

EXPLORING THE ROLE OF PROBLEM-ORIENTED POLICING IN THE
BURGLARY DROP IN ENGLAND AND WALES

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“One day, in retrospect, the years of struggle will strike you as the most beautiful.”

Sigmund Freud

ABSTRACT

Problem-oriented policing (POP) is one of the various proactive policing strategies that have been developed since the 1970s. It has been claimed that POP has had a considerable effect in reducing crime (Weisburd et al., 2010). However, its role in the crime drop that has been experienced in England and Wales and across the world since the 1990s (Tseloni et al., 2010) is not yet known (Weisburd and Majmundar, 2018). Therefore, this thesis explores the role of POP in the burglary drop at the police force area (PFA) level in England and Wales between 1988 and 2007/08.

The theories that underpin both POP and this study are opportunity-related theories (rational choice and routine activity theories), social disorganisation theory, and the new public management concept. The empirical component of the study is divided into three phases, where each phase employs different methods (e.g. multilevel negative binomial regression) to analyse a rich array of data sources (e.g. the Crime Survey for England and Wales). The results of this thesis can be summarised as follows:

1. A number of police forces in England and Wales were consistently committed to POP over time.
2. There seemed to be a relationship between POP and the fall in burglaries and repeat burglaries in a number of POP-committed PFAs between 1995 and 2007/08.
3. Although POP-committed police forces experienced fewer burglaries in 2003/04, POP did not result in a statistically significant reduction in burglaries between 1995 and 2003/04.
4. Conversely, POP-committed police forces saw a statistically significantly higher number of burglaries in 1997.
5. Police forces with a higher number of police officers per 1000 residents experienced a statistically significant reduction in burglaries in 2003/04.

In light of the above findings, this thesis sheds new light on the crime drop and policing literature. Consequently, the findings inform the theoretical and practical aspects of POP that can be used by police and other crime prevention agencies to reduce burglary victimisation.

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CHAPTER 1

INTRODUCTION

1.1 Background

The history of American policing was divided into three eras by Kelling and Moore (1988): (1) the political era, (2) the reform era, and (3) the community problem-solving era (see also Reising, 2010). In the political era (the 1840s-the early 1900s), there were close ties between police and politicians, with the former supporting the latter during election periods. The reform era was a reaction to the political era when visible patrols, rapid responses to calls, and follow-up investigations were considered successful strategies to the control of crime. “It took hold during the 1930s, thrived during the 1950s and 1960s, began to erode during the late 1970s” (Kelling and Moore, 1988: 8). With the end of the political era, proactive policing strategies, which could be attributed to the principles suggested by Sir Robert Peel in London in 1829, started to emerge. These policing strategies include community policing, intelligence-led policing, hot spots policing and problem-oriented policing (POP). Indeed, Kirkby (1997: 3) speculated that “Perhaps the earliest recorded champion of problem-oriented policing was Robert Peel in 1829.”

The community problem-solving era began with Goldstein’s (1979) seminal work *Improving Policing: A Problem-Oriented Approach*. Herman Goldstein, an American professor of law and former adviser to the Chicago Police Department, further elaborated on his ideas in *Problem-Oriented Policing*, as published in 1990. POP mainly aims to enhance the crime prevention capacity of police forces by changing the organisational mindset from one of reactivity to proactivity. In practice, its intention is to eradicate the underlying conditions of recurring problems rather than targeting incidents on per incident basis. It is a scientific approach (Scott, 2000) which involves the following steps (Goldstein, 1990):

- identifying problems
- analysing problems
- the search for alternatives (developing tailor-made responses)
- reflections on implementation efforts.

Since its development, POP has been implemented by police forces not only in the US but in many countries worldwide, including the UK (Leigh et al., 1996; 1998; Clarke, 1997; Read and Tilley, 2000; Scott, 2000; Bullock et al., 2006; Eck and Weisburd, 2006; Boba and

Crank, 2008; Heaton, 2009a; Sidebottom and Tilley, 2010; Tilley, 2010; Weisburd et al., 2010; Tilley and Scott, 2012). By 2000, nearly all police forces purported to endorse POP in England and Wales (Read and Tilley, 2000). In addition, POP-related interventions were encouraged by the UK government (Newburn, 2008) through the funding of large-scale crime reduction programmes that applied a problem-oriented approach, such as the Safer Cities Programme (1988-1998) (Ekblom et al., 1996; Sutton, 1996; Hirschfield et al., 2001) and the Crime Reduction Programme (1999-2002) (Bullock et al., 2002; Hope et al., 2004; Millie and Hough, 2004; Homel et al., 2004; Hirschfield, 2007). Moreover, police forces in England and Wales submitted nearly 900 problem-oriented projects to the Tilley and Goldstein Award schemes, which are intended to spread the POP-related best practice, between 1997 and 2011 (<https://popcenter.asu.edu/>). Although these schemes are good examples of disseminating the best practice of POP, the Tilley Award scheme ultimately ceased due to financial issues in 2010. However, South Yorkshire Police received a £6.35 million Police Transformation Fund Award in 2017 and officially opened the Tilley Award for application on 7th September 2018 for the first time in eight years (South Yorkshire Police, 2018).

The question of course is whether the application of POP to that extent affected crime rates at the national- and police force area (PFA) levels in England and Wales over time. According to the ONS (2018), crime recorded by both the Crime Survey for England and Wales (CSEW) and police has been decreasing substantially in England and Wales since the 1990s. This reduction has been heralded as constituting the ‘crime drop’ phenomenon. Since crime first started to decline in the US, initial studies examining the cause of its decrease focussed on the US context. For instance, Blumstein and Wallman (2006) published a collection of US-based studies concentrating on violent crimes. However, it was observed that the crime drop was not confined to the US. Zimring (2007) compared crime trends in the US and Canada and found a concurrence between them (see also Ouimet, 2002). Tonry (2014) subsequently suggested that there had been an international crime drop, while Tseloni et al. (2010) went one step further and proposed that there might have been a global crime drop. Additionally, Farrell et al. (2014) critically summarised at least seventeen crime drop hypotheses and argued that the only reasonable hypothesis was the security hypothesis, which proposes that increased security of homes and vehicles decreased offender opportunities, and that crime therefore, fell. However, Farrell et al. (2014) did not conduct a comprehensive analysis as to whether POP played a role in the crime drop in England and

Wales and cited Eck and Maguire (2006) to eliminate the policing-related crime drop hypotheses in favour of the security hypothesis. However, Eck and Maguire (2006) did not actually criticise POP, which is the primary focus of the current study; indeed, they even concluded that POP is a plausible policing strategy.

Innovative and proactive policing strategies were cited as being amongst the more significant factors in the reduction of crime since the 1990s (Zimring, 2007; 2012; Weisburd et al., 2017). With regard to POP, narrative reviews (Skogan and Frydl, 2004; Weisburd and Eck, 2004) and systematic reviews (Mazerolle et al., 2006; Weisburd et al., 2010; Braga and Weisburd, 2012; Mazerolle et al., 2013; Gill et al., 2014; Braga et al., 2015; Telep and Weisburd, 2016) noted that POP reduces crime and disorder in certain circumstances and small areas (e.g. police beats). However, it is still not known whether and to what extent POP has influenced the crime drop at the PFA level in England and Wales since the 1990s, as per Weisburd and Majmundar's (2018: 15) suggestion that "there has not been study of whether a problem-oriented approach used widely in a city [or a PFA] would reduce overall crime in that jurisdiction". Therefore, it is clear that research on the role of POP in the crime drop at the PFA level in England and Wales - whilst controlling for other socio-demographic characteristics of households and PFAs and the number of police officers in a PFA - represent a vital contribution to the existing policing and crime drop literature.

1.2 Overarching aim and objectives of the study

The overarching aim of the current study is to explore whether there is a relationship between the implementation of POP and burglaries^{1 2} at the PFA level in England and Wales between 1988 and 2007/08³. The following objectives have been developed in order to accomplish the overarching aim of the study:

1. to critically review the existing literature concerning POP in order to identify the nature of POP and its role in crime reduction
2. to critically review the existing literature concerning the crime drop to determine the nature and validity of existing empirical studies

¹ This thesis is interested in burglary with entry only and excludes attempted burglaries (see Chapter 4, Section 4.8.1 for specific reasons). Therefore, 'burglary' refers to burglary with entry throughout the thesis. See Appendix 1.1 for the definition of burglary in England and Wales.

² Burglaries, mean number of burglaries, and mean number of burglary victimisations are used interchangeably throughout the thesis.

³ The reasons for choosing certain time periods (1988-2007/08 in Chapter 6; 1995-2003/04 in Chapter 7) to be analysed and the units of analysis can be found in Chapter 4, sections 4.9.2 and 4.9.3.

3. to identify highly POP-committed police forces
4. to identify policing strategies of police forces over time
5. to separately determine the level of commitment of police forces to POP in 1997 and 2003/04
6. to examine the extent and nature of changes to both CSEW and police-recorded burglaries at the PFA level in England and Wales between 1988 and 2007/08
7. to explore whether there was a relationship between POP and the drop in burglaries at the PFA level in England and Wales between 1988 and 2007/08
8. to examine whether the implementation of POP had a statistically significant effect on the mean number of burglary victimisations (also controlling for socio-demographic characteristics of households and PFAs) between 1995 and 2003/04
9. to critically reflect upon the relationship between POP and the drop in burglary in England and Wales in light of the empirical evidence presented within this thesis in order to make appropriate theory and policy recommendations.

The next step is to present the specific research questions that have guided the empirical component of the research.

1.3 Research questions

The overarching empirical research question of this study is:

Was there a relationship between the implementation of POP and the fall in both Crime Survey for England and Wales (CSEW) and police recorded burglaries in England and Wales between 1988 and 2007/08?

The empirical component of the study is divided into three phases (chapters 5-7) to address the overarching empirical research question. Each phase answers a number of sub-questions to address the overarching empirical research question of this original research.

Phase one (Chapter 5):

- Which police forces in England and Wales were highly committed to POP?⁴
- What were the policing strategies of police forces in England and Wales?
- What was the level of commitment to POP by police forces in England and Wales in 1997 and 2003/04?

⁴ Whilst highly POP-committed police forces are identified, 10 hypotheses are proposed to be tested in Phase two (see Appendix 5.1).

Phase two (Chapter 6):

Was the drop in both CSEW and police-recorded burglaries between 1988 and 2007/08 much greater in highly POP-committed PFAs compared to their most similar PFAs which were not committed to POP to the same extent?

Phase three (Chapter 7):

Did POP have a statistically significant effect on the mean number of burglary victimisations (also considering household composition and PFA characteristics) between 1995 and 2003/04?

1.4 Research methodology

As an overarching strategy, this thesis uses ‘triangulation’ (Denzin, 1989) because no single dataset, theory or method is sufficient to analyse the effect of POP on burglaries. There are five types of triangulation (see below), which this section briefly explains along with data sources, analysis strategies and units of analysis that were used in each phase (chapter) of the empirical research.

According to Denzin (1989), the various types of triangulation are as follows:

- Data triangulation
- Investigator triangulation
- Theory triangulation
- Methodological triangulation

Thurmond (2001) adds data-analysis triangulation to this list. Briefly, data triangulation has three subtypes (time, space and person) about which researchers can collect data (Denzin, 1989). Using more than one data analyst or interviewer in a study is considered investigator triangulation. A researcher can use multiple theories (related or otherwise) when testing a phenomenon, which is referred to as theory triangulation (see Chapter 2, Section 2.2 for details). Methodological triangulation is somewhat confusing as it can refer to either data collection methods or research designs (Thurmond, 2001); the combination of interviews and questionnaires in a study could be considered an example of such (Denzin, 1989). Finally, data-analysis triangulation is the combination of two or more methods of analysing data (Thurmond, 2001). Here, the researcher uses triangulation to increase their confidence in the results of this present thesis (Jick, 1979).

Each phase (chapter) of the empirical research addresses different research questions using different methods (see Chapter 4, Section 4.9 for details). Briefly, Chapter 5 argues “simply counting the number of agencies that claim to be using ... [a policing strategy] ... is a poor indicator of the diffusion of the innovation” (Eck and Maguire, 2006: 245). However, previous research regarding the level of commitment of (all) police forces in England and Wales to POP is limited. Therefore, Chapter 5 makes an original contribution to current knowledge through identifying and collating highly POP-committed police forces using two indicators of commitment to POP that were selected by the researcher (data triangulation):

- problem-oriented projects that were submitted to the Tilley and Goldstein Award schemes by police forces in England and Wales between 1997 and 2008 ⁵ (<https://popcenter.asu.edu/>)
- problem-oriented projects that were applied by police forces in England and Wales as part of the large-scale government-supported crime reduction programmes which applied a problem-oriented approach, such as
 - a. the Safer Cities Programme (1988-1998) (Tilley and Webb, 1994; Ekblom et al., 1996; Sutton, 1996; Hirschfield et al., 2001)
 - b. the Crime Reduction Programme (1999-2002) (Tilley et al., 1999)
 - i. the Reducing Burglary Initiative (1999-2002) (Hope et al., 2004; Millie and Hough, 2004; Homel et al., 2004; Hirschfield, 2007)
 - ii. the Targeted Policing Initiative (1999-2000) (Bullock et al., 2002; Bullock and Tilley, 2003).

Chapter 5 also reviews the POP-related literature to complement and triangulate the findings from the analysis of the two indicators (data triangulation). Further, Chapter 5 revisits previous studies on the policing strategies of police forces in England and Wales and revises their findings (data triangulation). Finally, Chapter 5 determines the level of commitment of all police forces to POP in 1997 and 2003/04, separately. The limitations of the data sources used in Phase one and the reasons for selecting them can be found in Chapter 4 (sections 4.3.1.3, 4.3.2.3 and 4.4).

Based on the findings from the first phase, Chapter 6 is merely an initial exploration of the extent to which POP has, or has not, played a role in the burglary drop at the PFA level in

⁵ The first problem-oriented project submission to the award schemes by a police force (the West Midlands) in England and Wales was in 1997. Since the last point in time to be analysed is 2007/08, the present study uses problem-oriented projects that were submitted to the award schemes between 1997 and 2008.

