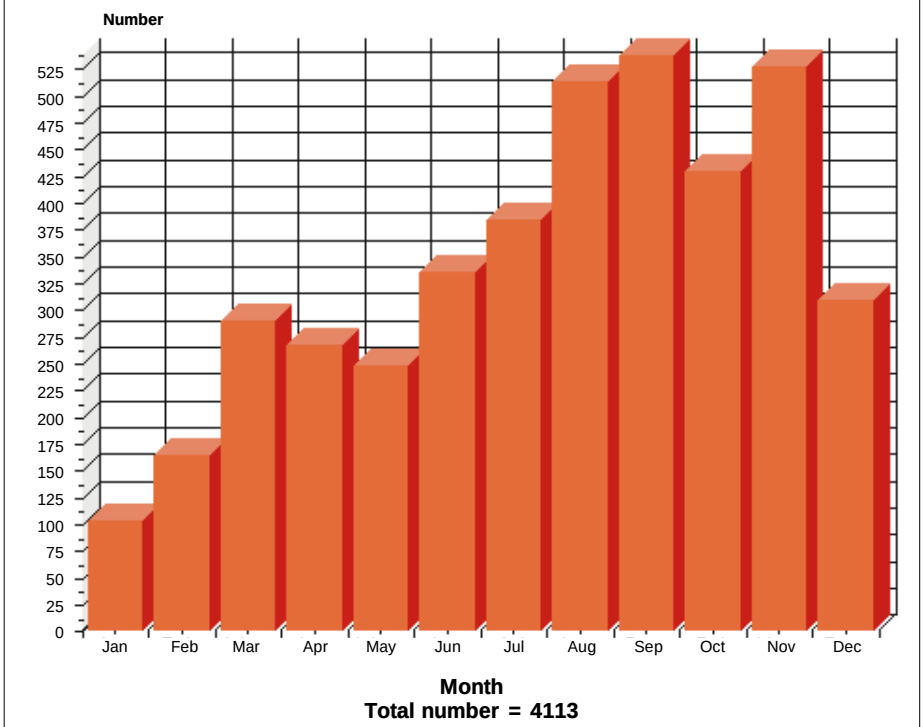
Forms which are returned to the head office are subsequently entered onto a database to allow for future analysis. The information stored on the database includes details of the vehicle the device is installed on, details of the device itself and details of the member fitting the device.

The growth in vehicles with recognised security products fitted

Analysis undertaken in March 1995 showed that details from 5454 certificates had been entered onto the database. The majority of these (75.4%) were returned in 1994. Starting with 599 certificated devices at the end of 1993, the scheme grew at a rapid rate during 1994. Figure 4 shows that there was a steady increase in the number of certificates returned per month between January and September, after which time the number fell back slightly. On average, 343 certificates were returned each month.

In terms of market penetration for security device products, Sold Secure members have installed recognised security devices on only a small proportion of the total vehicle parc. With approximately 25 million vehicles currently registered in Great Britain, products installed under the Sold Secure scheme represent just 0.02% of vehicles. Concentrating on those forces where Sold Secure operates, the scheme was found to have fitted devices on the slightly higher figure of 0.04% of vehicles. These figures are, perhaps, misleading given the fact that many recognised security devices will be sold and fitted by distributors who are not members of Sold Secure. Nonetheless, given that one of Sold Secure's goals is to ensure that no private vehicle is sold in an unprotected state, it seems reasonable to suggest that the scheme still has a significant task ahead of it.

Figure 4: Certificates returned per month in 1994



Distribution of security devices nationally

As Table 3 shows, there was considerable variation between areas in the number of security devices fitted under the Sold Secure scheme. Four force areas (Northumbria Police, Greater Manchester Police, Avon and Somerset Constabulary and Nottinghamshire Constabulary) accounted for 60% of devices fitted. These areas have some of the highest rates of vehicle crime nationally. However, the distribution of devices fitted may well be largely a function of the length of time the area has been participating in the scheme. For example, Wiltshire Constabulary, Staffordshire Police and Cheshire Constabulary have all joined in the last twelve months and have relatively few devices registered, whilst Northumbria Police has been in the scheme since mid 1992, with considerably more devices registered.

Table 3: Devices fitted in each force area

Member Area	Number	Percent
Northumbria	1731	31.7
Greater Manchester	550	10.1
Avon and Somerset	540	9.9
Nottinghamshire	488	8.9
Wales[3]	282	5.2
Leicestershire	259	4.7
Gloucestershire	245	4.5
RUC	205	3.8
Essex	188	3.4
Devon and Cornwall	161	3.0
South Yorkshire	160	2.9
Derbyshire	147	2.7
West Midlands	112	2.1
Lincolnshire	85	1.5
Suffolk	74	1.4
Cumbria	71	1.3
Surrey	59	1.1
Dorset	36	0.7
Wiltshire	20	0.4
Staffordshire	18	0.3
Cheshire	1	0.0
Unknown/Missing	22	0.4
TOTAL	5454	100.0

Discussions with Sold Secure staff suggested two possible schools of thought on how to develop the scheme:

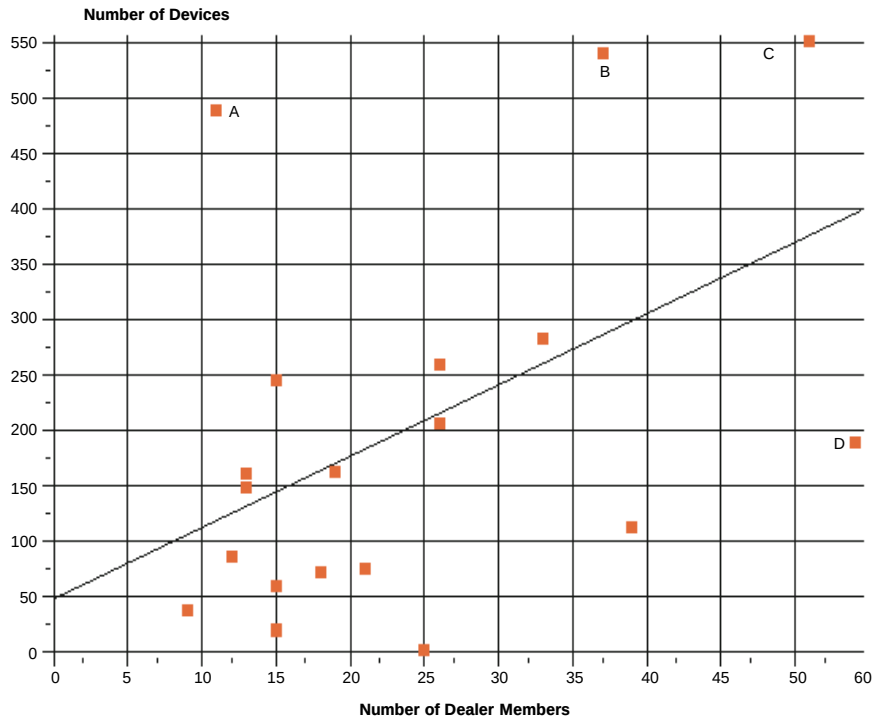
(i) Small scale/high quality service. Keeping the number of members in an area fairly small can encourage a high quality of service by creating a climate where Sold Secure representatives have the opportunity to work closely with their dealer members, thereby improving the way the scheme is sold to customers. In the long run, this may increase the number of devices sold as a result of the

3 The figure for Wales includes Dyfed Powys, Gwent, North Wales and South Wales

increased demand at these outlets. However, it is questionable whether consumers would be willing to travel far to purchase a Sold Secure endorsed product.

