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1999 to 2009: Re-evaluating Secured by Design Ten Years On

Secured by Design (SBD) is an award scheme which aims to encourage housing developers to design out crime at the planning stage. The scheme is managed by the Association of Chief Police Officers Crime Reduction Initiatives Limited (ACPO CPI Ltd.) whilst the day-to-day delivery of the scheme is conducted by Architectural Liaison Officers (ALOs) or Crime Prevention Design Advisors (CPDAs) working for individual police forces throughout the United Kingdom. The scheme sets standards for compliance which developments must meet to be awarded SBD status. This paper presents the findings of research conducted over a ten-year period (1999 to 2009) into the effectiveness of the SBD scheme as a crime reduction measure. Utilising a variety of methods, the research aims to establish whether residents living within SBD developments experience less crime and fear of crime than their non-SBD counterparts. Whether SBD developments show less visual signs of crime and disorder than their non-SBD counterparts, and finally, whether properties built to the SBD standard are able to sustain any crime reduction benefits over a ten-year period.

INTRODUCTION

This paper presents the findings of a re-evaluation of Secured by Design (SBD) housing within West Yorkshire, England that was conducted between January and March 2009. The research builds upon an original evaluation of SBD housing within West Yorkshire that was conducted in 1999 (Author, 2000).

The rationale for conducting the re-evaluation was threefold. The first was that in June 2008, Quaver Lane in Bradford became the 10,000th SBD property to be built in West Yorkshire, making West Yorkshire the county with the largest number of SBD properties outside of London. The second rationale was that 2009 marked the ten-year anniversary of the original evaluation of SBD in West Yorkshire, which had received considerable attention because of its encouraging findings. The final and most significant rationale was based upon the need to update the findings of the original evaluation which had utilised a sample of developments built prior to the introduction of key changes to the SBD standard.

Updating the Sample

The review of literature outlines the findings of the original evaluation in some detail, however it is appropriate at this stage to explain the basics of the methodology previously used. The analysis within the original evaluation included three major strands. The first looked at police recorded crime and compared 25 matched pairs (25 SBD and 25 non-SBD developments) to

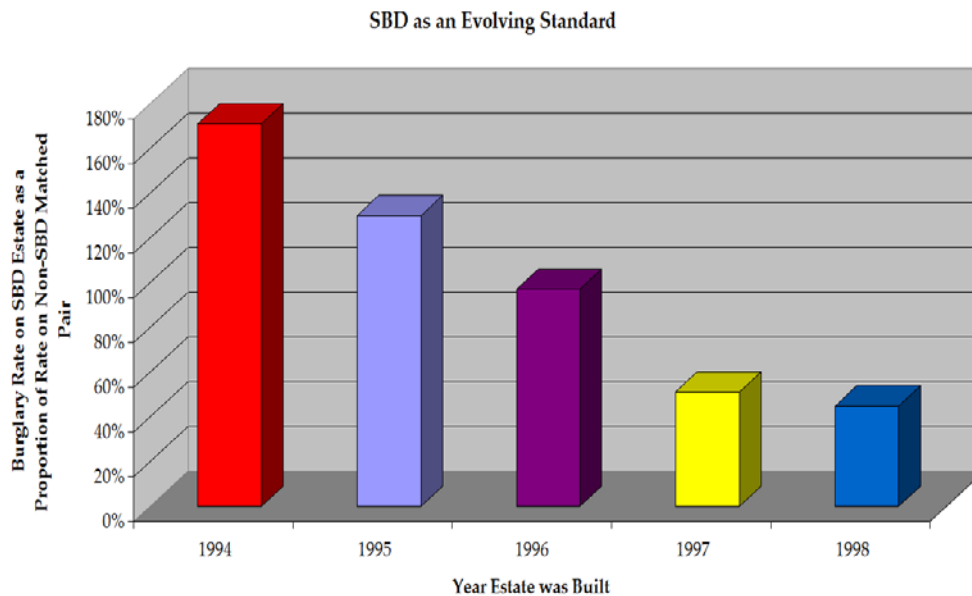
establish whether there was a significant difference between the crime rates within these matched pairs. The second method utilised the same sample of 25 SBD and 25 non-SBD developments, but instead of looking at police recorded crime, this utilised a survey of residents who were personally asked about the experiences, fears and perceptions of crime and disorder within their area. The final strand looked at whether SBD estates built more recently were performing better than older estates – was the standard improving?