England and Wales between 1988 and 2007/08. In other words, the goal is to obtain an initial indication of whether there is any relationship between POP commitment and burglary levels without testing the statistical significance of any given POP effect. Chapter 6 uses both the CSEW and police-recorded crime data (PRCD) to calculate the mean number of burglaries in 42 PFAs⁶ (data triangulation). Thereafter, trends in both CSEW and PRCD burglaries in highly POP-committed PFAs are compared to the trends in their most similar PFAs⁷, but which were not committed to POP to the same extent, between 1988 and 2007/08.

In reality, there is a whole set of factors that may explain burglary trends. Taking account of these contextual factors, Chapter 7 goes one step further and analyses whether POP had a *statistically* significant effect on burglaries between 1995 and 2003/04. Chapter 7 starts by conducting a multilevel negative binomial regression (Cameron and Trivedi, 1986; Tseloni, 2006) which controls for characteristics of households (which are identified by drawing upon opportunity-related theories) and PFAs (which are identified by drawing upon social disorganisation theory) that correlate well with crime (theory triangulation, see Chapter 2, Section 2.2) and the number of police officers per 1000 residents in a PFA to examine whether POP had a statistically significant and independent effect on burglaries in 1997 and 2003/04, separately⁸ (see Chapter 4, Section 4.9.3 for particular reasons for selecting the years analysed). The data for this analysis comes from the CSEW (1998 and 2003/4), UK Censuses (1991 and 2001), and police workforce statistics (the Chartered Institute of Public Finance and Accountancy - CIPFA) (data triangulation). Chapter 7 then tests bivariate correlations between POP and the mean number of burglaries from 1995 to 2003/04 using the CSEW sweeps (1996-2003/04)⁹ (data-analysis triangulation, see also Chapter 6).

Households, and the PFAs where those households reside, were chosen as two units of analysis in Chapters 6 and 7. There are two main reasons for this decision. Firstly, burglary is a household crime (ONS, 2018); secondly, the structure of the data used is hierarchical due to the CSEW sampling selection (see Chapter 4, Section 4.5.1 for further information).

⁶ There are 43 police force areas in England and Wales. However, City of London is merged with the Metropolitan in the CSEW.

⁷ See Chapter 4, Section 4.9.2 for a definition.

⁸ The independent variable of this analysis (the level of commitment of police forces to POP) has four categories: (3) high-commitment, (2) medium-commitment, (1) low-commitment, and (0) no-commitment.

⁹ The independent variable of this analysis (POP status) has two categories: (1) POP forces, (0) No-POP forces.

1.5 Original contribution to knowledge

This thesis makes a number of original contributions to knowledge. Firstly, to the best of the researcher's knowledge it is the only empirical study to identify and collate highly POP-committed police forces in England and Wales over time (Chapter 5). Secondly, in criticising previous research on policing styles of police forces over time, it provides crucial revisions to the findings of earlier studies (Chapter 5). Thirdly, it develops an original methodology to determine the level of commitment of police forces to POP in 1997 and 2003/04, separately (Chapter 5). Fourthly, it uses ten sweeps of the CSEW (1996-2007/08) along with PRCO (1988-2007/08) to investigate, for the first time, the relationship between POP and the burglary drop at the PFA level in England and Wales between 1988 and 2007/08 (Chapter 6). The fifth original contribution to knowledge is related to repeat victimisation (Chapter 6). Previous research (Thorpe, 2007) examined whether there is a relationship between the drop in repeat burglary victimisations and the overarching burglary drop at the national level. However, this thesis focusses on the relationship between POP and the drop in repeat burglary victimisations at the PFA level in England and Wales between 1995 and 2007/08 for the first time. The final original contribution of the thesis concerns the exploration of whether POP had a *statistically significant* effect on the mean number of burglary victimisations in England and Wales between 1995 and 2003/04 in two steps (Chapter 7). The first step takes the level of commitment of police forces to POP into account and controls for the effects of characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA to test whether POP had a statistically significant and independent impact on burglaries in 1997 and 2003/04, separately. The second step examines the extent of bivariate correlations between POP and burglaries from 1995 to 2003/04.

1.6 Overview of chapters

This thesis consists of eight chapters. The first two substantive chapters (2 and 3) review the previous literature regarding POP and the crime drop, respectively. Specifically, Chapter 2 is concerned with the theoretical and practical aspects of POP. It first sets out the theoretical framework of the study. Secondly, it briefly reviews the history of policing, including any associated circumstances, which paved the way for the birth of POP and the developments regarding the rise of POP in the UK. Thirdly, it notes the major objectives and strategies of policing and POP. Fourthly, it discusses the similarities and differences between POP and a number of proactive policing strategies. Fifthly, it argues how one can measure the

effectiveness of POP and explains the Scanning, Analysis, Response, and Assessment (SARA) framework (Eck and Spelman, 1987), which is the most common way of implementing POP, in detail. Sixthly, it reviews previous research concerning the effectiveness of POP. Finally, factors limiting and facilitating the implementation of POP are summarised.

Chapter 3 begins with an introduction to the crime drop phenomenon, followed by a critical review of the most commonly cited crime drop hypotheses in six parts: (1) economic, (2) offender-based, (3) substance abuse, (4) security and opportunity-related, (5) criminal justice system, and (6) policing-related hypotheses. In doing so, Chapter 3 eliminates implausible hypotheses for the crime drop in England and Wales in order to accurately assess the relationship between POP and the burglary drop in England and Wales. It also summarises burglary risk and protective factors.

Chapter 4 explains the methodology adopted in this study. It begins with an overview of the data used, and the strengths and limitations of those data sources are discussed. Variable selection for Chapter 7 is described in detail by referring to relevant theories (routine activity and social disorganisation). It finally outlines the analysis plan (research design) and elaborates how the three phases of the empirical research address the empirical research questions.

Chapter 5 (Phase one) firstly identifies and collates highly POP-committed police forces using the two indicators of commitment to POP selected by the researcher (see Section 1.4). It also reviews the related literature to supplement and triangulate the findings from the analysis of the two indicators. Secondly, it revisits previous research on the policing strategies adopted by police forces over time and revises their findings. Thirdly, it determines the level of commitment of (all) police forces to POP in 1997 and 2003/04, separately. Throughout the chapter, 10 hypotheses are proposed for testing in Chapter 6.

Chapter 6 (Phase two) is an initial exploration of the extent to which POP has or has not played a role in the burglary drop at the PFA level in England and Wales between 1988 and 2007/08. It starts with an overview of crime trends. It then explores whether there is a relationship between the implementation of POP and the drop in both CSEW and PRCD burglaries at the PFA level between 1988 and 2007/08. For this, it compares the trends in burglaries in highly POP-committed PFAs identified in Chapter 5 with the trends in burglaries in their most similar PFAs that were not committed to POP to the same extent. In

other words, it tests the 10 hypotheses proposed in Chapter 5 along with two additional hypotheses regarding repeat victimisation before conducting a comprehensive statistical analysis in Chapter 7.

Chapter 7 (Phase three) starts by reporting descriptive statistics of the variables to be used in multilevel negative binomial regression modelling. Secondly, it employs principal component analysis (PCA) to eliminate the multicollinearity problem (which refers to high correlation amongst the PFA level continuous variables) and ready the data to conduct multilevel negative binomial regression modelling to identify whether POP had a statistically significant and independent effect on the mean number of burglary victimisations whilst controlling for characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA in England and Wales in 1997 and 2003/04, separately. Thirdly, it tests bivariate correlations between POP and the mean number of burglaries from 1995 to 2003/04. Finally, it presents the findings of the above.

The thesis concludes with Chapter 8, which firstly returns to the original aim of this study. Secondly, it summarises its main findings. Thirdly, the limitations of the study are presented. Fourthly, theoretical contributions of the study are provided according to four categories: (1) POP-committed senior leadership in policing, (2) policies targeting repeat victimisation, (3) the disconnect between theory and implementation of POP and other factors, and (4) increasing the number of police officers. Fifthly, policing-related policy and methodological implications are discussed. Sixthly, it notes the original contributions to knowledge that the current study has made. Finally, it suggests directions for future research, with the chapter finishing with a number of concluding remarks.

CHAPTER 2

PROBLEM-ORIENTED POLICING

2.1 Introduction

This chapter is concerned with the theoretical and practical aspects of problem-oriented policing (POP) and aims to identify a gap in knowledge in relation to the effect of POP on crime. The chapter begins with the theoretical framework underpinning both POP and the study. Secondly, it briefly reviews the history of policing, including the circumstances, which paved the way to the birth of POP, and the developments regarding the rise of POP in the UK. Thirdly, the chapter describes major objectives and operational strategies of policing (in general) and POP (in particular). Fourthly, it discusses similarities and differences between POP and a number of proactive policing strategies. Fifthly, it discusses how one can measure the effectiveness of POP and defines the methodology of problem-solving, namely the Scanning, Analysis, Response, and Assessment (SARA) framework (Eck and Spelman, 1987), which is the most common way of implementing POP. Sixthly, the chapter reviews previous research to have considered the effectiveness of POP to identify the related gap in knowledge. This review leads the reader and the researcher to the problems with the implementation of POP, whilst finally reporting the factors that can help overcome them.

2.2 Theoretical framework

“While police officers are essential entry points to social services for many people, they are best positioned to prevent crimes by focusing on the situational opportunities for offending rather than attempting to manipulate socio-economic conditions that are the subjects of other governmental agencies. Theories that deal with the “root causes” of crime focus on interventions that are beyond the scope of most problem-oriented projects. Theories that deal with opportunities for crime and how likely offenders, potential victims, and others make decisions based on perceived opportunities have greater utility in designing effective problem-oriented policing interventions” (Braga, 2008: 4-5).

In addition to the justification made in the above quote for using opportunity-related theories in designing effective POP activities, traditional criminological theories (e.g. social control, strain, social learning, and labelling) “were of little practical value to police” (Scott et al., 2008: 234; see also Eck and Madensen, 2013) and were unable to explain both increases and

decreases in crime rates (Aebi and Linde, 2010). In contrast, opportunity-related theories (namely routine activity theory (Cohen and Felson, 1979), rational choice theory (Cornish and Clarke, 1986) and situational crime prevention (Clarke, 1980; 1997)) were used as theoretical frameworks to explore both increases in crime rates in the 1960s (e.g. Wilkins, 1964, cited in Clarke, 1997), and decreases in crime rates in the 1990s (e.g. van Dijk et al., 2012; Farrell et al., 2014). Scholars (e.g. Tseloni, 2006) have also used opportunity-related theories (particularly routine activity theory) in conjunction with social disorganisation theory to model crimes over household and area characteristics because while the routine activity theory explains why people become victims of crime at the micro-level (e.g. household), social disorganisation theory does so at the macro-level (e.g. police force area).

The integration between POP, this present study, and opportunity-related theories and social disorganisation theory is twofold. First, POP draws upon opportunity-related theories to alter environmental conditions that give rise to crime and to reduce opportunities for offenders in order to prevent and control crime (Reisig, 2010). Second, Chapter 7 of this present thesis conducts various statistical analyses to examine the effect of POP on burglaries which are affected by factors both at the micro-level (e.g. household) and area level (e.g. police force area). Therefore, Chapter 7 draws in particular upon routine activity theory to identify burglary risk factors at the household level (e.g. household income) and social disorganisation theory at the macro-level (e.g. poverty).

Finally, it can be argued that the use of the “New Public Management” (NPM) concept (Hood, 1995; Hoggett, 1996) has increased the prevalence of POP or that POP is a reflection of policies that draw upon the NPM concept, as NPM promotes an innovative problem-solving management model – like POP – to effect organisational change in policing (Ashby et al., 2007).

Considering the above discussion and the overarching aim of the thesis (i.e. exploring the role of POP on the burglary drop in England and Wales), the present thesis uses multiple theories (theory triangulation, see Section 1.4) to approach the analyses from multiple perspectives (Denzin, 1989). In other words, this thesis uses opportunity-related theories, social disorganisation theory and the NPM concept as a theoretical framework, considering their suitability in designing POP interventions and explaining the crime drop of the 1990s and the introduction of POP to the policing agenda in England and Wales. Sections 2.2.1-

2.2.5 explain these theories in detail and how they relate to POP and police activity on the ground.

2.2.1 Routine activity theory

Routine activity theory was developed by Cohen and Felson (1979). Its basic argument is that if there is not a *capable guardian* (e.g. police, neighbour), handler (e.g. parent, relative, peer, teacher), or manager (e.g. store clerk, owner of a place, agent) to protect *targets* (e.g. cash, laptops, cell phones, people), then *motivated offenders* will commit crime. Apart from these elements, some tools ease the commission of a crime (e.g. guns, cars) or help prevent crime from occurring (e.g. gates, fences). In the absence of tools for offenders and the presence of tools for guardians, crime is more likely to be prevented. Moreover, the routine daily activities of people (or lifestyles) influence the convergence of these elements (capable guardian, target, and motivated offender) to cause crime to occur and determine the visibility and accessibility of targets at particular times. The relationship between this theory and POP comes from the fact that during the analysis phase of the SARA framework, crime analysts collect data about these three elements to identify which component is most susceptible to police intervention (Read and Tilley, 2000). Thereafter, police officers develop tailor-made responses to address those elements to prevent crime. For example, police forces may work with other government agencies to add streetlights to prevent burglaries by reducing opportunities for offenders at some particular location (Braga, 2008). In particular, Santos (2015: 108) argued that routine activity theory is one of the cornerstones of police crime analyst work and contended that “police crime analysis is fundamentally grounded in applying Routine Activity Theory and its concepts through the practical perspective of the theory, the adoption of problem-oriented policing strategies, and the focus of police crime reduction on geography and the clustering of crime by place”.

2.2.2 Rational choice theory

Rational choice theory was developed by Cornish and Clarke (1986) to provide a conceptual framework for situational crime prevention (Cornish and Clarke, 2008), as will be discussed in the following section. This theory is often combined with routine activity theory to explain criminal behaviour during criminal events (Clarke and Felson, 1993). It also has an apparent affinity with the deterrence doctrine as both apply utilitarian philosophy to crime (Akers, 1990). According to Cornish and Clarke (2008: 24), the assumptions of the theory are as follows:

- Criminal behaviour is purposive.
- Criminal behaviour is rational.
- Criminal decision-making is crime specific.
- Criminal choices fall into two broad groups: ‘involvement’ and ‘event’ decisions.
- There are separate stages of involvement.
- Criminal events unfold in a sequence of steps and decisions.