(ii) High member/high volume approach. An alternative strategy would be to have a higher number of members introduced into an area, which can increase the volume of products distributed by virtue of having an increased number of retail outlets for security devices. This could, however, adversely affect the attention the Sold Secure representative for the force area is able to pay to each dealer member.

Figure 5: Scatterplot of relationship between number of members and number of devices fitted in each force area[4]



4 The figures used to produce this scatterplot are based on the number of devices fitted and the number of members at the time of fieldwork in March 1995. This picture changes on a continual basis as new members join and existing members leave the scheme. Figure 5 therefore provides only a 'snapshot' of the relationship between the number of members and devices fitted.

An examination of the data provided some support for the second approach. Generally speaking, as the number of dealer members in an area increased, so did the number of recognised security devices fitted. The scatterplot in Figure 5 shows that areas with fewer dealer members tended to fit the fewest number of devices. Sold Secure currently appears to emulate the small scale/high quality service model as this scenario accounts for the majority of force areas, with most having between 10 and 20 members. By contrast the small number of force areas fitting the most products tended to have more dealer members.[5] This may, however, simply be a function of the length of time a police force area has been in the scheme. As time passes, one might expect the number of dealer members to increase as popularity and knowledge of the scheme grows. Similarly, the longer the scheme has been operating, the more devices are likely to have been fitted. Nevertheless, to further aid the growth of the scheme there may well be some merit in moving towards a high member/high volume approach.

Figure 5 shows four police force areas (labelled A, B, C and D) which differed considerably from the norm. The average number of devices fitted in an area was 260 and the average number of dealer members was 19. Each of these four, however, exceeded the average by at least 75% on either one or both of these factors. Attempts were made to explain why these forces should be different to the rest so that lessons could possibly be learned for the future.

Force A: This force was characterised by having few members but a high number of devices fitted. It covers a relatively small geographical area and has dealers in each of the area's main towns. Dealers are distributed fairly evenly throughout the county, with an outlet located within a short distance of most of the resident population.

Force B: This force had an above average number of members and a high number of devices fitted. Force B has invested considerable resources into reducing vehicle crime with Sold Secure forming an integral part of this initiative. There has been a concerted effort by the police to recruit members to the scheme and to increase public awareness of the importance of securing their cars.

Force C: This force had a high number of members and a high number of devices fitted. The force covers a large metropolitan area with a significant vehicle crime problem. As such, the resident population is generally aware of the importance of vehicle crime prevention. The Sold Secure liaison officer in this force has been proactive in recruiting dealer members to meet the demand for reliable security devices.

5 Testing the strength of this association using Spearman's Rho indicated that the relationship was a moderate one, but nonetheless statistically significant (Rho = 0.396 p = 0.084)

Force D: This force had the most members but only an average number of devices fitted. As one of the early members of Sold Secure, Force D had been proactive in recruiting security device dealers in the early days of the scheme. Since then, the scheme has lost a certain amount of its driving force and was not being marketed through the dealers as effectively as it could have been.

Although no detailed analysis has been made of more 'average' force areas, these four examples may provide some clues to increasing the number of devices sold. The following points should therefore be treated as suggestions which *may* aid the growth of the scheme, rather than definitive solutions.

Having a good geographical distribution of outlets would seem to be one possible answer, as potential customers are unlikely to be willing to travel far to make their purchase. Ideally, the majority of the local population should be within a short distance of a Sold Secure product dealer. Although this was achieved through a fairly small number of dealers in Force A, increasing the number of dealers generally is likely to help, as long as they are not all in close proximity to each other.

Good local co-ordinators also seem to be important to the scheme. Indeed, the success of the scheme in all four areas can partly be attributed to this factor. Maintaining enthusiasm in the scheme amongst Sold Secure dealer members is an important function of local co-ordinators as it is down to these individuals to recommend Sold Secure products. Failure at this stage could undermine the work undertaken by Sold Secure in the testing of the devices, because without the dealers' help, customers are unlikely to know which security devices provide an adequate level of protection.

Local co-ordinators are also important for publicising the significance of effective vehicle security. As they will often be police force crime prevention officers, they will be responsible for promoting the use of good security generally. Where vehicle security is concerned, they will be able to direct members of the public to Sold Secure dealers in their area, thereby increasing the number of devices sold at these establishments.

Analysis of Sold Secure recognised security devices fitted

As Table 4 shows, the twenty most frequently fitted security devices accounted for 83% of all devices recorded by Sold Secure. (Appendix C provides a full list of the devices fitted.) The Mul-t-Lock was the single most frequently installed product, accounting for over a fifth of all vehicles registered with Sold Secure. However, electronic immobilisers (which disable the electrical system when the vehicle is not in use) were the most frequently installed type of device. Indeed, the seven models of electronic immobiliser made by Foxguard together accounted for over a quarter (25.4%) of products installed. Overall, electronic immobilisers constituted 69.3% of all devices fitted, whilst mechanical devices made up a further 27.2% of the total.

Table 4: "Top 20" recognised security devices fitted		
Security Device	Number	Percent
Mul-t-Lock	1249	22.9
Foxguard V Max 2	463	8.5
Foxguard F14 E/P	377	6.9
Autojack 202	283	5.2
Guardsman 2000	253	4.6
H & P Matrix II	243	4.5
Compact 2	198	3.6
Foxguard JR 50	197	3.6
Autojack 101E	170	3.1
Active 8 JP 12	159	2.9
H & P Matrix III	155	2.8
Viking 604	132	2.4
Foxguard F1 11	115	2.1
Immobiliser Compact	92	1.7
Piranha SCM 18 RND	87	1.6
Barrier Deadlock	84	1.5
Foxguard JR60	87	1.6
Foxguard V Max 1	83	1.5
Laserline 992T	68	1.2
Foxguard T38 S2 E/P	64	1.2
TOTAL	4559	83.4

Vehicle makes fitted with Sold Secure security devices

Analysis of vehicle make information on the database maintained by Sold Secure identified over 30 different makes of vehicle which had been fitted with a recognised security device. Among the more unusual makes were 3 Ferraris, 2 Lotuses, 1 Rolls Royce and 1 Bentley. (Appendix D provides the full breakdown of makes.) This should not be taken to mean that Sold Secure has concentrated on the high performance or luxury sectors of the vehicle market. Indeed, the vast majority of vehicles fitted with security devices reflect the most popular ranges of vehicle on the road.

Over half (58.2%) of all the security devices were fitted to either Vauxhall or Ford vehicles. As Table 5 shows, each of these makes appeared at least five times more often in the database compared to their closest rivals. These were followed by Rover and Volkswagen, each accounting for approximately 5% of the total.