Although the findings were extremely positive, one of the major weaknesses of the study (as time has progressed) is that the sample of estates were all built between 1994 and 1998. The study began in 1999 and for developments to be included within the sample, residents had to have been living within the developments for at least one-year to ensure that there was sufficient crime data to validate the analysis. Therefore, developments built post 1998 were excluded from the sample. Unfortunately, many changes in the SBD standard were introduced in 1999 and thus not accounted for within the evaluation. These include the standards BS7950 for windows and PAS 24 for doors. This meant that even though the findings were extremely positive, they were reporting on the performance of the SBD standard before it was improved.

SBD as an Evolving Standard

As well as the changes to the SBD standard, the findings of the original evaluation also revealed an interesting pattern which suggested that the findings of the evaluation may not be reflecting an accurate picture of the performance of SBD ten years on. In an attempt to establish whether the performance of SBD was improving, the original evaluation compared the burglary rates of SBD estates built in 1994 through to 1998 with their non-SBD matched pair. The results revealed a year on year improvement in the performance of SBD. The mean burglary rate for SBD estates built in 1994 was 171% of the burglary rate for non-SBD estates built in 1994. However, SBD estates built in 1998 were experiencing less than half of the burglary of their non-SBD counterparts – a vast improvement. Figure one (below) displays these findings.

Figure 1: Burglary Rate on SBD Estates as a Proportion of Non-SBD Matched Pairs.



REVIEW OF THE LITERATURE

The Secured by Design Scheme

SBD is an award scheme, managed by the Association of Chief Police Officers Crime Prevention Initiatives Ltd. (ACPO CPI Ltd.), which aims to encourage the building industry to design out crime at the planning stage. SBD was devised in 1989 by police forces based within the South East of England, with the aim of countering the rise in household burglary (Pascoe and Topping, 1997). Although the scheme is owned and managed by ACPO CPI Ltd, it is run on a day-to-day basis by local police Architectural Liaison Officers (ALO) or Crime Prevention Design Advisors (CPDA) whose role it is to ensure that developments are designed and built to certain specifications.

Evaluating the Effectiveness of SBD

There have been four published evaluations of the effectiveness of the SBD scheme (Brown, 1999; Pascoe, 1999; Author, 2000, Teedon and Reid, 2009) each concluding that SBD confers a crime reduction advantage.

Using police recorded crime data, residents' surveys and focus groups with local residents, Pascoe (1999) found that both the residents' perceived levels of crime and the actual levels of crime had been reduced following modernisation to SBD standards on ten estates within the UK.

A second evaluation of Secured by Design Housing revealed positive results in terms of crime reduction and prevention. This evaluation was carried out

in Gwent, South Wales (Brown, 1999) and involved an analysis of police recorded crime data alongside structured interviews with police officers, housing association managers, architects and tenants. The results revealed that SBD properties experienced at least 40% less burglaries and vehicle related crime, and 25% less criminal damage than the non-SBD properties.

Teedon and Reid (2009) conducted an evaluation of SBD in Glasgow, Scotland. The results revealed that total housebreaking crime reduced by 61% following the introduction of SBD. This is compared to a reduction of just 17% in the comparison area.

Author (2000) revealed that for developments refurbished to the SBD standard, total crime fell by 55% relative to the pre-SBD period. For the analysis of new-build properties, the results revealed that the mean crime rate within the SBD sample was 0.70. This was compared to a non-SBD rate of 0.94. When excluding all crimes other than burglary in a dwelling, the results revealed that the mean burglary rate within the SBD sample was 0.17; this was compared to a rate of 0.29 within the non-SBD sample.