However, the theory does not provide a complete explanation of criminality. Instead, it is concerned with how to prevent or disrupt crime and examine crime from offenders’ perspectives (Cornish and Clarke, 2008). An effective approach for the police is to be crime-specific when analysing offender decision making and choice selection. Particularly, police crime analysts should consider offenders’ decisions regarding different steps of participation in crimes separately. For instance, they should differentiate offenders’ decisions regarding initial involvement in the crime and choice of target (Cornish and Clarke, 2008). Following the analysis, police officers can develop tailor-made responses to crime problems to eliminate opportunities for perpetrators and intervene in their motives at the response stage of the SARA framework. For example, police forces may implement traditional law enforcement tactics (e.g. directed patrols, crackdowns, and stop-and-search interrogations) to increase the risk of arrest for burglary or drug offences in a neighbourhood (Reisig, 2010).

2.2.3 Situational crime prevention

“There has been some alignment between POP and Situational Crime Prevention, which have affinities with one another. Those with interest in SCP have seen POP as a vehicle for its implementation. Those with interest in POP have seen SCP as a major resource for working out what to do in dealing with problems” (Tilley and Scott, 2012: 128; see also Eck and Madensen, 2013).

The theories discussed above are cognate theories of situational crime prevention (Tilley and Scott, 2012). While routine activity theory considers the situations that cause crime-related problems from the perspective of problem solvers, situational crime prevention looks at conditions from the perspectives of offenders (Scott et al., 2008: 236); that is, situational crime prevention as summarised by Clarke and Eck (2003):

- increases the perceived effort that perpetrators must make to commit a crime
- increases the perceived risks that perpetrators must take in completing a crime

- reduces the anticipated rewards that perpetrators expect to obtain from commission of a crime
- removes excuses that perpetrators may use to justify their actions.

Although POP and situational crime prevention have different origins and purposes (Tilley, 2008), they aim to improve the effectiveness of the police in crime control (Hope, 1994). While situational crime prevention is a set of methods (see Section 2.7.1.3.1 for 25 techniques of situational crime prevention) that the police can use to reduce crime (Clarke and Eck, 2003), POP is an approach or a philosophy that uses those methods to change the mindset of the police (Goldstein, 1990). For example, the police may work with other government agencies to fit gates in alleyways, which is an effective way of reducing burglaries (Bowers et al., 2004; Sidebottom et al., 2018). Partnerships between police and other government agencies have another crucial role in crime prevention, as the police themselves do not have a monopoly on crime prevention. According to Clarke (1997), a closer relationship between POP and situational crime prevention can help build partnerships between the police and other government agencies and therefore help the police change their mindset.

Overall, opportunity-related theories have had a remarkable influence on policing (Eck and Madensen, 2013). For the police, it is more practical to develop a response to a crime problem by altering the conditions that create opportunities at the micro-level (Braga, 2014). For example, an analysis of 59 projects submitted to the Goldstein award scheme shows that 55% of the projects were place-based projects (Eck and Madensen, 2013) and where POP applied situational crime prevention methods at a local level, they were successful in reducing crime (Clarke, 1997). However, this is not to say that the police only deal with crime at the micro-level; they may also develop partnerships with other agencies to deal with factors affecting crime at the macro-level (Bullock et al., 2006).

2.2.4 Social disorganisation theory

The aforementioned opportunity-related theories predominantly focus on micro-level risk factors. Although some aspects of social disorganisation theory also operate at the micro-level (e.g. street), it is usually used to explore the underlying causes of crime problems at the macro-level. The theory suggests that structural factors, such as “economic status, ethnic heterogeneity, residential mobility, and family disruption”, have an impact on crime within an area (Sampson and Groves, 1989: 774).

Social disorganisation theory is not directly related to POP and is limited in terms of providing insights into how the police can improve factors that give rise to crime (Reisig, 2010). However, the theory can be used at the response stage of the SARA framework where the police and other community organisations work together to alter criminogenic neighbourhood conditions, as suggested by Goldstein (1990). The police may also work directly with residents to strengthen collaboration and increase informal social controls (Sampson and Grove, 1989).

2.2.5 New public management

Scholars have demonstrated that reactive policing does not help to reduce crime (see Eck and Spelman, 1987). Accordingly, a number of reform efforts in policing (and in other agencies in the public sector), such as community policing (Alderson, 1977) and POP (Goldstein, 1979), have emerged since the 1970s. With the advent of these reforms, police officers are expected to do their jobs in a proactive manner, as POP suggests (scanning crime problems, conducting a comprehensive analysis of the crime problems, developing a tailor-made response to the crime problems, and assessing the effect of the responses on the crime problems (Goldstein, 1990)). It can be therefore argued that POP is an example of the NPM reforms that aim to increase the quality and efficacy of public institutions (Hood, 1995; Hoggett, 1996; Andersson and Tengblad, 2009). In addition, a number of reforms in policing, which reflect the NPM concept, have influenced the approach adopted by the police service in the UK since the 1990s (Cope et al., 1997; Butterfield et al., 2005; Ashby et al., 2007):

- Sheehy Inquiry (an inquiry into police responsibilities and rewards)
- White paper on police reform
- Police and Magistrates' Court Act 1994
- Home Office review of police core and ancillary tasks.

These reforms addressed issues regarding the organisational structure and core functions of policing. For example, the Sheehy Inquiry concentrated on whether the police should be responsible for the guarding of premises and people. Therefore, it can be argued that there might have been some consequences of these reforms aligning with routine activity theory that the police use to determine their tactics, and thus where police resources will be targeted. In addition, according to the Sheehy Inquiry "Performance indicators are being put in place to measure the efficacy of forces and individual officers and to prioritise community needs as opposed to organisational needs. This involves a renewed commitment to working with

other social services and local government departments to tackle local crime and social problems. The multi-agency approach is an explicit acknowledgement that the police cannot solve crime problems on their own” (McLaughlin and Murji, 1993: 101). Therefore, it can be speculated that these reforms pushed the police to deal with certain risk factors at the macro-level, which is the concern of social disorganisation theory.

With regard to the integration between POP and NPM, instead of adopting a hierarchical traditional management style, NPM stresses a decentralised, innovative problem-solving management model (Butterfield et al., 2005) such as POP (Goldstein, 1990). In addition, the essential components of NPM correspond with certain elements of POP, such as:

- increasing accountability
- high performance (e.g. increasing the effectiveness of police forces in terms of preventing burglaries)
- restructuring bureaucratic agencies (e.g. police service)
- redefining organisational missions (e.g. being proactive not reactive, engaging with the community)
- decentralising decision making (e.g. making fuller use of rank-and-file police officers) (Goldstein, 1990; Denhardt and Denhardt, 2000).

In sum, this study is concerned with POP, which has affinities with routine activity and rational choice theories and the situational crime prevention perspective. In particular, the present study draws upon routine activity theory and social disorganisation theory to identify burglary risk factors at the household- and police force area levels. It also uses the NPM concept to relate the reforms in policing and the advent of POP in the UK since the 1980s.

2.3 Brief history of policing

Societal, demographic and economic changes arising from the urbanisation and expansion of the population during the industrial revolution necessitated the development of policing. British society, particularly its elites, were worried about being victimised by poor and unemployed people in London (Emsley, 2008). As a result, Sir Robert Peel, the then chief of the London Metropolitan Police, introduced the Metropolis Police Act to the House of Commons in April 1829 (Taylor, 1997). After lengthy discussions about the Act, Sir Peel established the London Metropolitan Police, the first modern police force, in 1829 to restore “the social cohesion that was claimed to have been lost through urbanisation and industrialisation” (Rawlings, 2012: 1). Peel also aimed to create an impartial and impersonal

police image and win respect within the community (Miller, 1977, cited in Reisig, 2010). Peel's Act was followed by the 1835 Municipal Corporations Act, the 1839 Rural Constabulary Act, and the 1856 County and Borough Police Act, which paved the way for the establishment of police constabularies (forces) in all English counties and boroughs (Taylor, 1997), and indeed many American and European cities.

Peel's main success was to establish police forces that deal with crime and disorder problems, which is distinct from the objectives of an army. Peel's nine principles regarding law enforcement can be cited as follows (Reith, 1948: 64):

1. The primary mission for which the police exist is to prevent crime and disorder.
2. The ability of the police to perform their duties is dependent upon public approval of police actions.
3. Police must secure the willing co-operation of the public in voluntary observance of the law to be able to obtain and maintain the respect of the public.
4. The degree of co-operation of the public that can be secured diminishes proportionately to the necessity of the use of physical force.
5. Police seek and preserve public favour not by catering to public opinion but by consistently demonstrating absolute impartial service to the law.
6. Police use physical force to the extent necessary to secure observance of the law or to restore order only when the exercise of persuasion, advice and warning is found to be insufficient.
7. Police, at all times, should maintain a relationship with the public that gives reality to the historical tradition that the police are the public and the public are the police; the police being only members of the public who are paid to give full-time attention to duties which are incumbent on every citizen in the interests of community welfare and existence.
8. Police should always direct their action strictly towards their functions and never appear to usurp the powers of the judiciary.
9. The test of police efficiency is the absence of crime and disorder, not the visible evidence of police action in dealing with it.

Over the last four decades, a number of innovative and proactive policing strategies that might be considered related to Peelian principles have emerged. They include community policing (Peelian principles 3-5, and especially 7), intelligence-led policing (Peelian

principles 1, 4, and 9), hot spots policing (Peelian principles 1 and 9) and POP. Indeed, Kirkby (1997:3) speculated that “Perhaps the earliest recorded champion of problem-oriented policing was Robert Peel in 1829.”

2.3.1 Towards POP

Scholars divided the history of American policing into three eras: (1) the political era, (2) the reform era, and (3) the community problem-solving era (Kelling and Moore, 1988; Reisig, 1990). In the political era (the 1840s-the early 1900s), and likewise in London, unified police forces were established in New York, Chicago, and other big cities (Reisig, 2010). However, there were two salient differences between them, although early American policing did replicate Peel’s principles. Firstly, there were close ties between the police and politicians in America, as opposed to England, as American police were decentralised and operated under the authority of local municipalities and politicians who had the power to appoint police officers. The relationship between the police and politicians was based on mutual interest. While the politicians maintain the police in office, the police helped the politicians by encouraging citizens to vote for them. By contrast, the English police were centralised and functioned under the management of police chiefs who were appointed by the central authority of the Crown (Kelling and Moore, 1998). Secondly, the main focus of American police was that of sustaining security and law enforcement, while English police focussed on peace and crime prevention (Stevens, 2003, cited in Sozer, 2009).

In the reform era (the 1930s-the late 1970s), American policing focussed on crime-fighting rather than public service (Kelling and Moore, 1988). The main strategies adopted to fight crime were random car and foot patrols, rapid response to calls, and follow-up investigation. The police were insulated from political influence as the appointment of police officers by politicians was partly eliminated (Palmiotto, 2000, cited in Sozer, 2009). However, the relationship between the police and the community was not strong. Besides, crime rates, complaints and protests about unfair police practices had increased. Consequently, national commissions, such as the President’s Commission and the Kerner Commission, were established by the then American government to address these issues. In light of the recommendations of these commissions, comprehensive studies on policing (e.g. the Kansas City Preventive Patrol Experiment), which were funded by civil foundations (e.g. the Police Executive Research Forum), were carried out to reduce crime rates and recover the relationship between the police and the community (Kelling and Moore, 1988).

The community problem-solving era began with Goldstein's (1979) seminal work *Improving Policing: A Problem-oriented Approach*, which suggested that the police should deal with underlying factors that create recurrent problems proactively rather than just dealing with individual incidents. In the meantime, a number of innovative policing strategies, such as community policing, intelligence-led policing and hot spots policing, have emerged. Although different theories underpin these approaches (see Section 2.6), some scholars (e.g. Sparrow, 2016) suggested that they are reduced forms of POP (see also Sherman and Eck, 2002; Eck and Gallagher, 2016).

2.3.2 Birth of POP

POP is based upon Goldstein's criticism regarding the situation of policing in the reform era. Goldstein first argued that, as in other top-down bureaucratic systems, the police were interested in internal procedures or means (e.g. the structure, staffing, and equipping of the police) instead of developing effective strategies to achieve the goals of policing itself. Goldstein called this 'means-over-ends syndrome' (Goldstein, 1979; 1990). That is, police forces deviated from their main aim, namely that of "tackling recurrent police-relevant problems [e.g. repeat burglary victimisations] of concern to the local community" (Sidebottom and Tilley, 2010: 1).

Secondly, Goldstein discussed the ineffectiveness of the professional model of policing (incident-driven policing), which applies visible car and foot patrols, rapid response to calls, and follow-up investigation (Goldstein, 1990). These methods were thought to be the most effective way of deterring offenders from committing crime in the reform era (Scott et al., 2016). However, Goldstein (1979) criticised the fact that they focus on individual incidents instead of solving recurring problems. Eck and Spelman (1987: 35) summarised the findings concerning the professional model of policing as follows:

"First, the Kansas City Preventive Patrol Experiment questioned the usefulness of random patrol in cars (Kelling et al., 1974). Second, studies of response time undermined the premise that the police must rapidly send officers to all calls (Kansas City Police Department, 1980; Spelman and Brown, 1984). Third, research suggested, and experiments confirmed, that the public does not always expect a fast response by police to non-emergency calls (Farmer, 1981; McEwen, Connors, and Cohen, 1984). Fourth, studies showed that officers and detectives are limited in their abilities to successfully investigate crimes (Greenwood, Petersilia, and Chaiken, 1977; Eck,

1982). And, fifth, research showed that detectives need not follow up every reported unsolved crime (Greenberg, Yu, and Lang, 1973; Eck, 1979). In short, most serious crimes were unaffected by the standard police actions designed to control them. Further, the public did not notice reductions on patrol, response speed to non-emergencies, or lack of follow-up investigations”.

The third critique of the reform era by Goldstein was about lack of community engagement in crime prevention. He argued that community engagement is crucial to learn what the community wants from the police. “A community must police itself. The police can, at best, only assist in that task” (Goldstein, 1990: 21). However, he also discussed to what degree the community could affect the decision-making process (ibid: 25).