Table 5: "Top 20" vehicle makes fitted with security devices

Vehicle Make	Number	Percent
Vauxhall	1788	32.8
Ford	1387	25.4
Rover	268	4.9
Volkswagen	252	4.6
Peugeot	138	2.5
BMW	129	2.4
Renault	128	2.3
Austin	113	2.1
Toyota	112	2.1
Honda	108	2.0
Nissan	90	1.7
Citroen	86	1.6
Land Rover	69	1.3
Volvo	63	1.2
Audi	55	1.0
British Leyland	54	1.0
Fiat	47	0.9
Mitsubishi	46	0.8
Hyundai	41	0.8
Mercedes	37	0.7
TOTAL	5011	92.1

Vehicle models fitted with Sold Secure security devices

As can be seen from Table 6, the high proportion of Vauxhalls on the Sold Secure database is a result of high numbers of Astras, Cavaliers and Corsas fitted with security devices. Together, these three models accounted for 26.8% of all products fitted. The Ford Fiesta and Escort also accounted for a high proportion of the devices fitted, with 7.5% and 6.1% of all products respectively.

Overall, the "top 20" vehicle models accounted for 65.9% of recognised security devices fitted. However, not all of these were cars. Ford Transit vans constituted 165 (3%) of the vehicles on the database.

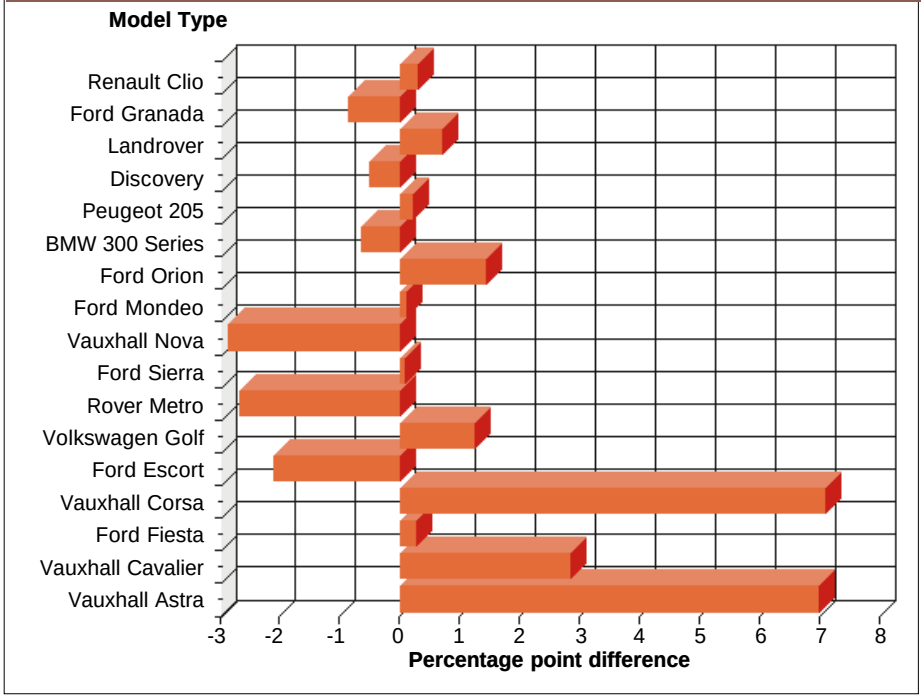
Table 6: "Top 20" vehicle models fitted with security devices

Vehicle Make	Number	Percent
Vauxhall Astra	595	10.9
Vauxhall Cavalier	469	8.6
Ford Fiesta	409	7.5
Vauxhall Corsa	397	7.3
Ford Escort	333	6.1
Volkswagen Golf	180	3.3
Ford Transit	165	3.0
Rover Metro	130	2.4
Rover 200 Series	130	2.4
Ford Sierra	126	2.3
Vauxhall Nova	117	2.1
Ford Mondeo	97	1.8
Ford Orion	80	1.5
BMW 300 Series	73	1.3
Peugeot 205	61	1.1
Honda Civic	59	1.1
Land Rover Discovery	53	1.0
Vauxhall Calibra	41	0.8
Ford Granada	40	0.7
Renault Clio	38	0.7
TOTAL	3593	65.9

The "top 20" models were then compared to the distribution of those same vehicle models nationally. This provided an indication of the degree to which the vehicles in the scheme were similar to the general population of vehicles. For each model, the proportion of the vehicle parc it constituted was subtracted from the proportion it accounted for in the Sold Secure database, giving a percentage point difference between them. For example, Vauxhall Astras constituted 10.9% in the Sold Secure database but only 3.9% nationally. This meant there was a 7 percentage point difference between Astras in the Sold Secure scheme and those registered nationally.

As Figure 6 shows, there was a fairly high level of similarity between the distribution of vehicles fitted with Sold Secure recognised security devices and the distribution of vehicles in the motor parc nationally.

Figure 6: Difference between the proportion of the Sold Secure database taken up by specific models and the motor parc nationally[6]



The majority of the most frequent models on the Sold Secure database were present in similar proportions to those found nationally. Indeed for 11 of the 17 analysed, the difference was less than 2 percentage points. There were, however, a number of exceptions to this general rule. For example, Vauxhall Astras, Cavaliers and Corsas were over-represented in the Sold Secure database compared to the national picture. By contrast, Ford Escorts, Ford Sierras and Rover Metros were under-represented in the Sold Secure figures.

The types of security device fitted varied somewhat from model to model. Appendix E shows the distribution of products fitted to each of the 20 most frequent models.

6 Figures were unavailable for the Ford Transit, Honda Civic and Vauxhall Calibra, so only 17 of the "top 20" were analysed.

For 16 of these models the Mul-t-Lock was the single most frequently fitted security device. This device was particularly popular for some vehicle models, with 57.9% of Renault Clios, 32.5% of Ford Granadas and 32.1% of Land Rover Discoveries on the Sold Secure database fitted with Mul-t-Locks. Despite the popularity of the Mul-t-Lock, electronic immobilisers constituted the majority of devices fitted to 18 out of the 20 vehicles most frequently fitted with Sold Secure devices. The exceptions to this general trend were the Land Rover Discovery and the Renault Clio with 60.4% and 57.9% fitted with mechanical devices respectively, though no reason for this was identified.

3. Data quality issues for the security device database

Problems with returning certificates

The analyses presented in section 2 are based solely on certificates returned to Sold Secure. There is, however, evidence to suggest that a significant proportion of certificates are not returned. This will inevitably create some inaccuracies in the database and could be a result of a number of factors:

Confusion over responsibility. Although one person is usually responsible for liaison with Sold Secure head office within a dealership, confusion can still arise over whose responsibility it is to return certificates. The person responsible for selling the device may not be the same one who fits it to the vehicle. Indeed, one party may not know that a certificate needs to be completed, especially if they have not attended the Sold Secure training session.

Confusion over what to do with the certificates. Members may not be clear about what to do with the forms once they have been completed. Some may not realise that a copy needs to be returned to Sold Secure head office, whilst others may not know where to return them. This latter point was noted by Sold Secure staff, who felt it may be compounded by the fact that the certificates do not have a return address on them.