As well as evaluations of the SBD scheme as a whole, there has been an abundance of literature to show that the principles upon which SBD is based each work to reduce crime, disorder and the fear of crime. These include increasing **physical security** (Brown and Altman, 1983; Cromwell and Olson, 1991), **minimising access** (Brantingham and Brantingham, 1975, 1993, 2000; Brantingham *et al*, 1977; Brown and Altman, 1983; Newlands, 1983; Greenberg and Rohe, 1984; Cromwell and Olson, 1991; Bevis and Nutter, 1997; Mirlees-Black *et al*, 1998), **increasing surveillance** (Repetto, 1974; Brown and Altman, 1983; Cromwell and Olson, 1991; Brown and Bentley, 1993) and **managing and maintaining developments** (Zimbardo, 1970; Finnie, 1973; Wilson and Kelling, 1982 and Skogan, 1990).

METHODOLOGY

Analysis of Police Recorded Crime

SBD Versus West Yorkshire

The analysis of police recorded crime data included three separate samples. The first sample compared crime rates on the 16 SBD developments built in 2006/2007 (342 properties) with crime rates for the whole of West Yorkshire. The rationale for selecting the 16 SBD developments built in this period was that these were the most recent SBD developments built within West Yorkshire- still allowing one year's crime data (post residents moving in) for the analysis. The analysis included the crime categories: Assault, criminal

damage, theft, burglary other, theft of a vehicle, theft from vehicle, burglary dwelling and 'other' and the period of analysis was August 2007 to July 2008.

SBD against Non-SBD: Same Street Analysis

The second level of analysis included SBD and non-SBD properties which were located on the same street. Where this occurred, this was often a large non-SBD development that included a small proportion of SBD properties (it is often a requirement of planning consent to include a set proportion of social housing, and therefore SBD, properties). In other cases, the SBD section of the sample was a block of apartments located on (or just off) a street of non-SBD properties. Eleven streets were included within this analysis - this included 455 properties (101 SBD and 354 non-SBD). Crime rates were analysed for all crime categories for the SBD and non-SBD sample. The time period of analysis was again August 2007 to July 2008.

SBD Versus Non-SBD: Matched Pairs Analysis

The third level of analysis included a comparison of crime rates on 16 SBD developments as compared to 16 non-SBD developments which were selected as matched pairs. The 16 SBD developments were the SBD developments built in West Yorkshire during 2006/2007. The 16 non-SBD estates were selected based purely upon their location, that is that they were the nearest non-SBD development to each of the 16 SBD developments. Again, all crime categories were analysed for the time period August 2007 to July 2008.

Assessing the Sustainability of Crime Reduction Impacts

In an attempt to establish the extent to which developments analysed within the original evaluation had improved, deteriorated or remained the same over the ten-year period 1999 to 2009, two of the original 25 matched pairs were randomly selected and crime rates were compared between 1999 and 2009.

Analysis of Self-Reported Crime

As a means of gathering data on residents' experiences and perceptions of crime and disorder within their area, all residents living at the 16 SBD and 16 non-SBD matched pairs (342 SBD and 253 non-SBD residents) were invited to complete a survey (available from the authors). The survey was based upon both the British Crime Survey and the survey utilised within the 1999 evaluation to ensure that comparisons could be made. 68 residents returned the survey, giving a response rate of 11%.

Visual Audits

Visual audits took place at the 16 SBD and 16 non-SBD matched pair developments and were designed to measure visual signs of crime and disorder (the schedule is available from the authors). Scores were assigned on

the basis of low being a positive and high being a negative, for example, vandalism to buildings would be scored as zero for no evidence of vandalism and five as a high level of vandalism.

KEY FINDINGS

Police Recorded Crime Data

SBD Versus West Yorkshire

As was highlighted within the methodology section, the first section of the analysis of police recorded crime data involved comparing crimes within the SBD sample (SBD properties built in 2006/2007) with crimes across West Yorkshire as a whole. A total of 19,701 domestic burglaries were reported in West Yorkshire between August 2007 and July 2008, however, only two burglary dwellings were committed against the SBD sample (SBD dwellings built in 2006/2007) within this time period. This represents a rate of 5.8 burglaries per 1000 properties within the SBD sample and 22.7 (per 1000 properties) within West Yorkshire as a whole. The difference between burglary rates within the SBD and non-SBD samples were found to be statistically significant (Wilcoxon Signed Ranks Test $p < 0.01$ one tailed test).