Fourthly, Goldstein criticised the role of rank-and-file officers in the reform era. He suggested that rank-and-file police officers should constantly take part in the fight against crime. However, the education of these officers had been neglected, and they had not been given sufficient authority to solve appropriate problems; police resources had not been used to improve their talents. Goldstein suggested that providing more freedom to those officers, who know community problems first-hand, could enhance the crime prevention capacity of the police and encourage officers to be more willing to solve problems within their communities.

Goldstein provided further criticism of the reform era where he argued that the power of the police subculture against innovation had not been sufficiently recognised (Goldstein, 1990). In addition, the police did not consider existing problems holistically. Goldstein, therefore, suggested that police organisations should have a plan to do so and determine the implications of that plan for the police service (Goldstein, 1990).

Based on the above criticisms, Goldstein (1990) defined POP as a proactive policing strategy that emphasises the importance of understanding the underlying conditions of recurring problems rather than targeting individual incidents when they occur (Goldstein, 1990). It is a scientific approach (Scott, 2000) which involves the following key processes to accomplish the major objectives of policing in general, and POP in particular, as discussed in Section 2.4 in detail:

- identifying problems
- analysing problems

- the search for alternatives (developing tailor-made responses)
- reflections on implementation efforts (Goldstein, 1990).

2.3.3 Rise of POP in the UK

Police forces, especially in the US and the UK, have been implementing POP since the 1980s (Leigh et al., 1996; 1998; Clarke, 1997; Bullock et al., 2006; Boba and Crank, 2008; Sidebottom and Tilley, 2010; Tilley, 2010; Weisburd et al., 2010; Tilley and Scott, 2012; Eck, 2014; South Yorkshire Police, 2018). The UK government has promoted the problem-solving approach either implicitly or explicitly since the 1980s (Bullock et al., 2006; Tilley and Scott, 2012). For example, Bullock et al. (2006) argued that several developments regarding the ‘police reform’ agenda under the Blair government were equivalent to POP, even though they were not framed explicitly as such. The Blair Government emphasised (a) improving the performance of the police service, (b) making the police more flexible, (c) increasing capacity and reducing bureaucracy, (d) training and development, and (e) investing in communications, IT, forensic and best practice (see Section 2.2.5). Tilley (2002) summarised key developments that contributed to the popularity of POP amongst the police forces in England and Wales (see Table 2.1, see also Laycock and Clarke, 2001; Newburn, 2002). Particularly, Ron Clarke’s studies on situational crime prevention, which is one of the theories underpinning POP “got a bit of wind behind it” (Mayhew, 2016: 4) in the early 1980s and “materially contributed to a number of policy initiatives” after the ‘nothing works’ era (Laycock and Clarke, 2001: 237).

Table 2.1: Key developments in crime prevention in England and Wales, 1976-2001

Development	Year
The Effectiveness of Sentencing: A Review of the Literature	1976
Crime as Opportunity	1976
Designing out Crime	1980
Co-ordinating Crime Prevention Efforts	1980
‘Situational Crime Prevention’	1980
First British Crime Survey report	1983
Crime Prevention Unit Set up	1983
Home Office Standing Conference	1983
Home Office Circular 8/84, Crime Prevention	1984
First Crime Prevention Unit Paper	1985

Table 2.1: Key developments in crime prevention in England and Wales, 1976-2001 (continued)

Five Towns Initiative	1986
Gas and Suicide	1988
Getting the Best out of Crime Analysis	1988
Safer Cities	1988
Crime Concern	1988
First Kirkholt Report, Beginning of Repeat Victimisation Focus	1988
Crash Helmets and Motorbike Theft	1989
Home Office Circular 44/90	1990
Morgan Report	1991
Police Research Group Established	1992
Single Regeneration Budget	1993
First CCTV Challenge	1995
Repeat Victimisation Task Force Set up	1996
First Issues of International Journal of Risk, Security and Crime Prevention	1996
National Training Organisation	1998
Home Office Research Study 187	1998
Policing and Reducing Crime Unit Established	1998
Crime and Disorder Act 1998, and Guidance	1998
Beating Crime	1998
Crime Reduction Programme	1999
Safety in Numbers	1999
Crime Targets Task Force	1999
Foresight Programme	1999
Calling Time on Crime	2000
The Home Office Policing and Crime Reduction Directorate	2000
Appointment of Regional Crime Directors	2000
Preparation and Publication of 'Toolkits' to Deal with Specified Problems	2001

Sources: Tilley (2002); Laycock and Clarke (2001)

The then Conservative Government funded, for example, the Safer Cities Programme as part of a broader programme (Actions for Cities) to tackle a wide range of crimes (e.g. repeat residential burglary). The first phase of the programme was inaugurated in 1988 and ended in 1995 and covered 20 cities or boroughs (in London) at the local level in England and Wales. All Safer Cities projects intended to use a problem-oriented (multi-agency or partnership) approach and widely applied target hardening, community-oriented, and

offender-oriented strategies (Ekblom et al., 1996). Of those Safer Cities projects (n = 2,300), 33.3% targeted residential burglary; 3.9% targeted theft from vehicles, and 2.6% targeted theft of vehicles. Overall, 500 schemes targeted domestic burglary (ibid: 5-6).

Large-scale problem-oriented projects indeed prospered after the New Labour Government came into power in 1997. They legislated the Crime and Disorder Act in 1998 (Laycock and Clarke, 2001), which was informed by a comprehensive literature review and which summarised what works in crime reduction (Goldblatt and Lewis, 1998). Then, the Crime Reduction Programme (CRP), which was an evidence-based and cost-effective policy programme in crime reduction, was instigated in 1999 (Tilley et al., 1999; Hamilton-Smith and Kent, 2005). The CRP was the “best resourced and most comprehensive effort for driving down crime ever attempted in a Western developed country” (Homel et al., 2004: v). Similar to the Safer Cities Programme, much of the CRP followed the logic of POP (Bullock and Tilley, 2003). Of those projects, 246 targeted domestic burglary (see Table 2.2).

Table 2.2: The Crime Reduction Programme schemes

Initiative	Number of Projects	Initiative	Number of Projects
CCTV	683	Neighbourhood wardens	85
Targeted policing	59	Vehicle crime	13
Reducing domestic burglary	246	On Track	26
Drug arrest referrals	1	Sentencing	3
Treatment of offenders	1	Summer play schemes	147
Effective school management	38	Design against crime	4
Violence against women	58	Distraction burglary projects	3
Youth inclusion	70	Distraction Burglary Taskforce	1
Locks for pensioners	1	Tackling prostitution	11

Source: Bullock and Tilley (2003)

The Reducing Burglary Initiative (RBI) merits special mention here. It was intended (a) to reduce repeat burglaries *nationally* by targeting hot spots using a problem-solving approach, and (b) to roll out effective anti-burglary projects (Tilley et al., 1999; Homel et al., 2004). The RBI was comprised of three funding rounds. The first round started in 1998, and it included 63 projects (also known as Strategic Development Projects (SDPs)). The second round began in 1999 and funded 161 projects. The third round was a ‘rolling round’, which

started in April 2000 (Homel et al., 2004). Three consortia evaluated the first round of projects (the Midlands, the Northern and the Southern) (Hope et al., 2004; Millie and Hough, 2004; Hirschfield, 2007). Further to the CRP and RBI, the government funded the Targeted Policing Initiative (TPI), which funded 59 projects. Bullock and Tilley (2003) listed some of these projects (see Table 2.3). They aimed to roll out the problem-solving approach in England and Wales, but did not primarily target burglary. In sum, it could be argued that POP had become the primary way of policing in England and Wales as nearly all police services purported to endorse POP by 2000 (Read and Tilley, 2000).

Table 2.3: The Targeted Policing Initiative projects

Project
Bringing evidence-based POP to Knowsley (Merseyside)
Implementation of the National Intelligence Model
Using POP in a rural area
Cycle theft in Cambridge
Gang-related shootings in Manchester
Violent crime linked to alcohol abuse in Nottingham
Alcohol-related violence in Cornwall
Alcohol-related street violence in Cardiff
The stolen goods market in a northern town
The stolen goods market in a southern town
Racially motivated crime in Hounslow, Greenwich, Merton and Tower Hamlets
Hate crime in Southwark
Hate crime in Brighton and Hove
Anti-social and low-level criminal behaviour in a large housing estate in Hull
Drug use and drug-related crime in Dalston
Vehicle crime in Islington, Camden and Southwark
Crime and disorder in remote rural locations in Northumbria
Vehicle crime in Calderdale

Source: Bullock and Tilley (2003)

2.4 Major objectives of policing and POP

Fundamental objectives for the police that were proposed by Sir Peel and characterised in Goldstein's seminal work (*Policing a Free Society*), as cited in Scott (2000: 83), are as follows:

- to prevent and control conduct threatening to life and property (including serious crime)
- to aid crime victims and protect people in danger of physical harm
- to protect constitutional guarantees, such as the right to free speech and assembly
- to facilitate the movement of people and vehicles
- to assist those who cannot care for themselves, including the intoxicated, the addicted, the mentally ill, the physically disabled, the elderly, and the young
- to resolve conflict between individuals, between groups, or between citizens and their government
- to identify problems that have the potential of becoming more serious for individuals, the police or the government
- to create and maintain a feeling of security in the community.

Scott (2000) further stated that while the police mission can be characterised in other ways, Goldstein's characterisation is still a complete and suitable reference for managing police practices in general, although there are police forces with specialised roles (see also Sparrow, 2015). The same author suggested that “[t]he entire edifice of problem-oriented policing is built on the foregoing ideas about the fundamental objectives of the police [as] [t]he ultimate aim of problem-oriented policing is to continually make the police better at accomplishing each of the above objectives to better prevent crime, to better assist victims, to make communities feel safer, and so forth.” (Scott, 2000: 84-85).

2.4.1 Organisational characteristics

Indeed, the objectives listed in Section 2.4 seem to be the ones at the operational level. At the strategic or organisational level, the principal aim of POP is to change the mindset of policing from one of being reactive to proactive (Goldstein, 2018), which can be achieved by changing (1) organisational structure, (2) organisational culture, and (3) management style (Eck and Maguire, 2006).

2.4.1.1 Organisational structure

Police organisations traditionally have a military-type hierarchical system (Bullock et al., 2006). However, Goldstein (1990) stresses that a flattened hierarchical system that gives more authority and flexibility to frontline officers is needed to reply to problems within the community more efficiently (see also Eck and Spelman, 1987).

2.4.1.2 Organisational culture

Attempts of introducing innovative behaviour in the public sector have never disappeared but rather have always been a challenge (Osborn and Brown, 2011). Police organisations are not an exception (Goldstein, 1990, 2003; Scott, 2003) because police officers always consider crime fighting, rapid response to calls and arresting offenders to be ‘real police work’ and they resist changing their views (Goldstein, 1990). When they practice an innovative strategy, they do it superficially (Weisburd et al., 2003). Therefore, it is important to be able to manage changes.

Lewin’s three-stage model (1947) of organisational change, which took form after his death (Cummings et al., 2016), has been popularly used to implement new strategies within organisations. The model comprises three steps: (1) unfreezing the present way of working, (2) changing to a new way of working, and (3) refreezing the new way of working, which must be achieved by not only senior management but also others involved. An example of the first step would be to convince officers that most of the reactive strategies to address the underlying causes of crime will inevitably fail, and the role of police is not just one of catching the criminals. In the second step, the specific aims and objectives of the new way of working (e.g. POP) are clarified; suitable management and internal structures are developed. In the final step, the aim is to freeze the new way of working and monitor whether officers tend to revert to the old way. For example, POP-related activities might take some time to produce significant outcomes and officers might revert to the reactive strategies that they used previously (Townsley et al., 2003).

In addition to the Lewis model, senior management might prefer different kinds of top-down or bottom-up approaches to implement POP force-wide or individual problem-oriented projects. Bullock (2007) examined whether these approaches are sufficient to explain the implementation of problem-oriented projects and concluded that, in fact, neither is sufficient. Overall, senior management have a number of options to change the mindset of their organisations from reactive to proactive but there are issues of organisational culture that

might inhibit the implementation of POP or problem-oriented projects even if these approaches are applied with commitment; these are discussed in Section 2.9.2 in detail.

2.4.1.3 Management style

According to the organisational psychology literature (e.g. Bass and Avolio, 1994), there are two types of leaders: (1) transactional and (2) transformational (Bass, 1997). For transactional leaders, order and structure is important, as in the military or police. Their main aim is to complete objectives on time. In places where transactional leaders command, there is not sufficient scope for change and creativity (Bass, 1997; Judge and Piccolo, 2004). As Goldstein stated, police managers were interested in internal procedures or means (e.g. the structure, staffing, and equipping of the police) instead of developing effective strategies to achieve the goals of policing. He called this ‘means-over-ends syndrome’ (Goldstein, 1979; 1990). On the contrary, transformational leaders motivate and inspire their subordinates for change and creativity. They are charismatic, provide intellectual stimulation, and act as mentors or coaches (Bass, 1997; Judge and Piccolo, 2004).

A meta-analysis of leadership styles (Burke et al., 2006) showed a positive association between transformational leadership and innovative activities. Therefore, it could be argued that leadership/management style plays an important role in changing the mindset of a police force from reactive to proactive (e.g. implementing POP). Recently, Mazerolle et al. (2012) argued that having transformational police leaders is crucial to the successful implementation of POP (see also Goldstein, 1990; Leigh et al., 1998; Read and Tilley, 2000; Bullock and Tilley, 2003; Townsley et al., 2003; Bullock et al., 2006; Scott, 2006; Tilley and Scott, 2012) and found that the problem-solving model that was applied by Commissioner Hyde, who was strongly committed to transformational leadership, reduced crime significantly in South Australia.

2.5 Core operational strategies of police and POP

Based on the assumption that Goldstein’s articulation concerning the objectives of the police is correct, Scott (2000: 85) conceptualised police work and listed core strategies at the operational level to achieve the fundamental goals of policing in general, and POP in particular:

1. preventive patrol
2. routine incident response
3. emergency response

4. criminal investigation
5. problem-solving
6. support services.