Lack of motivation. The dealers' primary responsibility is to sell the security products. Once a product has been sold they may feel that their task is complete and that filling in a certificate is too much of a burden. This may be compounded by the fact that some security device manufacturers now include their own certificates to be completed and returned. Another cause of low motivation may be that Sold Secure members see little benefit from returning the certificate. To address this, Sold Secure have begun to award certificates to the top ten members returning certificates.

Not in members' interest to return the certificates. It could be argued that members are in fact penalised for returning the forms. This is because the dealer members must purchase the certificates at £1 each in the first place. Therefore, the more certificates a company returns, the more they will have to pay for participating in the scheme. There may be a conflict of interest for Sold Secure in using the certificates for generating income on the one hand and for ensuring a high response rate on the other.

In recognition of the fact that the response rate is not as high as it could be, Sold Secure staff undertook a campaign to increase the number of certificates returned.

Those dealers who had returned less than ten certificates since joining the scheme were targeted on the basis that these were most likely to be the ones failing to return certificates. In all, reminder letters were sent to 301 members in England and Wales, representing 67.6% of those in the scheme.

At the time of the fieldwork, the process of increasing returns was still in progress, but had begun to show results. Over a five week period (from 1 February 1995 to 8 March 1995) an additional 564 forms were returned over what might have been expected if the exercise had not been undertaken. These figures suggest that at least 13.7% are not being returned to the head office. On a monthly basis, members may be failing to return in excess of 47 certificates.

Checking the quality of the data entry

The structure of the database had been designed with fields which will take free text. This means that within any one of the fields it is possible to enter data in any chosen form. This makes the data entry job easy, but makes any analysis of the data very difficult.

A major part of the early analysis involved assessing the quality of the data arising from using this method of data entry. This involved two processes:

- Checking for spelling mistakes in the data.
- Checking for data entered in the wrong field.

Spelling mistakes

As there is no restriction on what can be entered into a field, spelling mistakes are inevitable. This can make the task of analysis difficult. If, for example, one searches for a particular word or phrase, spelling errors at the data entry stage would mean the search could fail to identify the desired information. For example, a search for 'Ford' would fail to find misspellings like 'Frod' or 'Fodr'. The more spelling errors in the database, the less reliable it becomes.

Analysis of spelling mistakes was conducted on three key fields:- vehicle make, vehicle model and security device fitted. As Table 7 shows, a number of spelling mistakes occurred in the database. Based on these three variables alone, there were 259 errors made, with the vehicle make field containing the most mistakes. A closer look at the fields revealed where the common errors occurred. Within the vehicle make field, Renault seemed to cause major problems, with 6 different spellings (Rebault, Renalut, Renalt, Renualt, Renaukt, Renult) as did Peugeot (Peugeout, Peugeut, Peugoet, Peugot, Pugeot, Pegeout). Volkswagen was also prone to misspelling with 5 different variations (Vauxwagon, Vayxwagen, Volfswagen, Volkswagon, Volkswahon).

Where the vehicle model was concerned the most frequent spelling error was with Escort, (spelled Ecsort on 13 occasions), followed by Granada (with 10 spellings of Granda). The most popular misspelling for security devices was for Mul-t-Lock, which was spelled incorrectly on 22 occasions, with 6 different spellings (Mul-T-Lol, Multilock, Multi Lock, Mul-T-Look, Mu-T-Lock, Mut-T-Lock).

Overall, these misspellings accounted for a fairly small proportion of cases and were within a 2% margin of error. Nevertheless, most of these were simple typing errors which could have been avoided by having rules written into the database which automatically prevented erroneous spellings.

Table 7: Spelling mistakes in the database

Field	Number of errors	Error rate
Vehicle make	110	2.0%
Vehicle model	83	1.5%
Security device fitted	66	1.2%
TOTAL	259	1.6%

Data in the wrong field

As well as spelling mistakes, there were logical inconsistencies in the vehicle make / model records with the wrong information placed in a field. Table 8 describes how this occurs.

Table 8: Example of data in the wrong field

Case	Vehicle Make	Vehicle Model
Correct:		
1	Ford	Escort
Incorrect:		
2	Escort	XR3
3	Ford Escort	XR3

In the above example, all three cases relate to Ford Escorts, yet each contains different information. In case 1, the data is entered in accordance with agreed conventions. A search on the make would identify a Ford and a search on the model would show an Escort. Problems arise with the scenario presented in cases 2 and 3. In case 2, a search for Fords under the vehicle make field would fail to identify 'Escort' as a make and the search for Escort under the vehicle model would fail to find 'XR3'. In case 3, a search for Fords under the vehicle make may identify the description 'Ford Escort', but would only be found if the search was for the word 'Ford' anywhere within the field, in which case, other makes (eg. Iveco Ford) might also be selected. As with case 2, a search for Escort under the vehicle model field would ignore the term 'XR3'.

Analysis of the make and model fields revealed that vehicle models were present where the make should have been on 411 (7.5%) occasions. Careful attention should therefore be paid to ensuring the same information is entered into a field to describe a vehicle each time. One way to aid this would be to include an additional field in which to place specific model details (such as XR3, XR2, GTI etc.). In addition to this method a restriction on the words which could be entered into each field, or a set list of codes which correspond to specific makes and models (eg. input 1 instead of Ford, 2 instead of Vauxhall etc.) would also help prevent errors being made.

4. Evaluating the effectiveness of Sold Secure

The key objective of Sold Secure is *"...to reduce the chances of vehicle theft or criminal damage"*. The overall success of the scheme can therefore be measured on the basis of the influence it has in reducing vehicle crime. Until recently, the extent to which Sold Secure reduces the risk of vehicle crime was unclear because Sold Secure did not have access to detailed national data on vehicle theft.

To assess fully the scheme's success at reducing vehicle crime, the national risk of theft associated with each of the types of vehicle stored on the Sold Secure database would need to be compared to the theft rates for vehicles installed with Sold Secure products. Unfortunately, national theft rate figures for specific types of vehicle were not available. A less methodologically sound approach to measuring the success of the scheme therefore had to be adopted. This was to assess the number of vehicles on the Sold Secure database which had been stolen during 1994 and to compare this figure with the national rate of theft for all vehicles. To achieve this, information on stolen vehicles supplied from the Police National Computer (PNC) was compared to the database of vehicles fitted with Sold Secure products.

Assessing the number of Sold Secure vehicles stolen

To provide a baseline for assessing the effectiveness of Sold Secure, this research set out to estimate how many vehicles fitted with Sold Secure products had been stolen. The methodology employed involved taking a copy of the Sold Secure database of vehicles and checking each vehicle registration with the PNC to identify those which have been reported stolen to the police. As the PNC is an operational database, it does not keep records of those vehicles which have been stolen but subsequently recovered. It should therefore be noted that the process of checking PNC records can provide only a partial solution to this problem.