Same Street Analysis

The second strand of analysis looked at crime rates on streets/developments that contained both SBD and non-SBD properties. A total of 105 crimes were committed within the 'same street' sample between August 2007 and July 2008. Of these 105 offences, 93 were committed against non-SBD properties and 12 were committed against SBD properties. This equates to a rate of 262.7 crimes per 1000 households within the non-SBD sample and 118.8 crimes per 1000 households within the SBD sample. This difference in rates was statistically significant (Wilcoxon Signed Ranks Test $p < 0.05$). No burglary dwellings were recorded against the SBD properties within this sample, however, five were recorded against the non-SBD sample. With the exception of criminal damage, rates for all crime categories analysed were higher within the non-SBD sample.

Table 1: Crime Categories recorded within the 'Same Street' sample (August 2007-July 2008)

Crime Type	Non SBD		SBD		Significant Difference
	No.	Rate	No.	Rate	
Assault	24	67.8	0	0.00	p<0.05
Criminal Damage	12	33.9	4	39.6	ns
Burglary Other	7	19.8	2	19.8	ns
Burglary Dwelling	5	14.1	0	0.00	p<0.05
Theft from vehicle	7	19.8	0	0.00	p<0.05
Theft of vehicle + twoc	3	8.5	0	0.00	ns
Other	35	93.2	6	59.4	-
Total	93	262.7	12	118.8	p<0.05

Matched Pairs Analysis

The final strand of the analysis of police recoded crime involved creating 16 matched pairs of SBD and non-SBD developments (these were matched based on SBD status and location). All crime categories were analysed for the time period August 2007 to July 2008. A total of 44 crimes were committed within the SBD sample during the time period analysed, this produced a rate of 128.7 per 1000 properties. This compares to 42 crimes committed on non-SBD developments, a higher rate of 166.0. Although these figures are positive for SBD, further analysis revealed that the difference between the crime rates on the SBD and non-SBD sample were not statistically significant (the distribution of crime within the SBD and non-SBD samples was not normally distributed - Shapiro-Wilk test for normality of distribution = 0.01; Wilcoxon signed ranks test = 0.570).

Four offences of burglary dwelling were reported in the sample properties during the analysis period, two were located on the SBD streets and two on the non-SBD streets. The rate of burglary dwelling across the whole SBD sample was 5.9 per 1000 households. In the non-SBD sample the burglary dwelling rate was higher at 7.9 per 1000 households. Again, this is a positive finding, however, the difference between rates was not statistically significant (Wilcoxon signed ranks test =1.000).

Table 2: Number and Rate of crimes Recorded in the Matched Pairs sample (August 2007-July 2008)

Crime Type	Non SBD		SBD		Significant Difference
	No.	Rate (per 1000 properties)	No.	Rate (per 1000 properties)	
Assault	7	27.7	17.0	49.7	ns
Criminal Damage	12	47.5	8.0	23.4	ns
Burglary Other	1	4.0	2.0	5.9	ns
Burglary Dwelling	2	7.9	2.0	5.9	ns
Theft from vehicle	1	4.0	2.0	5.9	ns
Theft of vehicle + twoc	0	0.0	3.0	8.8	ns
Other	19	75.1	9.0	26.3	ns
Total	42	166.0	44.0	128.7	ns

These findings are largely positive for SBD and reveal that key offences such as burglary dwelling, as well as total crimes are lower within the SBD sample. When comparing these findings with those of the original 1999 evaluation, the results are also extremely positive. In this 2009 study, the burglary dwelling rate per 1000 dwellings for the one-year period 2006/2007 was 5.9 for the SBD sample and 7.9 for the non-SBD sample. However, for the one-year period April 1999 to March 2000 the burglary rate for the SBD sample was 22.7 and for the non-SBD sample was 38.3. The figures for total crime are also positive. The 1999 evaluation showed that for the one-year period April 1999 to March 2000, the SBD sample experienced 187.9 offences per 1000 dwellings, compared to the 203.1 experienced by the non-SBD sample. In the 2009 study, the rate of total crime for the SBD sample was just 128.7, with 166 per 1000 dwellings for the non-SBD sample.