The first four strategies are the conventional operational strategies that the police have been applying since the 1930s. Support services are ancillary services provided to the community by the police. “Problem-solving is a new operational strategy, introduced in Goldstein’s problem-oriented policing concept” (Scott, 2000: 84), and can be implemented in various ways in various contexts. For example, it can be applied in hot spots using situational crime prevention tactics. Specific tactics that can be applied to address crime problems will be discussed later in Section 2.7.1.3.

It is clear from the above statement that Scott (2000) distinguished problem solving from POP (see also Clarke, 1997). According to Scott, POP describes a comprehensive framework to improve the capacity of the police to address their objectives. In contrast, problem solving describes the mental process which is at the core of POP. Scott argued that problem solving is a more limited concept than POP. According to Clarke (1997), the difference between problem-solving and POP is a matter of the scope of the initiative. While problem-solving efforts are concerned with repeated problems involving a single location or person, actions that can be considered POP make more systematic improvements in the response against entire classes of problems.

The terms ‘problem solving’ and ‘POP’ are often used interchangeably in the literature. For example, problem-solving is widely used in the UK policing context (Burton and McGregor, 2018), partly as a matter of taste but “the link between Goldstein and problem-orientation is usually acknowledged” (Bullock et al., 2006: 7). For the current study, they are also used interchangeably because it is concerned with both small- and large-scale problem-oriented projects that have been applied by police forces in England and Wales since the 1980s.

2.6 Relating POP to other policing strategies

This section looks at the similarities and differences between POP and a number of proactive policing strategies. It starts with the relationship between POP and community policing and intelligence-led policing, drawing upon Tilley (2008). Thereafter, the section examines the relationship between POP and evidence-based policing, hot spots policing and crime mapping, drawing upon Bullock et al. (2006), Scott (2000; 2017), and Eck (2014).

According to Tilley (2008), the origins and rationales of the policing strategies discussed here differ substantially (see Table 2.4). However, there are considerable areas of overlap in practice. Importantly, POP is an approach that can be used for the full range of problems that are targeted by other policing strategies (Eck, 2014: 12). Indeed, “Goldstein is clear about what types of problem should be addressed by a problem-oriented approach: *any* that is identified as a cause of community concern and leads to demand for a police response” (Bullock et al., 2006: 8). These include the targets of intelligence-led policing (e.g. prolific offenders and criminal organisations) and the targets of community policing (police-relevant community problems).

In addition to intelligence-led policing and community policing, Bullock et al. (2006), Scott (2000; 2017) and Eck (2014) pointed out the similarities and differences between POP and evidence-based policing, hot spots policing, crime mapping, broken-windows policing, predictive policing and CompStat (see Table 2.5 for a comparison of common policing strategies). According to Bullock et al. (2006), POP is a form of evidence-based policing (see also Sherman et al., 2002), and when applied correctly it reduces crime by using an analytical approach and asking for evidence of effectiveness (see also Eck, 2014). In this regard, it is an evidence-based approach. Secondly, the assessment of POP efforts can assist in creating a knowledge base from which evidence-based solutions can be drawn. Thirdly, the language and the processes of POP fit well with the language and philosophy of evidence-based policing.

One of the essential elements of POP is to identify and analyse crime hot spots. Therefore, hot spots policing, crime mapping and POP are related (Scott, 2000). In addition, crime mapping matches well with situational crime prevention (ibid), which is one of the philosophies underpinning POP. However, Scott (2000) stated that crime mapping is not as comprehensive a crime prevention approach as POP.

POP also deals with disorder and quality of life issues that are targeted by broken-windows policing (Eck, 2014). The difference between the two policing strategies is that while broken-windows policing applies strong enforcement activities, which increase arrest rates and therefore cost to taxpayers, POP focusses on the few offenders and places generating most of the crime and disorder problems. Hence, its harm to society is less compared to broken-windows policing (ibid).

Table 2.4: Dimensions of intelligence-led, community and problem-oriented policing

Dimension	Intelligence-Led Policing	Community Policing	Problem-Oriented Policing
Background and raison d 'être			
1. Problem addressed	Poor detection rates	Lack of legitimacy	Demand exceeding capacity
2. Critique of traditional policing	Ineffective at clearing crime, inadequate at providing protection	Detached from community which funds policing and on whom policing depends; issue of consent	Ineffective in dealing with spiralling demand, not oriented to core problems
3. Inspiration	David Phillips	John Alderson, Robert Trojanowicz	Herman Goldstein
Conception of policing and police officers			
4. Police mission	Law enforcement	Community governance	Deal with police-relevant problems
5. Who defines policing needs	Police	Community	Constitution/law/rights
6. Scope of policing	Narrowed to law enforcement	Broadened to all community concerns/demands	Mid-range, police function defined
7. Dominant discourse	Law	Politics/ideology	Science
8. Core personnel	Intelligence units/Tasking and Co-ordinating groups	Community beat officers	Analysts

Table 2.4: Dimensions of intelligence-led, community and problem-oriented policing (continued)

Dimension	Intelligence-Led Policing	Community Policing	Problem-Oriented Policing
9. Openness to others	Enforcement contingent	Value in itself	Problem contingent
10. Source of legitimacy	Government/authority	Local community	Core police functions
11. Appeal	To the police	To the community	To government
Characteristic forms of thinking and action			
12. Problem diagnosis	Bad people	Communities in need	Unintentional crime opportunities
13. Intervention focus	Person	Place	Event pattern
14. Analytic inputs	Evidence/intelligence	Community concerns	Data
15. Technology	Computerised intelligence	Not important/mobile phone!	Computers
16. Preferred tactic	Arrest	Community mobilisation	Any – problem contingent
17. Preferred control mechanism	Incapacitation	Informal social control	Blocked opportunity
18. Key police quality	Action/brawn	Empathy/heart	Reason/brain
Success criteria			
19. Main indicator	Serious/prolific villains caught	Satisfied community	Police functions performed effectively
20. Expected benefit	Reduced crime	Reduced crime	Reduced crime

Source: Tilley (2008: 387-388)

Table 2.5: Comparison of policing strategies

	Problem-Oriented Policing	Community Policing	CompStat	Hot Spots Policing	Broken-Windows Policing	Intelligence-Led Policing	Predictive Policing	Evidence-Based Policing
Addresses full range of community demands	Yes	Yes	No	Crime only	Crime and disorder	Crime only	Crime only	Possible
Relies heavily on law enforcement	Limited	Limited	Yes	Yes	Yes	Variable	Yes	Possible
Relies heavily on partnership	Yes	Yes	No	No	No	Variable	No	Possible
Uses an analytical approach	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Relies on officer expertise	Yes	Yes	No	No	No	Yes	No	Possible

Table 2.5: Comparison of policing strategies (continued)

	Problem-Oriented Policing	Community Policing	CompStat	Hot Spots Policing	Broken- Windows Policing	Intelligence-Led Policing	Predictive Policing	Evidence-Based Policing
Evidence for effectiveness	Yes	Limited	No	Yes	No	Unclear	Unclear	Unclear
Principle value	An approach for the full range of police problems	Builds sound community support	Builds internal accountability	Focuses on the worst places	Attentive to disorder	Highlights the use of criminal intelligence	Values new analytical techniques	Demands strong scientific support for actions
Principle risk	Difficult to implement	Becomes a feel-good approach	Supports a whack-a-mole approach and stifles innovation	Supports a whack-a-mole approach	Justifies excessive stopping of youth and profiling	Does not look beyond a law enforcement approach	Supports a whack-a-mole approach	Stifles innovation

Source: Eck (2014: 12)

Finally, POP, predictive policing and CompStat apply a robust analytical approach to identify problems. However, when it comes to responding to problems, POP implements a variety of solutions, while other strategies often use law enforcement activities. In addition, predictive policing is a new strategy, and there is limited research regarding its effectiveness and CompStat is more of a managerial approach (Eck, 2014).

Overall, it could be argued that although the origins and rationales of these policing styles are different, they apply similar strategies to reduce crime problems in practice. This is why Sparrow (2016) argued that all other forms of policing strategies are a reduced form of POP (see also Sherman and Eck, 2002; Eck, 2014).

2.7 How can the effectiveness of POP be measured?

The effectiveness of POP can be measured in three main ways. Firstly, Scott (2017: 29) suggested that one can compare POP with other policing approaches in terms of their effects on crime rates (see also Eck and Gallagher, 2016). To the best of the researcher's knowledge, previous studies that compare POP and other policing strategies in terms of their effect on crime rates in England and Wales have been somewhat limited. For example, Heaton (2009a) compared the effects of intelligence-led policing with POP, partnership policing and geographic policing. However, there are a number of limitations to Heaton's study which are discussed in Chapter 5 (see Section 5.5) in detail.

Secondly, one can establish whether the 'POP movement' has been successful. In other words, one can examine whether POP has become the everyday practice of a police force (Scott, 2000) or to what extent police forces are committed to POP. In this regard, previous research is limited. Her Majesty's Inspectorate of Constabulary examined the state of problem solving in the police service *nationally* (HMIC, 1998), which was later followed up (HMIC, 2000) to monitor the associated progress. Read and Tilley (2000) then published a research report that accompanied the inspection. However, they did not report the level of commitment of *individual* police forces to POP. To the best of the researcher's knowledge, the only study that reported the level of commitment of two police forces to POP was that of Bullock et al. (2006). Their study examined the development of POP in Lancashire and Hampshire and noted that they "can be considered to be amongst the UK's very best in terms of vigour and resources that have gone into it [POP]" (Bullock et al., 2006: 12). However, their study did not examine whether POP affected crime rates in these counties.

Finally, one can examine whether POP projects make communities safer by reducing crime and disorder. Particularly, one can test whether POP projects reduce repeat victimisation. Indeed, the majority of the existing studies used POP projects to reach a conclusion in relation to the effectiveness of POP (see Section 2.8 for details), however, “there has not been study of whether a problem-oriented approach used widely in a city would reduce overall crime in that jurisdiction” (Weisburd and Majmundar, 2018:15). The next section explains the stages of the SARA framework, which is the most common way of applying POP projects.

2.7.1 The SARA framework

The SARA framework was developed by Eck and Spelman in 1987 in the Newport News (Virginia) in the US to facilitate the implementation of POP. It is the acronym for scanning, analysis, response, and assessment. It should be immediately noted that POP can be practised via other frameworks, such as PAT (Eck, 2003), PROCTOR (Read and Tilley, 2000); the 5Is (Ekblom, 2008); SPATIAL (Burton and McGregor, 2018); and ID PARTNERS (Henson, 2005, cited in Sidebottom and Tilley, 2010). Respectively, PAT refers to Problem Triangle Analysis; PROCTOR to PROblem, Cause, Tactic, or Treatment, Output and Result; the 5Is to Intelligence, Intervention, Implementation, Involvement, and Impact; SPATIAL to Scan, Prioritise, Analyse, Task, Intervene, Assess, and Learn; and, finally, ID PARTNERS to (I)dentify the demand, (D)rivers, (P)roblem, (A)im, (R)esearch and analysis, (T)hink creatively, (N)egotiate and initiate responses, (E)valuate, (R)evuew, (S)uccess (cited in Sidebottom and Tilley, 2010: 7). The remainder of this section explains the SARA framework in detail.

2.7.1.1 Scanning: What are the problems¹⁰?

Scanning involves (a) identifying recurrent problems and their characteristics, which concern the community and the police, (b) prioritising those problems, and (c) selecting problems for further analysis. Most common features of problems are as follows: behaviour (e.g. noise), territory (e.g. neighbourhood), persons (e.g. the elderly), and time (e.g. festivals) (Goldstein, 1990: 67-68). Problems can be identified by the community, police management, and rank-and-file officers, for example, using (a) calls for service data, (b) crime data, (c) letters of complaint, (d) elected officials, (e) other governmental agencies, and (f) media (Goldstein, 1990; Eck, 2003; Bullock et al., 2006; Bullock, 2007; Scott et al., 2016).

¹⁰ Questions are adapted from Eck (2003: 81).

Goldstein (1990) insistently noted the importance of the personal experiences of rank-and-file officers. He argued that they are “in the best position to identify problems from the bottom-up” (ibid: 73).

Having identified problems, they can be prioritised through a variety of means: (a) making judgements regarding the impact of the problem on the community (e.g. cost); (b) analysing whether the problem affects the lives of residents; and (c) examining the degree of interest of the community to the inquiry and recommendations in relation to the problem (Goldstein, 1990; Bullock, 2007).

2.7.1.2 Analysis: What causes the problems?

Analysis is the most comprehensive understanding of a crime problem (Scott, 2000; Scott et al., 2016). It “focuses on the who, why and how of the specified problems, to inform decisions about responses” (Bullock et al., 2006: 110; see also Clarke and Eck, 2003). In other words, it is an attempt to understand the nature of crime problems, which is called “a broad enquiry” by Goldstein (1990, see pages 82-83 for the detailed questions to be asked in this step). For this, all the available data about the problem is gathered and then examined by trained analysts to understand the conditions that give rise to the problem. Sources of information could be the relevant literature, police files and department archives, rank-and-file officers, victims, offenders, other government agencies, and the wider community (Goldstein, 1990: 84-88).

After gathering the data from various sources, the critical issue is now the rigour of the inquiry. For this, the need for specialist analysts is crucial. Once police forces have specialist analysts, they can use several means to analyse the selected problem. The analysis can be conducted through using, for example, the Problem Analysis Triangle (PAT) (Eck, 2003), which has apparent affinities with routine activity theory (Cohen and Felson, 1979) that was defined in the same year that POP was first developed (Goldstein, 1979); it also complements the theory of POP (Scott et al., 2016). It analyses crime problems from three perspectives: offender, target/victim, and place. All three elements need to come together at the same time and place for a crime to occur. For instance, if a motivated offender has a chance of stealing a suitable target from a house due to the absence of a guard, it is highly likely that this crime will occur. Therefore, the police need to prevent those elements from coming together at the same time and place through collecting information about all three components of the triangle. The location element of PAT needs more attention since both likely offenders and

suitable targets (e.g. valuable and removable goods) may converge at problematic locations and, generally, these locations lack capable guardians (e.g. unoccupied houses in deprived areas) (Hamilton-Smith and Kent, 2005). However, Clarke and Goldstein (2003: 265) observed that “the police view of the problem was focused mostly on offenders and victims, rather than on the locations”. In addition, ‘crime attractors’, ‘crime generators’ and ‘crime enablers’ are three essential concepts (Brantingham and Brantingham, 1998; Sidebottom and Worthley, 2016) in the identification of hot spots where crimes mostly occur (Clarke and Eck, 2003; Weisburd, 2015). Crime attractors are places that attract perpetrators because they offer plentiful opportunities (e.g. drug markets, red-light districts). Crime generators are places which include suitable targets for opportunistic offenders (Clarke, 1998). These places might be shopping centres, concert areas, car parks without capable guardians, and so on. Finally, crime enablers are locations where there is an absence of capable guardians (e.g. unattended houses).