The results of conducting the checking exercise showed that thirteen vehicles registered with Sold Secure had been recorded by PNC as having been stolen during 1994. As the number of vehicles registered with Sold Secure fluctuated throughout the year due to the continual growth of the scheme, it was not possible to calculate a single theft rate representing the whole year for those vehicles installed with Sold Secure devices.

Instead, two figures were calculated to show the range within which the theft rate might be expected to fall. Firstly, the "worst case" scenario was calculated in which it was assumed that all 13 vehicles were stolen in January 1994, when there were just 703 vehicles registered with Sold Secure. This showed that 18.5 vehicles per 1,000 registered with Sold Secure would have been stolen. A "best case" scenario was then also calculated in which all 13 vehicles were stolen in December 1994 when there were 4,712 vehicles registered with Sold Secure. This would suggest that 2.8 vehicles per 1,000 registered with the scheme were stolen. The theft rate might reasonably be expected to fall somewhere between the "best" and "worst" scenarios.

It can therefore be concluded that the theft rate for Sold Secure registered vehicles was likely to be between 2.8 and 18.5 vehicles per 1,000. As the national vehicle theft rate was approximately 21 vehicles per 1,000 registered[7], Sold Secure vehicles would appear less likely to be stolen.

There is, however, one caveat to be made in relation to this calculation. The analysis was based on the assumption that those who buy the recognised security products are broadly similar to the general population of vehicle owners. As such, it would be fair to assume that the difference in theft rates is likely to be the result of the presence of good vehicle security, rather than any other extraneous factor - such as usage of garages at night, or living in a low crime neighbourhood. Unfortunately, the research was unable to assess the degree of similarity between Sold Secure security device purchasers and the general population.

Make and model stolen

As Table 9 shows, there appears to be little pattern to the makes and models stolen. The thefts were distributed amongst seven manufacturers, with only Cavalier and Maestro models appearing more than once.

Where the security devices were concerned, mechanical devices were fitted in 61.5% of thefts. This was over twice the level which might be expected, given the fact that 27.2% of the devices fitted were mechanical; suggesting that these type of devices were fitted in a disproportionately high number of theft cases. This could, however, be explained if mechanical devices were fitted to vehicles which were more popular as targets of theft. Unfortunately, no figures were available to test this hypothesis. All mechanical devices must be set manually each time the vehicle is left if it is to be effective. Where stolen vehicles fitted with Sold Secure devices are concerned, it is unknown whether the drivers had used their mechanical devices prior to the thefts.

The remaining five devices in Table 9 are all electronic immobilisers. One of these, however, did not involve a breach of the security system. The vehicle was driven away using its keys which had been stolen in a burglary.

7 In 1994, 25,231,000 vehicles were licenced with DVLA, whilst 528,938 vehicles were stolen

Table 9: Details of the vehicles fitted with Sold Secure recognised products but subsequently stolen

Year of Registration	Make	Model	Type of device fitted
1989	Ford	Escort	Electronic Immobiliser
1989	Vauxhall	Nova	Mechanical
1991	Land Rover	Discovery	Mechanical
1991	Vauxhall	Cavalier	Electronic Immobiliser
1991	Volkswagen	Golf	Mechanical
1991	Ford	Fiesta Van	Mechanical
1994	Ford	Transit	Mechanical
1994	Rover	Maestro Clubman	Mechanical
1994	Toyota	Previa	Electronic Immobiliser
1994	Vauxhall	Astra	Electronic Immobiliser
1994	Vauxhall	Cavalier	Mechanical
1994	Citroen	ZX	Electronic Immobiliser
1994	Rover	Maestro Clubman	Mechanical

5. Conclusions and recommendations

The research focused on the evaluation and monitoring procedures in place and the recommendations reflect this by suggesting possible changes to the current system.

Improving the security device certificate

- Include Sold Secure address. The certificate could include the address of Sold Secure head office on it. This would help the members to return the certificates and could ultimately increase the response rate of these.
- Include customer address. One of the omissions on the current certificate is a space for the address of the customer purchasing a Sold Secure product. This could prove useful for conducting consumer surveys on satisfaction with the Sold Secure scheme, or for mailshots of information on Sold Secure or security products. This would, however, require Sold Secure to register the information held on computer under the Data Protection Act 1984.
- Record serial numbers. As Appendix B shows, each certificate has a unique serial number stamped on it. This means a record could be kept of the serial number batches sent to each member which, in turn, would allow Sold Secure to chase up missing certificates. Alternatively, requests for further issues of certificates could be followed up by encouraging members to return remaining certificates. At present no record of serial numbers is kept and adopting these procedures could help improve the response rate.
- Provide certificates free of charge. The current practice of charging members for the certificates which are returned to the head office should be reviewed. As the situation stands, a member pays a financial penalty each time a certificate is returned, because further certificates may have to be purchased. A higher response rate for the certificates could be achieved if the certificates were free. The additional cost to Sold Secure could then be recovered by a small increase in the membership fee, equal to the cost of the average number of forms returned per member.

Improving the security device database

- Create data validation rules. One of the potential weaknesses of the database as it currently stands is that any text can be entered into any of the fields. This creates the possibility of spelling mistakes and wrongly entered data. This problem could be easily rectified by writing validation rules into the database so that spellings which are not recognised are not accepted at the point of entry.
- Use codes instead of free text. Another way to overcome the problem of misspellings in the database would be to use numbers in place of commonly used terms. For example, 1 could be used whenever a Ford is to be entered in the make field, 2 for Vauxhall and so on, with each make having its own unique number. It is recognised that this could be difficult with some fields (like vehicle model) where the different possibilities seem almost infinite.

Codes could be used particularly effectively with the security device field. Here, the whole range of possible devices entered on to the database are known and the number of variations limited. In this case, the security devices on the list of recognised products could be numbered. For example, the PBS Pedal Lock could be given the code 1, Rimlock Mk IV given 2 and so on. This practice could even be taken a step further by gaining the assistance of security device manufacturers to place a Sold Secure code on the packaging for the device. On completing the certificate for a security device, a member could then just insert the code for the product on the certificate.

- Create an extra column for vehicle model types. The data which could be extracted from the database would be further improved if an extra field was included to provide more information about the vehicle model. This could include details on the body type (saloon, hatchback, estate etc.) or on the vehicle's particular marque (GTI, XR3, L etc.). The result of this would be a more refined database.
- Conduct annual checks with PNC. The success of Sold Secure as a crime prevention initiative has been evaluated by comparing the Sold Secure data with the Police National Computer stolen vehicle file. Each individual vehicle on the Sold Secure database was checked with PNC to see if it had been stolen. This provides one measure of Sold Secure's performance, which should be undertaken on at least an annual basis.

  It is recognised, however, that to undertake this process manually would be a time consuming and laborious task. This process should therefore be automated by obtaining a database / data processing package which can conduct a batch process to check the data for matches between the Sold Secure and PNC vehicles. In conducting the work for this paper, three hours programming work and 30 hours computer processing time was required. This same process would have taken approximately five staff days to conduct manually.