Assessing the Sustainability of Crime Reduction Impacts

In an attempt to assess the sustainability of crime reduction impacts, the analysis also included a comparison of crime rates on two randomly selected matched pairs that had been included in the original 1999 evaluation. This involved comparing the crime rates for the one-year period April 1999 to March 2000 with the one-year period August 2007 to July 2008.

Table 3: Crime Rates on Matched Pair One

Development	Number of Properties	Number of Crimes 1999/2000	Crime Rate per 1000 in 1999/2000	Number of Crimes 2007/2008	Crime Rate in 2007/2008
SBD Street	14	1	71.43	1	71.43
Non-SBD Street	14	1	71.43	8	571.43

The analysis revealed that for matched pair one the crime rate for the SBD and non-SBD matched pair in 1999/2000 was 71.43 crimes per 1000 properties – just one crime on each development and an identical crime rate. Analysing the crime rates in 2007/2008 for the same matched pair revealed that although the crime rate on the SBD development had remained exactly the same – 71.43 crimes per 1000 properties (one crime), the crime rate on the matched pair had increased dramatically. For the 2007/2008 period there was one crime on the SBD development (a crime rate of 71.43 per 1000 properties), however, there were eight crimes on the non-SBD development, a crime rate of 571.43 per 1000 properties.

Table 4 displays the number and rate of crimes on matched pair two. The analysis revealed that the crime rate for the SBD development in 1999/2000 was 45.45 per 1000 properties – just one crime offence. On the non-SBD development, the crime rate was 178.57 per 1000 properties – with five crimes taking place within that one-year period. Analysing the crime rates in 2007/2008 for the same matched pair revealed that the crime rate on the SBD development did increase slightly, with three offences within the one-year period – a crime rate of 136.36 offences per 1000 properties. However, the crime rate on the non-SBD development also increased to six offences – a crime rate of 214.29.

Table 4: Crime Rates on Matched Pair Two

Development	Number of Properties	Number of Crimes 1999/2000	Crime Rate per 1000 in 1999/2000	Number of Crimes 2007/2008	Crime Rate per 1000 Properties in 2007/2008
SBD Street	22	1	45.45	3	136.36
Non-SBD Street	28	5	178.57	6	214.29

Self Reported Crime

In addition to the analysis of police recorded crime, the research also involved the analysis of self-recorded crime as measured by a residents' survey. The survey asked residents whether they had been a victim of certain crimes within the previous 12-month period, and if so, how many times. The results revealed that three per cent of SBD respondents (one) reported having been a victim of domestic burglary within the previous year. This is compared to six per cent of non-SBD respondents (two). The proportion of SBD residents falling victim to this offence remained the same (three per cent) between 1999 and 2009. Table six (below) compares the responses between 1999 and 2009.

Table 5: Summary of Experiences of Crime

Crime Category	Percentage of SBD respondents - 2009	Percentage of non-SBD respondents - 2009	Percentage of SBD respondents - 1999	Percentage of non-SBD respondents - 1999	Percentage of British Crime Survey Respondents (07/08)
Theft of Vehicle	3% (1)	6% (2)	5%	6%	0.6%
Theft from Vehicle	6% (2)	17% (6)	8%	6%	3.4%
Theft of Bicycle	3% (1)	6% (2)	10%	7%	1.6%
Burglary Dwelling	3% (1)	6% (2)	3%	8%	2.4%
Attempt Burglary Dwelling	3% (1)	14% (5)	-	-	1%
Theft of Property from Outside Dwelling	9% (3)	17% (6)	16%	24%	-

Visual Audits

The final strand of analysis involved conducting visual audits on the 32 developments including within the matched pair analysis (16 SBD and 16 non-SBD). The total score (out of a possible 2240) for the SBD sample was 317; the total score for the non-SBD development was 388. When analysing the

scores for each matched pair (as opposed to the sample as a whole) the results revealed that, in general, the best performing estates were SBD developments, and the worst performing estates were non-SBD developments. Of the 16 matched pairs, three pairs revealed SBD to be performing worse than the non-SBD counterpart, one matched pair showed that both the SBD and non-SBD developments scored the same, however, 12 of the 16 SBD to be performing better than the non-SBD matched pair.