Figure 2.1: Problem analysis triangle



Figure 2.2: Problem analysis double triangle



Source: <https://popcenter.asu.edu/>

Eck (2003) improved the basic PAT presented above and developed the Problem Analysis Double Triangle. He added ‘handlers’ (e.g. parents, neighbours, police officers) to prevent likely offenders from committing crime; ‘managers’ (e.g. property owners, lifeguards, teachers in classrooms) to protect places; and ‘capable guardians’ (e.g. friends protecting friends) to protect potential victims from offenders (Scott et al., 2016: 245). According to Bullock et al. (2006: 112), this “has the greatest preventive potential”.

Analysts can also use concepts of ‘crime scripts’ (Cornish, 1994) and ‘crime chains’ (Felson and Clarke, 1998). Cornish (1994) coined the concept of ‘crime script’ to identify patterns of crime. He asserted that crimes are committed in the same way by different offenders. For example, a theft of vehicle script would be as follows: (1) gather tools, (2) enter car park, (3) loiter unobtrusively, (4) select vehicle, (5) approach vehicle, (6) break into vehicle, (7) take vehicle, (8) reverse out of bay, (9) leave car park (Cornish, 1994: 164). If the police can intervene at any stage of this script, it becomes straightforward to prevent the crime. However, this is not to say that offenders do not have any flexibility. The idea of a ‘crime chain’, which was proposed by Felson and Clarke (1998), suggests that a crime may occur due to another crime. For instance, criminal damage may occur when a burglary is being committed.

2.7.1.3 Response: How can we find effective solutions to the problems?

The next step is to develop tailor-made responses to crime problems in light of the comprehensive analysis conducted. “The development of appropriate responses is closely linked with the analysis that is performed” (Braga, 2008: 22; see also Braga, 2014). It is a step towards finding the most effective way of fighting the identified problem. As Goldstein (1979: 250) stated that this step is an “uninhibited search for alternative responses that might be an improvement over what is currently being done”. In other words, “identifying practical interventions that have a real chance of reducing the identified problem” (Bullock, 2007: 17) is crucial. For example, focussing on too narrow a set of problems, such as bullying around one school, or working on too broad a set of problems, such as violent crime, should be avoided (Goldstein, 1990; Clarke, 1997).

POP can be divided into two types: “enforcement” and “situational” (Braga, 2008: 55). The former applies mostly traditional tactics in a proactive way. For instance, a police force may apply directed patrols covering hot spots. However, Goldstein advocated situational POP by which situational responses, based on a thorough analysis of crime problems, are applied (Braga, 2008). Indeed, there are a number of alternative ways in which to respond to crime problems, which Goldstein (1990: 104-140) noted in his book:

- concentrating attention on those individuals who account for a disproportionate share of a problem (e.g. repeat offenders [victims])
- connecting with other government and private services (e.g. referral to another agency for a solution to the problem)

- using mediation and negotiation skills (e.g. to solve a dispute between tenants and landlords)
- sharing information with the community (e.g. to reduce anxiety and fear)
- mobilising the community (e.g. organising a neighbourhood crime watch against burglary)
- making use of existing forms of social control in addition to the community (e.g. the influence of a teacher over a student)
- altering the physical environment to reduce opportunities for problems to occur [situational POP].

One may find these strategies in individual POP projects, which are the unit of work in problem solving (Scott, 2000). The remainder of this section discusses, in particular, strategies of situational POP as they have “produced alternative responses that problem-oriented policing is designed to produce” (Goldstein, 1990: 103). Targeting repeat victimisation is also discussed as it is one of the alternative and conventional ways of responding to crime problems (Goldstein, 1990; Laycock and Farrell, 2003; Scott et al., 2016). In addition, it has been one of the major police performance indicators in the UK (Tilley, 2002).

2.7.1.3.1 Situational crime prevention responses

There is strong evidence that situational crime prevention is an effective way of reducing crime (Eck and Madensen, 2013). Importantly, it is highly likely that the conclusion drawn by Skogan and Frydl (2004) regarding the effectiveness of POP owed much to the relationship between POP and situational crime prevention (Scott et al., 2016). There are five main components of situational crime prevention: (1) increasing the effort, (2) increasing the risk, (3) reducing the rewards, (4) reducing provocations, and (5) removing excuses (Clarke and Eck, 2003; Clarke, 1997). Table 2.6 summarises 25 techniques of situational crime prevention based on these five main strategies. These strategies can be used against various types of crime, especially property crimes. Drawing upon the Reducing Burglary Initiative (RBI), these strategies are discussed in the following sections, respectively.

Increase the effort

The purpose of this strategy is to prevent offenders from accessing houses by applying physical prevention techniques, such as target hardening. For instance, fences and alleyway gating were popular and effective RBI interventions (Hamilton-Smith and Kent, 2005).

Increase the risk

This strategy often involves installing burglar alarms, street lighting, security lighting and 'occupancy' lighting (Hamilton-Smith and Kent, 2005) to increase the risk for offenders. A variety of alarms (e.g. pendant alarms, cluster alarms) were used in RBI projects, and they were found to be effective. However, it was unclear which kind of alarms affected burglaries (Hamilton-Smith and Kent, 2005). In addition, ten RBI projects used street lighting, half of which were found to be effective in reducing burglaries.

Reduce the rewards

The rationale of this strategy is reducing the value of targets for perpetrators. This can be done through, for example, property marking (Forrester et al., 1988; Hamilton-Smith and Kent, 2005). Few RBI projects used property marking as a way of reducing burglaries and evidence regarding its effectiveness was limited (Hamilton-Smith and Kent, 2005).

Reduce provocations

This strategy is implemented, for example, through education to prevent the influence from peers to commit burglary. A number of RBI projects used these techniques, but the evidence as to their effectiveness was not compelling (Hamilton-Smith and Kent, 2005).

Remove Excuses

Interventions under this strategy include deterrent publicity (e.g. keeping an eye on offenders), rental agreements (e.g. threat of eviction), antisocial behaviour orders (ASBOs - which no longer exist), and private rental sector measures to prevent offending through place-specific rules (Hamilton-Smith and Kent, 2005).

Table 2.6: Twenty-five techniques of situational crime prevention

Increase the Effort	Increase the Risk	Reduce the Rewards	Reduce Provocations	Remove Excuses
1. Target Harden	6. Extend guardianship	11. Conceal targets	16. Reduce frustrations and stress	21. Set rules
Steering column locks and ignition immobilisers	Go out in a group at night	Off-street parking	Efficient lines and polite service	Rental agreements
Anti-robbery screens	Live signs of occupancy	Gender-neutral phone directories	Expanded seating	Harassment codes
Tamper-proof packaging	Carry cell phone	Unmarked armoured trucks	Soothing music/muted lights	Hotel registration
2. Control access to facilities	7. Assist natural surveillance	12. Remove targets	17. Avoid disputes	22. Post instructions
Entry phones	Improved Street lighting	Removable car radio	Separate seating for rival soccer fans	“No parking”
Electronic and card access	Defensible space design	Women’s shelters	Reduce crowding in bars	“Private property”
Baggage screening	Support whistle-blowers	Pre-paid cards for pay phones	Fixed cab fares	“Extinguish campfires”
3. Screen exits	8. Reduce anonymity	13. Identify property	18. Reduce temptation and arousal	23. Alert conscience
Ticket needed for exit	Taxi driver IDs	Property marking	Controls on violent pornography	Roadside speed display boards
Export documents	“How is my driving?” decals	Vehicle licensing and parts marking	Enforce good behaviour on soccer field	Signatures for customs declarations
Electronic merchandise tags	School uniforms	Cattle branding	Prohibit racial slurs	“Shoplifting is stealing”

Table 2.6: Twenty-five techniques of situational crime prevention (continued)

Increase the Effort	Increase the Risk	Reduce the Rewards	Reduce Provocations	Remove Excuses
4. Deflect offenders	9. Use place managers	14. Disrupt markets	19. Neutralise peer pressure	24. Assist compliance
Street closures	CCTV for double-deck buses	Monitor pawn shops	“Idiots drink and drive”	Easy library checkout
Separate bathrooms for women	Two clerks for convenience stores	Control on classified ads	“It is OK to say No”	Public lavatories
Disperse pubs	Reward vigilance	License street vendors	Disperse troublemakers at school	Litter receptacles
5. Control tools/weapons	10. Strengthen formal surveillance	15. Deny benefits	20. Discourage imitation	25. Control drugs and alcohols
“Smart” guns	Red-light cameras	Ink merchandise tags	Rapid repair of vandalism	Breathalysers in bars
Restrict spray paint sales to juveniles	Burglar alarms	Graffiti cleaning	V-chips in TVs	Server intervention programmes
Toughened beer glasses	Security guards	Disabling stolen cell phones	Censor details of modus operandi	Alcohol-free events

Sources: Clarke and Eck (2003); Clarke and Bowers (2017)

2.7.1.3.2 Targeting repeat victimisation

As noted in Section 2.3.2, POP aims to prevent persistent crime problems via thorough analysis, which informs appropriate responses to such problems (Goldstein, 1990). Indeed, persistent crime problems refer to repeat victimisation of individuals, places (particularly hot spots), and households that have been victims of a crime once are more likely to be victimised again (Ellingworth et al., 1997; Pease, 1998; Bowers and Hirschfield, 1999; Eck, 2003; Tseloni and Pease, 2005; Farrell and Pease, 2007; Tseloni et al., 2010), often within a first few days of the first incident (Johnson et al., 1997).

There has been a particular interest in reducing repeat burglary victimisation in England and Wales over the last three decades (Forrester et al., 1988; 1990; Tilley, 1993; Tilley and Webb, 1994; Laycock and Tilley, 1995; Clarke, 1998; Laycock and Farrell, 2003; Farrell and Pease, 2007; Grove, 2011; Grove et al., 2012). The police have been advised to focus on repeat victimisation since the 1980s (Laycock and Farrell, 2003), and indeed repeat victimisation became a police performance indicator in the early 1990s (Tilley and Webb, 1994). By 1999, all police forces in England and Wales had a policy and system for identifying repeats and reducing (especially) repeat burglary victimisation (Farrell et al., 2000; Laycock and Farrell, 2003; Farrell and Pease, 2007).

The government promoted a ‘partnership approach’ officially via the Crime and Disorder Act 1998 to facilitate the prevention of repeat victimisation. Laycock and Farrell (2003: 221-22) stated that the government also took a number of measures to raise awareness about repeat victimisation, such as:

- Six “roadshows” on repeat victimisation, which were held across the country, and drew the research and its implications to the attention of relevant agencies, including the police.
- A “task force” on repeat victimisation was established within the central government research agency.
- A police officer was designated as repeat victimisation liaison officer in each of the 43 forces in England and Wales.
- The police were encouraged to present reports on their work at both practitioner and academic conferences.
- Continued investment was obtained in a research programme to demonstrate that reducing repeat victimisation could reduce crime.

- Reducing repeat victimisation was included as one of the Home Secretary's performance indicators for the police.

Overall, targeting repeat victimisation is an effective way of reducing crime. In particular, police forces in England and Wales have targeted repeat burglaries over the last three decades. POP also emphasises the importance of targeting repeat victimisation. Therefore, it can be concluded that the UK government has implicitly promoted POP since the 1990s.

2.7.1.4 Assessment: How can we learn from problem solving?

The key role of assessment is to find out 'what works' in terms of reducing crime along with avoiding the 'means-over-ends syndrome' (Braga, 2008; Scott et al., 2016). Therefore, police should not neglect the last step not only to allow them to learn lessons but also to assist others (Clarke, 1997). However, this stage has its own challenges (Goldstein, 1990), which will be discussed later in this chapter (see Section 2.9.1.4). Goldstein called upon the police to develop relationships with universities and other government agencies to be assessed independently, and therefore avoid repeating ineffective responses and save resources.

2.8 Does POP work?

Having explained how POP projects are implemented, the next step is to answer whether POP actually works. In Section 2.3.3, it was noted that the UK government has promoted POP either implicitly or explicitly since the 1980s (Bullock et al., 2006; Tilley and Scott, 2012). Police forces have applied small- and large-scale problem-oriented projects since the 1980s. Did applying POP to that extent have any impact on the level of crime rates in England and Wales? Indeed, there is a body of research in relation to the effectiveness of POP on crime and disorder (Braga, 2014). They include (1) narrative reviews (Skogan and Frydl, 2004; Weisburd and Eck, 2004), (2) systematic reviews (Mazerolle et al., 2006; Weisburd et al., 2010; Braga and Weisburd, 2012; Mazerolle et al., 2013; Gill et al., 2014; Braga et al., 2015; Telep and Weisburd, 2016) and (3) studies targeting repeat victimisation (Forrester et al., 1988; Grove, 2011; Grove et al., 2012). The remainder of this section reviews these studies in turn. However, it should be noted that previous research used problem-oriented projects to examine the effectiveness of POP and "there has not been study of whether a problem-oriented approach used widely in a city [or a PFA] would reduce overall crime in that jurisdiction" (Weisburd and Majmundar, 2018: 15).