Producing output from the database

- Producing regular management reports. Effective monitoring requires regular analysis of the information available in order to keep management informed of the general trends in the work conducted by Sold Secure. Detailed management reports of the data on the security device database should therefore be produced on at least a six monthly and, preferably, on a three monthly basis.
- Providing feedback to Sold Secure members. One method of ensuring Sold Secure members maintain an interest in the scheme would be to provide them with regular information on how the scheme is working. One approach would be to provide each member with information on how many devices and of what type

they are selling. This could also help to improve the response rate, especially if members believe they are selling more devices than their statistics tell them.

The suggestions made here are fairly minor and should be viewed as fine tuning, rather than as extensive changes to the scheme. Sold Secure is a scheme which promises to be effective in reducing the risk of vehicle crime. However, it is important that the scheme continues to monitor its activity so that it can measure its effectiveness more reliably in future years.

Appendix A: Membership status of each police force in England and Wales

Force	Status
Avon & Somerset	Force live
Bedfordshire	Dealer presentation
Cambridgeshire	Police presentation
Cheshire	Force live
City of London	No interest shown
Cleveland	Police presentation
Cumbria	Force live
Derbyshire	Force live
Devon and Cornwall	Force live
Dorset	Force live
Durham	Dealer presentation
Dyfed Powys	Force live
Essex	Force live
Gloucestershire	Force live
Greater Manchester	Force live
Gwent	Force live
Hampshire	No interest shown
Hertfordshire	No interest shown
Humberside	Training given
Kent	Dealer presentation
Lancashire	No interest shown
Leicestershire	Force live
Lincolnshire	Force live
Merseyside	Police presentation
Metropolitan	Force live
Norfolk	Dealer presentation
Northamptonshire	Dealer presentation
Northumbria	Force live
North Wales	Force live
North Yorkshire	No interest shown
Nottinghamshire	Force live
Scottish Forces	Police presentation
South Wales	Force live
South Yorkshire	Force live
Staffordshire	Force live
Suffolk	Force live
Surrey	Force live
Sussex	No interest shown

Force	Status
Thames Valley	No interest shown
Warwickshire	Police presentation
West Mercia	Police presentation
West Midlands	Force live
West Yorkshire	No interest shown
Wiltshire	Force live
Royal Ulster Constabulary	Force live

Appendix B: Example of a 'Certificate of Installation'

CERTIFICATE OF INSTALLATION
(PLEASE KEEP THIS SAFE)

034589

DATE: SUPPLIERS REF:

CUSTOMER NAME:

VEHICLE No:

MODEL:

DEVICE PROVIDED: FITTED - YES/NO

	MAKE	MODEL	SERIAL No:
1.			
2.			

ENDORSEMENT:

I CERTIFY THAT THE ABOVE DEVICE(s) WAS/WERE INSTALLED IN ACCORDANCE WITH P.A.C.T. (NORTHUMBRIA) SPECIFICATION.

COMMENTS:

MEMBERSHIP No. ..... SIGNATURE .....

DEALER STAMP

WHITE COPY - CUSTOMER YELLOW COPY - EVALUATION PINK COPY - RETAINED FOR COMPANY RECORDS

Appendix C: Distribution of security devices fitted

Security Device	Number	Percent	Security Device	Number	Percent
Mul-t-Lock	1249	22.9	Foxguard F15	22	0.4
Foxguard V Max 2	463	8.5	Sigma SG10	18	0.3
Foxguard F14 E/P	377	6.9	Linwood PT 202	12	0.2
Autojack 202	283	5.2	Immobiliser Compact Plus	12	0.2
Guardsman 2000	253	4.6	Sigma SG20	11	0.2
H & P Matrix II	243	4.5	Conlog Scimitar XPE	10	0.2
Compact 2	198	3.6	Texalarm AV 2155	9	0.2
Foxguard JR 50	197	3.6	Texton TXT 155	9	0.2
Missing/Unknown	192	3.5	Foxguard F20	9	0.2
Autojack 101E	170	3.1	Abus Hexagonal Chain	7	0.1
Active 8 JP 12	159	2.9	Serpi Star MK 125	7	0.1
H & P Matrix III	155	2.8	Foxguard T34	7	0.1
Viking 604	132	2.4	Laserline 948	7	0.1
Foxguard F1 11	115	2.1	Rimlock MK IV	6	0.1
Immobiliser Compact	92	1.7	Foxguard F18	6	0.1
Piranha SCM 18 RND	87	1.6	Immobiliser Compact 4	5	0.1
Foxguard JR 60	87	1.6	Autostop JP II	5	0.1
Barrier Deadlock	84	1.5	Foxguard T36	3	0.1
Foxguard V Max 1	83	1.5	Linwood PT 303	2	0.0
Laserline 992T	68	1.2	Foxguard G14 EP	2	0.0
Foxguard T38 S2 E/P	64	1.2	Laserline 968	2	0.0
Piranha A101 FE	58	1.1	Laserline 994	2	0.0
H & P Vantage ATS	54	1.0	Laserline 995	2	0.0
Vecta Managusta	45	0.8	Laserline 996	2	0.0
TWOC Stop	42	0.8	Revtech Hublock	1	0.0
Low Loc	41	0.8	Delta Autonix DA 280	1	0.0
Autojack 424	39	0.7	Delta Autonix DA 180	1	0.0
Waso XPI	39	0.7	Waso Untouchable	1	0.0
Piranha SCM 16 RND	36	0.7	Killjoy Gold	1	0.0
Autojack 404	30	0.6	Piranha A201 E	1	0.0
Sigma SG3	29	0.5	Honda Pro Line 2	1	0.0
Pedalock Disklok	28	0.5	Foxguard F814	1	0.0
Meta M33	28	0.5	Foxguard H2M	1	0.0
Texton TXT 150	24	0.4	Foxguard V Max 3	1	0.0
Maystar S400	23	0.4	Total	5454	100.0

Appendix D: Distribution of vehicle makes with security devices fitted

Vehicle Make	Number	Percent	Vehicle Make	Number	Percent
Vauxhall	1788	32.8	Mazda	13	0.3
Ford	1387	25.4	Jaguar	12	0.2
Rover	268	4.9	Kia	10	0.2
Volkswagen	252	4.6	Proton	10	0.2
Peugeot	138	2.5	Range Rover	10	0.2
BMW	129	2.4	Bedford	9	0.2
Renault	128	2.3	Isuzu	9	0.2
Austin	113	2.1	Diahatsu	7	0.2
Toyota	112	2.1	Subaru	7	0.1
Honda	108	2.0	Lancia	6	0.1
Nissan	90	1.7	Reliant	6	0.1
Citroen	86	1.6	Seat	6	0.1
Land Rover	69	1.3	Leyland Daf	5	0.1
Volvo	63	1.2	Asia	4	0.1
Audi	55	1.0	Opel	4	0.1
British Leyland	54	1.0	Triumph	4	0.1
Fiat	47	0.9	Ferarri	3	0.1
Mitsubishi	46	0.8	Talbot	3	0.1
Hyundai	41	0.8	Freight Rover	2	0.1
Mercedes	37	0.7	Austin Rover	2	0.0
Porsche	29	0.6	Lotus	2	0.0
Suzuki	25	0.5	Daimler	1	0.0
Alfa	21	0.5	Jeep	1	0.0
M.G	19	0.4	Rolls Royce	1	0.0
LDV	17	0.3	Bentley	1	0.0
Saab	14	0.3	Total	5454	100.0