Of the 32 developments analysed, the best performing five developments (i.e. those with the lowest scores) were all SBD. The worst performing five developments (i.e. those with the highest scores) were predominantly non-SBD (only one was SBD).

Figure 2: Two of the Best Performing SBD Estates (Visual Audit Results)



DISUCSSION AND CONCLUSIONS

This paper presents the findings of an evaluation of SBD housing within West Yorkshire. The study aims to replicate, where possible, the original evaluation of SBD conducted in West Yorkshire ten years ago (Author, 2000) and to establish whether SBD has improved, maintained its performance or reduced its effectiveness as a crime reduction measure.

When comparing the SBD sample (16 developments) with the rest of West Yorkshire, the results revealed positive findings. All crime categories were lower (as a rate per 1000 properties) than the non-SBD sample and with the exception of vehicle crime, these differences were all statistically significant.

The analysis of same street data – comparing SBD properties with non-SBD properties which form part of the same street or development (11 developments in total), again revealed positive findings. A total of 105 crimes were committed within the ‘same street’ sample between August 2007 and July 2008. Of these 105 offences, 93 were committed against non-SBD properties and 12 were committed against SBD properties. This equates to a rate of 262.7 crimes per 1000 households within the non-SBD sample and 118.8 crimes per 1000 households within the SBD sample. This difference in rates was statistically significant.

The evaluation also analysed crime data on 16 matched pairs – the 16 SBD developments built in 2006/07 and their non-SBD matched pair. The analysis revealed that a total of 44 crimes were committed within the SBD sample during the time period analysed, this produced a rate of 128.7 per 1000 properties. This compares to 42 crimes committed on non-SBD streets, a higher rate of 166.0. Rates of burglary dwelling offences were also lower within the SBD sample 5.9 per 1000 dwellings as compared to 7.9, as were criminal damage (23.4 against 47.5) and ‘other’ offences (26.3 against 75.1). Rates of assault, theft of and theft from vehicles were higher in the SBD sample.

The analysis of police recorded crime also included analysis of two randomly selected matched pairs taken from the original evaluation of SBD within West Yorkshire (1999) to establish whether SBD had improved its effectiveness as a crime reduction measure, whether it had maintained its performance, or whether its effectiveness had deteriorated. The results were extremely positive and revealed that for both matched pairs the SBD development was performing either the same or better than the non-SBD development for the two time periods 1999/2000 and 2007/2008.

In addition to the analysis of police recorded crime, the evaluation also conducted a survey of residents living on the 16 SBD developments as well as the 16 non-SBD matched pairs. Residents were asked about their experiences, fears and perceptions of crime and disorder. The results revealed that for all crime categories, the proportion of SBD respondents experiencing the crime was lower than the non-SBD sample.

Finally, visual audits were carried out at the 16 SBD and 16 non-SBD matched pairs to measure visual signs of disorder. When the scores for each sample of 16 SBD and 16 non-SBD developments were totalled (giving a possible score of 0-2240) the SBD sample scored lower than the non-SBD sample (317 as compared to 388), suggesting that there were less signs of visual disorder

within this sample. When comparing each of the 16 matched pairs, the results were also positive.

The original evaluation of SBD within West Yorkshire revealed positive findings, and many felt that there was little point re-assessing the effectiveness of SBD, given that the research had shown SBD to be effective. However, to be complacent about the merits of SBD, or any crime prevention measure, would be to ignore the evolving nature of crime and those who take part in it. As Ekblom (2002) suggests “Knowledge of what works becomes a wasting asset that needs constant replenishment” (p.38). To ensure that SBD continues to evolve faster than criminals’ abilities to overcome it, research with an improvement orientation is essential. The re-evaluation of SBD has shown that SBD has continued to reduce crime and the fear of crime - SBD developments have sustained their crime reduction benefits and continue to experience less crime than their non-SBD counterparts. Furthermore, the effectiveness of SBD developments built more recently has exceeded that shown in the original evaluation, with SBD developments outperforming their non-SBD counterparts in terms of crime reduction, visual signs of disorder and levels of fear amongst residents.

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