2.8.1 Narrative reviews

Skogan and Frydl (2004) and Weisburd and Eck (2004) summarised the studies examining the effectiveness of POP on various crime problems (see Table 2.7). They stated that previous studies consistently suggest that problem solving is capable of reducing crime and disorder. Weisburd and Eck (2004: 56) also noted that “[e]vidence of the effectiveness of situational and opportunity-blocking strategies, while not necessarily police-based, provide indirect support for the effectiveness of problem solving in reducing crime and disorder”. As noted in Section 2.2, POP has a link with routine activity theory, rational choice theory, and situational crime prevention. In particular, Weisburd and Eck (2004) cited several studies examining the effect of *problem-solving* strategies (e.g. blocking crime and disorder opportunities in small places). The studies they cited (e.g. Poyner, 1981; Weisburd, 1997; Eck, 2002) found reductions in targeted crime and disorder. However, they noted that the studies they reviewed applied relatively weak designs.

Table 2.7: Studies cited in narrative reviews

Study name	Targeted problem
Cordner (1986)	Fear of crime
Eck and Spelman (1987)	Violent and property crime
Kennedy et al. (2001)	Firearm-related youth homicide
Capowich and Roehl (1994)	Various forms of disorder
Eck and Spelman (1987)	Various forms of disorder
Hope (1994)	Various forms of disorder
Mazerolle et al. (2000)	Violent and property crime
Clarke and Goldstein (2002)	Theft of appliances from new home construction sites
Braga et al. (1999)	Violent and property crime

There are also studies that did not report findings that favoured POP. For example, Weisburd et al. (2008) cited Stone (1993) and Stokes et al. (1996). The former study found a higher rate of being asked to buy or sell drugs in the treatment area. Although violence decreased in the intervention area, total and property crimes increased at a rate greater than the comparison sites. The latter study reported that student victimisation increased in the target school, while control schools experienced less student victimisation.

2.8.2 Systematic reviews

A specific systematic review on the effectiveness of POP (Weisburd et al., 2010), which is a more rigorous study than narrative reviews in terms of methodology, included ten eligible experimental and quasi-experimental evaluation studies (for the main analysis) and 45 before/after evaluation studies (for the secondary analysis) from amongst 5,500 articles and reports for further analysis. Out of ten experimental and quasi-experimental studies, nine studies (90%) were from the US, and only one study (10%) was from the UK. Thirty-two of the before/after evaluation studies (71%) were from the Goldstein and Tilley Award submissions (14 of which were from the UK); six were from peer-reviewed articles (two of which were from the UK). The rest mostly included published and unpublished reports (two of which were from the UK). Overall, Weisburd et al. (2010: 32) concluded that “the results [modest, but statistically significant reduction in crime and disorder] are similar whether we look at experimental or non-experimental studies”.

Mazerolle et al. (2006: 409) reviewed street-level drug law enforcement interventions and concluded that “[t]he results of the meta-analyses, together with examination of forest plots, reveal that problem-oriented policing and geographically-focused interventions involving cooperative partnerships between police and third parties tend to be more effective at controlling drug problems than community-wide policing efforts that are unfocused and spread out across a community”. The hot spots policing review by Braga et al. (2014) concluded that the effect of POP at hot spots was greater than other policing strategies. The legitimacy in policing systematic review by Mazerolle et al. (2013) concluded that POP could be used to promote and enhance citizen satisfaction. The disorder policing review by Braga et al. (2015: 580), which included 20 studies applying community problem-solving tactics, concluded that “[t]he results of our systematic review and meta-analysis suggest that disorder policing strategies generate noteworthy crime control gains. Importantly, these strategies yielded consistent crime reduction effects across a variety of violent, property, drug, and disorder outcome measures”.

The main problem with the above reviews is that the majority are from the US. Tuffin et al.’s (2006) study (National Reassurance Policing Programme - NRPP), which was included in both the community policing review (Gill et al., 2014) and the POP review (Weisburd et al., 2008; 2010), is one of the eligible studies coming from the UK. The NRPP was intended to address the ‘reassurance gap’, which refers to “the gap between the public perception of rising crime and the falling crime rate” (Tuffin et al., 2006: x) at 16 sites in England between

2003/04 and 2004/05. This programme was developed drawing upon the idea of ‘signal crimes’ (Innes, 2004). That is, some crime problems are more important than others in the eyes of the community. Tactics used to reassure citizens in the programme included (1) having easily accessible and visible police officers (e.g. Police Community Support Officers) and people from the local authority; (2) involvement of the community in identifying and prioritising problems; and (3) targeted problem-solving policing approaches.

Having implemented the programme, Tuffin et al. (2006) assessed the impact of the NRPP on key outcome indicators (e.g. crime, perceptions of anti-social behaviour, feelings of safety after dark, and public confidence in the police) at six sites. Tuffin et al. (2006) compared six trial sites with six control sites before and after the implementation of the programme in Surrey, England. Conducting victimisation surveys and through the use of police-recorded crime data (PRCD), Tuffin et al. (2006) assessed the impact of the programme and concluded that the decrease in the outcome indicators was associated with the NRPP and there were no improvements in risk or worry with regard to burglary. Although Tuffin et al. (2006) concluded an association between the implementation of the NRPP and the decrease in key outcome indicators, the sites were not selected randomly, and only two of the six treatment sites fully implemented the programme (Tuffin et al., 2006). The other four sites had problems in engaging with the community and implementing the problem-solving approach. In addition, the trial and comparison sites were only matched on population density, percentage of minority backgrounds, and percentage of managerial positions. That is, they omitted possible factors that could well have affected crime rates. There were also concerns about the victimisation survey, such as sample size and representativeness (see also Weisburd et al., 2010).

Morris (2006) evaluated the impact of the NRPP in the remaining ten sites in seven police force areas. Overall, *total* crime decreased significantly in only one site (Morris, 2006). In addition, “across the majority of sites, there was a positive change in public perceptions of crime” (ibid: 1). There were significant decreases in burglary and vehicle theft for five sites, but these decreases were not seen in wider Basic Command Units¹¹ (ibid). One of the main

¹¹ “Basic command units (BCUs) are local policing areas in England and Wales. NB – not all forces have BCUs as some use local policing units or operational districts. BCUs vary in size from over 1,000 officers to just under 100; some serve densely populated, ethnically diverse inner cities, while others cover vast tracts of sparsely populated countryside. What they do share are certain key aims and objectives, specifically to work with partner agencies in reducing crime and disorder in their areas, and to do so with integrity” (HMIFCRS, 2018). Available at: <https://www.justiceinspectrates.gov.uk/hmicfrs/our-work/article/basic-command-unit-bcu-reports/> [Accessed on 10 April 2019].

limitations of this evaluation is that there were no control sites. Therefore, it is challenging to associate significant reductions in crime with the implementation of the NRPP; the falling crime rates may be an independent result. Secondly, the change in crime rates was measured using PRCD, which ultimately is not a reliable source (HMICFRS, 2017).

In addition to Tuffin et al.'s (2006) work, the POP review (Weisburd et al., 2010) included 20 methodologically less rigorous (before/after without comparison groups) UK studies. They included problem-oriented projects submitted to the Goldstein and Tilley Award schemes by police forces in England and Wales before 2006 and published articles and unpublished reports (see Appendix 2.1). These studies targeted various crime problems, including burglary and car crime. However, they had a number of limitations. The main limitation of these studies was the absence of control/comparison groups. This creates the potential for internal validity issues. Moreover, "these studies rarely took statistical steps to account for "history," the idea that crime rates may be rising or falling independent of the specific problem-oriented policing project" (Weisburd et al., 2008: 30). A third limitation was that they were heavily reliant on PRCD as a measure of assessment. Victimization surveys were rarely used to assess differences in crime rates before and after the implementation of the projects. Fourthly, since these projects were submitted with the prospect of winning an award, they were biased toward success (Weisburd et al., 2008). Finally, similar to Tuffin et al.'s (2006) work, time and area coverage of these studies were limited.

2.8.3 Studies targeting repeat victimisation

There are also studies which focussed explicitly upon repeat victimisation initiatives using POP strategies. One such was the Kirkholt Burglary Project, which is a well-known project on repeat victimisation across the world. In the Kirkholt burglary project, "a detailed analysis of the burglary problem, as would be required for any problem-oriented approach" (Laycock and Farrell, 2003: 215) was carried out and repeat victims specifically targeted. As a consequence, burglaries fell by 75% in three years (Forrester et al., 1988). However, replications of the Kirkholt project were not successful to the same extent (Tilley 1993a).

Grove (2011) conducted a systematic review of 22 individual studies on repeat burglary victimisation from three countries (the UK, the US, and Australia). Grove et al. (2012) expanded that study to 31 studies on repeat victimisation, including crime types other than

burglary (22 of which were anti-burglary projects). They concluded that the projects from the UK were, overall, successful (see also Braga, 2008: 121-123).

Overall, although previous research (e.g. Weisburd et al., 2010) found that POP reduces crime, there is a limited number of high-quality studies examining the effectiveness of POP in the UK. For instance, the street-level drug law enforcement review did not include any eligible study from the UK (Mazerolle et al., 2006). Similarly, the pulling-lever policing review, which is a “problem-oriented policing framework to prevent gang and group-involved violence”, did not include any eligible study from the UK (Braga and Weisburd, 2012: 5). The hot spots policing review (Braga et al., 2014), which also included studies on POP, consisted of no eligible studies from the UK. Overall, there is a lack of rigorous studies from the UK, except for Tuffin et al.’s (2006) work. Targeting repeat victims is a promising method by which to reduce crime rates. Section 2.9 discusses factors that limit the implementation of POP, followed by Section 2.10, which explains the factors that facilitate the practice of POP.

2.9 Factors limiting the implementation of POP

This section explores both limitations of POP projects through the lens of the SARA framework, and the constraints imposed by organisational and frontline factors.

2.9.1 Limitations of POP projects via the SARA framework

2.9.1.1 Scanning

The main aim of the scanning phase of POP is to identify and group recurrent incidents and then prioritise them for further analysis. However, selecting too broad or too small a set of problems are typical implementation failures of problem-oriented projects (Goldstein, 1990; Clarke, 1998; Scott, 2000; Bullock and Tilley, 2003; Cordner and Biebel, 2005; Bullock et al., 2006; Scott, 2006; Boba and Crank, 2008; Carson and Wellman, 2018). Further, police forces appoint frontline officers, who are mainly in the rapid management of crime problems (Boba and Crank, 2008: 383) and can identify a problem by experience and observation (Cordner and Biebel, 2005), in problem-identification. Another issue in the scanning step as highlighted by Schnobrich-Davis et al. (2018) is that most police forces expect frontline officers to identify problems, but they should be identified not only by frontline officers but also by other possible resources such as interviews and surveys.

2.9.1.2 Analysis

It is only possible to develop high-quality responses to problems when a high-quality analysis is conducted (Bullock and Tilley, 2009). “Provision of data, analytic software for analysis and competent analysts” were found as essential factors encouraging proper analysis (Bullock and Tilley, 2003: 7; see also Goldstein, 1990; Clarke, 1998). However, studies (Leigh et al., 1996, 1998; Read and Tilley, 2000; Bullock et al., 2002; Bullock et al., 2006) suggest that there is a lack of high-quality analysis in practice due to inadequate analytic capacity and high-quality data. For example, Bullock et al. (2006) concluded that 15% (n = 22) of the Tilley Award projects (n = 150) conducted no or little quantitative analysis.

Read and Tilley (2000) scrutinised the implementation of POP across 43 police forces in England and Wales and found that most of the project reports written by police forces did not include the nature of problems and omitted the findings of the analyses. Further, studies suggested that police forces did not use alternative data sources from other governmental agencies and widely used PRCD (Leigh et al., 1998; Clarke, 1998; Read and Tilley, 2000; Bullock et al., 2002; Bullock et al., 2006). For instance, according to Leigh et al. (1998), police officers in Cleveland mainly used their own experience to analyse problems (see also Cordner and Biebel, 2005). Read and Tilley (2000) found similar results as 61% of the projects that they analysed used PRCD.

Finally, police forces did not use analysts in the correct position. The analysts generally dealt with data management rather than conducting high-quality analysis to develop responses to problems. Instead, police officers conducted analysis. For instance, analysts from Lancashire and Hampshire Police mostly worked on performance management monitoring and the National Intelligence Model (Bullock et al., 2006).

2.9.1.3 Response

Scott (2006) suggested that developing effective responses to crime problems is difficult as a result of inadequacy in:

1. the ability to wrangle data
2. using the related literature
3. using alternative response strategies
4. working with other governmental agencies and the community
5. conducting rigorous analysis.

Firstly, wrangling data is not an easy process and is often found difficult and time-consuming by police officers. As Leigh et al. (1998) found in Cleveland, police officers did not use official data to develop responses, even though they were provided with it. Secondly, police officers do not use related literature to conduct robust analyses; for instance, Read and Tilley (2000) concluded that police officers used what they learnt from their colleagues (see also Bullock et al., 2006). Thirdly, police officers do not use alternative response strategies and mostly rely on existing traditional policing tactics, such as patrolling and arresting (Read and Tilley, 2000; Scott, 2000; Clarke, 1998; Rojek, 2003; Scott et al., 2016). For example, Leigh et al. (1998) found that almost half of the actions taken by Cleveland and Leicestershire Police were representative of traditional police tactics. Fourthly, police forces rarely coordinate with other agencies (Leigh et al., 1998; Read and Tilley, 2000; Bullock et al., 2006). For example, Cleveland Police implemented 31% of the responses without any collaboration with other agencies (Leigh et al., 1998). Half of the Tilley Award projects (n = 75) were applied only by police forces (Bullock et al., 2006). Finally, developing effective responses to crime problems is difficult if analysis is not rigorous. For instance, Bullock et al. (2002) examined some problem-oriented projects and found that police forces could not develop rigorous responses to problems due to inadequate analysis.

2.9.1.4 Assessment

Scott et al. (2016) suggested that in order to avoid repeatedly making the same mistakes, the assessment step of POP is crucial. However, high-quality evaluation of responses is technically difficult (Goldstein, 1990; Read and Tilley, 2000; Scott, 2000; Bullock et al., 2006). Therefore, police forces commonly skip this step (Clarke, 1998; Eck, 2003). In studies conducting assessments, reductions in crime and disorder are mostly reported without linking the findings to specific responses. They also do not have a treatment and a control group. When they do so, they compare different locations (Clarke, 1998; Scott, 2000; Bullock et al., 2006).