Appendix E: Distribution of security devices fitted to "top 20" vehicles

Vauxhall Astra

13.9%	Mul-t-lock
11.6%	Autojack 202
10.6%	Foxguard F14
8.6%	Foxguard V Max 2
6.6%	Compact 2
6.1%	Foxguard JR50
4.9%	H&P Matrix II
4.7%	Foxguard JR60
3.7%	Viking 6
3.5%	Autojack 101E
3.4%	Guardsman 2000
3.2%	Active 8
2.7%	Immobiliser Comp.
2.5%	Foxguard T38
1.8%	Foxguard F1 11
1.7%	Barrier Deadlock
1.5%	Foxguard V Max 1
9.0%	Other

Ford Fiesta

23.2%	Mul-t-lock
13.0%	Foxguard JR50
6.6%	Immobiliser comp.
6.4%	Foxguard V Max 2
6.1%	Compact 2
4.6%	H&P Matrix II
4.1%	Autojack 101E
3.9%	H&P Matrix III
3.7%	Foxguard JR60
2.7%	Autojack 202
2.4%	Guardsman 2000
2.4%	Active 8
2.4%	Foxguard F14
1.5%	Autojack 424
1.5%	Piranha A101FE
1.2%	Waso XPI
1.0%	Foxguard F1 11
17.4%	Other

Vauxhall Cavalier

16.8%	Mul-t-lock
11.9%	Autojack 202
10.2%	Foxguard F14
7.7%	Foxguard V Max 2
5.5%	Compact 2
4.5%	Foxguard JR50
4.3%	H&P Matrix II
4.1%	Guardsman 2000
4.1%	Autojack 101E
3.4%	Viking 6
3.2%	Active 8
2.3%	Foxguard JR60
2.1%	Barrier Deadlock
2.1%	Piranha SCM 16
2.1%	Immobiliser Comp.
1.9%	Foxguard F1 11
1.9%	Foxguard T38
1.5%	Foxguard V Max 1
10.4%	Other

Vauxhall Corsa

16.6%	Autojack 202
16.1%	Foxguard V Max 2
10.6%	Foxguard F14
10.1%	Mul-t-lock
7.8%	Active 8
4.8%	H&P Matrix II
4.5%	Foxguard JR50
4.5%	Guardsman 2000
3.3%	Foxguard JR60
3.0%	Autojack 101E
2.8%	Barrier Deadlock
2.5%	Viking 6
2.0%	Compact 2
1.8%	Foxguard V Max 1
1.8%	Immobiliser Comp.
1.3%	Autojack 404
1.0%	Foxguard F1 11
5.5%	Other

Ford Escort

30.6% Mul-t-lock
5.4% Autojack 101E
5.4% Compact 2
4.8% Guardsman 2000
4.5% Foxguard V Max 2
4.5% Foxguard JR50
3.9% H&P Matrix II
3.6% Barrier Deadlock
3.3% Autojack 424
3.0% Foxguard F14
2.4% Piranha SCM 18
2.4% Foxguard F1 11
2.4% Foxguard V Max 1
2.1% H&P Matrix III
2.1% Autojack 202
1.8% Active 8
1.5% Laserline 992T
1.2% Waso XPI
1.2% Piranha A101FE
1.2% Immobiliser Comp.
1.2% Foxguard JR60
11.5% Other

Rover 200 series

63.1% Mul-t-lock
3.8% Barrier Deadlock
3.8% Autojack 202
3.1% Guardsman 2000
2.8% Foxguard F14
2.3% Viking 604
1.5% H&P Matrix II
1.5% H&P Matrix III
1.5% Active 8
1.5% Autojack 101E
1.5% Foxguard V Max 2
1.5% Compact 2
12.1% Other

Ford Sierra

23.8% Mul-t-lock
11.9% Foxguard F14
7.1% Autojack 101E
4.8% Foxguard JR50
4.8% Compact 2
4.8% Foxguard V Max 2
3.2% Pedalok Disklok
3.2% Barrier Deadlock
2.4% Active 8
1.6% Foxguard F1 11
1.6% H&P Vantage
1.6% H&P Matrix II
1.6% Vecta Managusta
1.6% Laserline 992T
1.6% Piranha A101FE
1.6% Foxguard V Max 1
1.6% Texton TXT
1.6% Immobiliser Comp.
19.6% Other

Vauxhall Nova

23.9% Mul-t-lock
11.9% Foxguard V Max 2
9.4% Active 8
9.4% Autojack 202
6.0% Barrier Deadlock
5.1% Autojack 101E
4.3% Viking 6
3.4% Foxguard F14
2.6% H&P Matrix 2
2.6% Waso XPI
2.6% Foxguard JR50
1.7% Foxguard T38
1.7% Guardsman 2000
1.7% Piranha A101FE
13.7% Other

Ford Mondeo

38.1%	Mul-t-lock
20.6%	Compact 2
7.2%	H&P Matrix III
6.2%	H&P Matrix II
4.1%	Autojack 101E
3.1%	Autojack 424
3.1%	Foxguard JR50
2.1%	Immobiliser Comp.
2.1%	Foxguard JR60
2.1%	Barrier Deadlock
1.0%	Abus Hexagonal Chain
1.0%	Foxguard F14
1.0%	Foxguard F15
1.0%	Texalarm AV 2155
1.0%	Guardsman 2000
1.0%	Active 8
1.0%	Linwood PT 202
1.0%	Linwood 303
1.0%	Meta M33
1.0%	Foxguard V Max 1
1.0%	Viking 6
0.3%	Other

Ford Transit

40.6%	Mul-t-lock
14.5%	Foxguard V Max 2
11.5%	Low Loc
6.1%	TWOC stop
3.0%	Compact 2
2.4%	Guardsman 2000
2.4%	Autojack 202
2.4%	Foxguard JR50
1.8%	Autojack 404
1.8%	Matrix II
1.2%	Active 8
1.2%	Maystar S400
11.1%	Other

Volkswagen Golf

26.7%	Mul-t-lock
10.0%	Foxguard F14
8.9%	Piranha A101FE
6.7%	Foxguard V Max 2
5.0%	Foxguard F1 11
4.4%	Matrix II
3.9%	Matrix III
3.3%	Autojack 101E
3.3%	Foxguard V Max 1
2.2%	Foxguard T38
1.7%	Pedalock Disklok
1.1%	Abus hexagonal chain
1.1%	Piranha SCM 18
1.1%	Sigma SG
1.1%	H&P Vantage
1.1%	Vecta Managusta
1.1%	Active 8
1.1%	Autojack 202
1.1%	Maystar S400
1.1%	Laserline
1.1%	Serpi Star
1.1%	Immobiliser comp.
1.1%	Compact 2
1.1%	Laserline 948
1.1%	Viking 6

Austin Rover Metro

44.6%	Mul-t-lock
19.2%	Foxguard V Max 2
3.8%	Viking 6
3.8%	Guardsman 2000
3.8%	Autojack 202
3.1%	Foxguard F14
2.3%	Barrier Deadlock
2.3%	Compact 2
2.2%	Active 8
1.5%	Autojack 101E
1.5%	Immobiliser Comp.
1.5%	Foxguard JR50
10.4%	Other

Ford Orion

27.5% Mul-t-lock
10.0% Foxguard V Max 2
7.5% Foxguard JR50
6.3% Autojack 101E
5.0% Foxguard F14
5.0% Active 8
2.5% H&P Matrix II
2.5% H&P Matrix III
2.5% Piranha A101
2.5% Foxguard V Max 1
2.5% Viking 6
1.5% Immobiliser Comp. 1
1.5% Immobiliser Comp. 2
1.5% Immobiliser Comp. 3
1.3% Barrier Deadlock
1.3% Pedalock Disklok
1.3% Piranha SCM 18
1.3% Piranha SCM 16
1.3% Sigma 10
1.3% Foxguard F1 11
1.3% Guardsman 2000
1.3% Vecta Managusta
1.3% Autojack 202
1.3% Waso XPI
1.3% Linwood PT 202
1.3% Texton TXT 150
1.3% Foxguard JR60

BMW 300 series

17.8% H&P Matrix II
13.7% Foxguard F14
13.7% H&P Matrix III
5.5% Mul-t-lock
5.5% Piranha SCM 18
5.5% Foxguard V Max 2
2.7% H&P Vantage
2.7% Laserline 992T
2.7% Guardsman 2000
2.7% Compact 2
1.4% Piranha SCM 16
1.4% Sigma SG 10
1.4% Foxguard T38
1.4% Vecta Managusta
1.4% Active 8
1.4% Autojack 101E
1.4% Maystar S400
1.4% Foxguard V Max 1
1.4% Honda Proline
1.4% Foxguard F15

Peugeot 205

13.1%	Foxguard V Max 2
11.5%	Mul-t-lock
8.2%	Autojack 101E
6.6%	Piranha SCM 18
4.9%	Autojack 202
4.9%	Autojack 404
4.9%	H&P Matrix II
4.9%	Foxguard F14
3.3%	H&P Vantage
3.3%	Guardsman 2000
3.3%	Active 8
3.3%	Maystar
3.3%	Laserline 992T
3.3%	Foxguard V Max 1
3.3%	Viking 6
1.6%	Barrier Deadlock
1.6%	Pedalock Disklok
1.6%	Sigma 20
1.6%	Foxguard F1 11
1.6%	H&P Matrix II
1.6%	Waso XPI
1.6%	Piranha A101

Honda Civic

32.2%	Laserline 992T
10.2%	H&P Matrix III
10.2%	Foxguard F15
6.8%	Foxguard F1 11
5.1%	Mul-t-lock
3.4%	Piranha SCM 18
2.2%	H&P Matrix II
1.7%	Guardsman 2000
1.7%	Linwood 202
1.7%	Foxguard V Max 2
1.7%	Foxguard F20
1.7%	Viking 6

Land Rover Discovery

32.1%	Mul-t-lock
28.3%	Low Loc
7.5%	Foxguard F1 11
7.5%	H&P Matrix II
7.5%	Viking 6
1.9%	TWOC stop
1.9%	Foxguard F14
1.9%	H&P Matrix III
1.9%	Guardsman 2000
1.9%	Autojack 101E
1.9%	Autojack 424
1.9%	Waso XPI
1.9%	Foxguard V Max 2

Vauxhall Calibra

24.4%	Mul-t-lock
7.3%	Foxguard V Max 2
7.3%	Foxguard JR50
4.9%	H&P Matrix II
4.9%	H&P Matrix III
4.9%	Barrier Deadlock
4.9%	Vecta Managusta
4.9%	Active 8
4.9%	Foxguard V Max 1
2.4%	Piranha SCM 18
2.4%	Foxguard F1 11
2.4%	Foxguard F14
2.4%	H&P Vantage
2.4%	Guardsman 2000
2.4%	Autojack 202
2.4%	Waso XPI
2.4%	Maystar S400
2.4%	Meta M33
2.4%	Piranha A101
2.4%	Viking 6
5.2%	Other

Ford Granada

32.5%	Mul-t-lock
7.5%	Piranha SCM 18
5.0%	Pedalock Disklok
5.0%	Foxguard JR50
5.0%	Foxguard F14
5.0%	H&P Matrix II
5.0%	H&P Matrix III
5.0%	Guardsman 2000
5.0%	Active 8
5.0%	Meta M33
2.5%	H&P Vantage
2.5%	Autojack A101
2.5%	Autojack 404
2.5%	Waso Untouchable
2.5%	Maystar S400
2.5%	Laserline 992T
2.5%	Foxguard V Max 1
2.5%	Other

Renault Clio

57.9%	Mul-t-lock
7.9%	Foxguard V Max 2
5.3%	Foxguard F14
2.6%	Piranha SCM 18
2.6%	Foxguard F1 11
2.6%	H&P Vantage
2.6%	H&P Matrix III
2.6%	Guardsman 2000
2.6%	Active 8
2.6%	Piranha A101
2.6%	Autostop JP11
2.6%	Compact 2
7.5%	Other

RECENT POLICE RESEARCH GROUP CRIME DETECTION AND PREVENTION SERIES PAPERS:

55. **Witness Intimidation: Strategies for prevention.** Warwick Maynard 1994.

56. **Preventing Vandalism: What Works?** Mary Barker and Cressida Bridgeman. 1994

57. **Thinking About Crime Prevention Performance Indicators.** Nick Tilley. 1995.

58. **Biting Back: Tackling Repeat Burglary and Car Crime:** David Anderson, Sylvia Chenery and Ken Pease. 1995.

59. **Combating Burglary: An Evaluation of Three Strategies.** Janet Stockdale and Peter Gresham. 1995.

60. **Policing and Neighbourhood Watch: Strategic Issues.** Gloria Laycock and Nick Tilley. 1995.

61. **Investigating, seizing and confiscating the proceeds of crime.** Michael Levi and Lisa Osofsky. 1995

62. **Performance Indicators for Local Anti-Drugs Strategies – A Preliminary Analysis.** Mike Chatterton, Christine Godfrey, Gwendy Gibson, Mark Gilman, Matthew Sutton and Alan Wright. 1995.

63. **Preventing School Bullying.** John Pitts and Philip Smith. 1995.

64. **Intelligence, Surveillance and Informants: Integrated approaches.** Mike Maguire and Timothy John. 1995.

65. **Local Crime Analysis.** Tim Read and Dick Oldfield. 1995.

66. **The Nature and Extent of Heavy Goods Vehicle Theft.** Rick Brown. 1995.

67. **Reducing Repeat Racial Victimisation on an East London Estate.** Alice Simpson and Coretta Phillips. 1995.

68. **Closed circuit television in town centres: Three case studies.** Ben Brown. 1995

69. **Disruption the distribution of stolen electrical goods.** Egmont Kock, Tim Kemp and Bernard Rix. 1995.

70. **Crime Risk Management. Making it work.** Cressida Bridgeman. 1996.