Although there are obvious problems in the implementation of POP according to the studies cited above, it should be noted that a recent study (Schnobrich-Davis et al., 2018: 12) which analysed the problem-oriented projects that were submitted to the Goldstein Problem-Oriented Policing award between 1993 and 2017 reported that “[t]here is significant progress in the development of problem-solving and its continuation as a practice within police agencies” (see Table 2.8 for details).

Table 2.8: Development of problem-solving process

		1993-2004	2005-2017	% Change
Scanning	Citizen complaint	47	40	-15
	Town complaint	13	12	-8
	Police observation	42	58	38
	Calls for service	53	57	8
	Publicised incidents	12	35	191
	Survey results	18	29	61
Analysis	Citizen surveys	28	32	14
	Offender surveys	11	10	-9
	Victim surveys	4	10	150
	Business surveys	9	10	11
	Citizen interviews	30	21	-30
	Offender interviews	28	16	-43
	Victim interviews	13	8	-38
	Business interviews	22	14	-36
	Incident data	86	88	2
	Offender data	14	31	121
	Crime mapping	13	53	308
Response	Third party	78	78	0
	Enforcement	71	82	15
	CPTED	61	68	11
	Communication/media	63	68	8
	Community involvement	54	51	-6
	Information/data collection	45	57	27
	Legislation/ordinance	42	27	-36
	Other	20	17	-15
Assessment	Use of crime data	54	84	56
	Use of crime mapping	11	38	245
	Discuss diffusion of benefits	0	27	---
	Discuss crime displacement	19	42	121
	Use of researcher	16	30	88

Source: Schnobrich-Davis et al. (2018: 11)

2.9.2 Organisational and frontline factors

In Section 2.4.1.2, the author briefly discussed issues of organisational culture (particularly police culture) that explain why reforms fail. In addition to these, this section elaborates some of the factors that specifically inhibit the implementation of POP. Townsley et al. (2003) split these factors into two groups: (1) organisational and (2) frontline. Organisational factors are as follows:

- rapid turnover of staff who are arguably best suited to a problem-oriented approach (Townsley et al., 2003)
- little attention from middle management, who are responsible for translating force policy into local action, to POP (Townsley et al., 2003)
- constant change in priorities of police forces (Townsley et al., 2003)
- not taking POP seriously (Townsley et al., 2003; Scott, 2003; del Castillo, 2018)
- considering POP as a delaying mechanism (Townsley et al., 2003; Applegate, 2004; Cordner, 1998)
- inability/unwillingness to involve partner agencies, which is mainly due to the variety in the speed of progress amongst agencies.

Frontline factors are as follows:

- police officers making their decisions quickly and therefore giving reactive responses (Townsley et al., 2003; Corder and Biebel, 2005; Mazerolle et al., 2013)
- limited amount of knowledge in relation to solutions (responses) to crime problems (Townsley et al., 2003)
- “I do not know” phobia and “I know best” syndrome, which are due to inadequate analysis of problems, and lack of knowledge regarding the problems (Townsley et al., 2003)
- tensions between frontline officers and managers (Reuss-Ianni, 1983)
- unwillingness of frontline officers to adopt top-down strategic reforms due to scepticism and mistrust as they do not believe that their departments would support their decisions if and when something went wrong (Allen, 2002).

Skogan (2008: 23) also summarised a number of issues that cause reform failure:

“I summarize what I have gleaned about obstacles to change in police organizations in 11 categories. Many of them reflect processes internal to police agencies. These I mostly attribute to the career and bureaucratic interests and managerial outlook of the

parties involved. At the top, executives worry about keeping their jobs and the rank-and-file working hard and out of trouble. Sergeants may not want to stray from what they know how to do in order to keep out of trouble. Street officers do not want to be plagued by out-of-touch programs that add to their workload and give them tasks that lie outside their comfort zone. Elite units such as detectives frequently are able to avoid getting involved, while union leaders keep a careful eye on their strategic situation vis-a-vis management. Other obstacles are probably endemic to public sector organizations: these include problems of interagency coordination, the competing demands of differing constituencies, and the inability of the police to measure their success in the absence of a profit-and-loss statement. External to the police are community and political forces that can stymie change as well.”

It is obvious that police forces have had numerous difficulties while implementing POP. However, previous research suggested that although there has been a disconnect between the theory and practice of POP, “problem-oriented policing interventions may not need to be implemented in the ways envisioned by Herman Goldstein to produce a crime prevention effect” (Braga and Weisburd, 2006: 134, see also Eck, 2003).

2.10 Factors facilitating the implementation of POP

This section discusses some of the factors facilitating good practice in POP (Goldstein, 1990; Bullock and Tilley, 2003; Bullock et al., 2006; Scott, 2006; Bullock, 2007). These factors may minimise the problems mentioned above.

2.10.1 Leadership and management

Leadership plays a vital role in mainstreaming POP within a police force area (Goldstein, 1990; Leigh et al., 1998; Read and Tilley, 2000; Bullock and Tilley, 2003; Townsley et al., 2003; Bullock et al., 2006; Scott, 2006; Tilley and Scott, 2012; Mazerolle et al., 2013; del Castillo, 2018). Read and Tilley (2000) found that police forces managed by leaders who were committed to the principles of POP were better at putting it into practice (see also Goldstein, 1990). For instance, Bullock et al. (2006: 12) noted that Lancashire and Hampshire “can be considered to be amongst the UK’s very best in terms of vigour and resources that have gone into it [POP]” owing to their leaders’ commitment to the principles of POP. In addition, an empirical analysis of whether POP-committed leadership reduces crime rates in a southern state in Australia (Mazerolle et al., 2013) demonstrated that implementation of POP strategy at the organisational level under the leadership of Commissioner Mal Hyde had a statistically significant impact on overall crime, which was mostly due to reductions in property crime. This result might be a reflection of employing a

flexible management style, which gives more freedom to subordinates and fosters their creativity (Goldstein, 1990). However, it should be noted that this kind of leadership is rare.

Lastly, the implementation of POP usually depends on committed and enthusiastic individual police officers (Bullock et al., 2006). However, relying heavily on individual police officers may cause problems in terms of sustainability. Once those POP-committed leaders and police officers retire or leave their forces, its implementation might cease. Therefore, POP should be practised by all staff for the sake of sustainability (Scott, 2000).

2.10.2 Training and resources

Training is one of the key factors facilitating the practice of POP (Goldstein, 1990; Bullock and Tilley, 2003; Townsley et al., 2003; Bullock et al., 2006; Tilley and Scott, 2012). Townsley et al. (2003: 206) added that “Retraining as compulsory would raise the status of problem-solving considerably”. In proper training, police officers first need to understand the principles and benefits of POP. Secondly, police officers and the community should be informed about the importance of dealing with the causes of problems rather than targeting incidents when they occur (Bullock et al., 2006). Thirdly, they need to know good and bad examples of POP in practice, and the general problems discussed above (Goldstein, 1990). For example, it has been found that the more police provide training, the better they are at implementing POP (Read and Tilley, 2000), as in Lancashire and Hampshire (Bullock et al., 2006).

Proper implementation of POP also depends heavily on sufficient and available resources such as finances, authority, and staffing (Scott, 2006). For example, a recent study (del Castillo, 2018) reported that lack of resources challenged the implementation of POP in Montevideo, Uruguay.

2.10.3 Rewards and incentives

Previous studies found that rewards and incentives play an important role in running POP effectively within a police force (Bullock and Tilley, 2003). They might include a trip to another country (Leigh et al. 1998), appraisal of individuals (Read and Tilley, 2000), and providing funding for outstanding problem-oriented projects to be presented at national or international conferences (Bullock et al., 2006). For instance, Bullock et al. (2006) found that incentives (e.g. an internal award scheme) were an important driver to the application of POP in Lancashire.

Townsley et al. (2003) suggested that making promotions based on POP-related efforts might reinforce organisational change towards a problem-oriented approach. Two requirements for promotion to any rank might be (a) “a thorough understanding of the problem-solving policing ethos, and (b) evidence of problem-solving participation” (ibid: 204, see also Goldstein, 1990). Once police officers believe that POP is a requirement of promotion, they might pay more attention to it. For example, Del Castillo (2018) found that economic incentives offered by another programme challenged the implementation of POP in Montevideo as a significant number of officers asked to be transferred to that programme.

2.10.4 Sharing good practice

The more police forces applying POP share their good practices, the more others get interested in it (Scott, 2000; Bullock and Tilley, 2003; Bullock et al., 2006). Therefore, it is important to have platforms to spread good practice in POP. For example, those interested in applying POP might access a number of useful resources, including:

1. the Police Online Knowledge Area (POLKA)
2. National Police Library
3. What Works Centre for Crime Reduction
4. College of Policing toolkit
5. Evidence-Based Policing Matrix
6. POP website (<https://popcenter.asu.edu/>).

In addition, conferences might be a good opportunity to follow the POP-related developments. For example, Lancashire held annual conferences where they presented their local problem-oriented projects to national and international attendees (Bullock et al., 2006:51). It could be argued that these conferences enabled Lancashire to become one of the leading police forces implementing POP across the world (Scott, 2000).

2.11 Chapter summary

This chapter started by describing the theoretical framework underpinning both the implementation of POP and the current study. It highlighted the strong relationship between POP, routine activity theory, rational choice theory, and situational crime prevention. In particular, routine activity theory was selected to identify the characteristics of households (micro-level) to be used in the statistical models in Chapter 7. The theoretical framework also included social disorganisation theory, which was selected to identify the characteristics

of PFAs (macro-level) to be used in the statistical models in Chapter 7. Finally, it was argued that basic components of new public management match up with the components of POP.

Following a brief history of policing, the chapter discussed how Goldstein developed POP, drawing upon his criticisms against the reform era of policing when random car and foot patrols, rapid response to calls and follow-up investigation were considered the best methods to control crime. The chapter noted that after the development of POP, the UK government has promoted POP either implicitly or explicitly since the 1980s.

The chapter outlined the major objectives and strategies of policing in general and POP in particular, followed by a discussion of the relationship between POP and other policing strategies. Notably, it was noted that the main objective of POP is to change the mindset of the police from one of being reactive to proactive. Problem solving is the operational strategy of POP, and its unit of work is problem-oriented projects. Police forces have applied small and large-scale problem-oriented projects since the 1980s, which is why this chapter argued that one can measure the effectiveness of POP using problem-oriented projects. In addition, one can measure the effectiveness of POP by asking whether the 'POP movement' has been successful. That is, one can ask whether problem-solving methodology has been integrated into everyday policing operations. The chapter argued that one cannot assume that if a police force claims to apply POP it is a POP-committed police force. Therefore, applying POP should not be the sole measurement to test the effectiveness of POP. Instead, the level of commitment to POP must be taken into account. However, the chapter identified that no previous research categorised all police forces in terms of level of commitment to POP.

The chapter reviewed previous research in relation to the effectiveness of POP under three sub-headings: (1) narrative reviews, (2) systematic reviews, and (3) studies targeting repeat victimisation. Although previous research suggested that POP reduces crime in certain circumstances, there is a lack of high-quality studies in this regard. However, it was noted that even weak applications of POP can reduce crime rates (Weisburd et al., 2010; Braga, 2014; Laycock and Tilley, 2018), which is one of the main inspirations to conduct the current study. The most significant gap in knowledge this chapter identified is that there has been no research investigating whether widespread application of POP in a PFA would reduce, for example, burglary in that PFA. The chapter finally discussed the factors limiting and facilitating the implementation of POP, respectively.

The next chapter critically reviews some of the crime drop hypotheses according to six sub-headings: (1) economic hypotheses, (2) offender-based hypotheses, (3) substance abuse hypotheses, (4) security and opportunity hypotheses, (5) criminal justice system hypotheses, and (6) policing strategies to identify whether they played a role in the burglary drop in England and Wales. By doing so, it will help the researcher select the control variables to be used in Chapter 7, to assess whether there is a statistically significant relationship between the implementation of POP and the mean number of burglary victimisations in England and Wales between 1995 and 2003/04.

CHAPTER 3

THE CRIME DROP: A PUZZLING PHENOMENON

3.1 Introduction

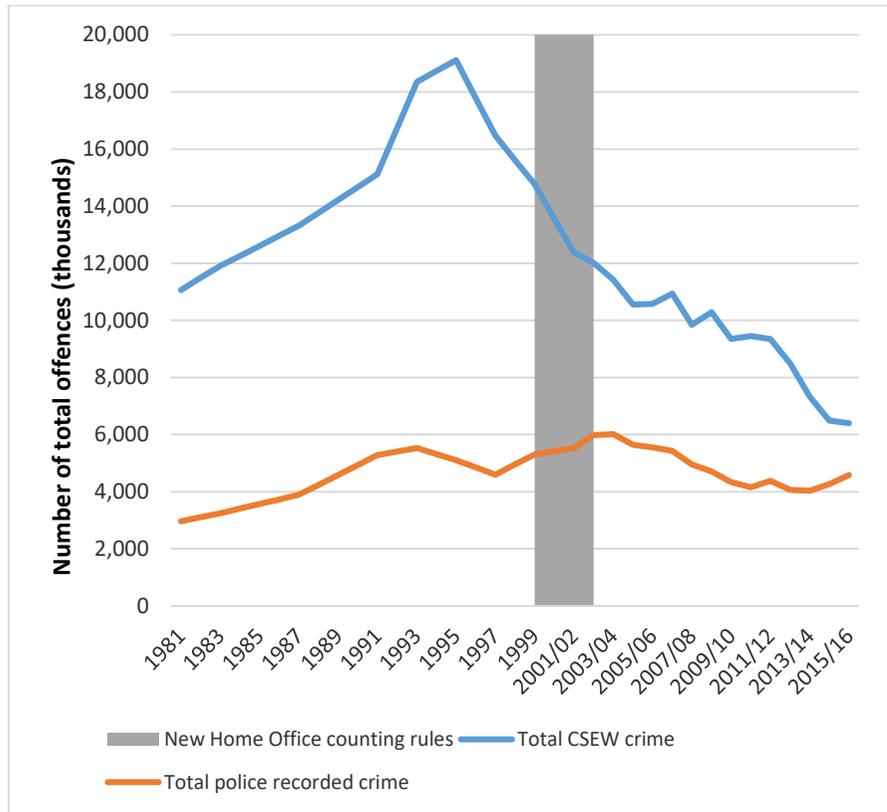
Victimisation surveys and police recorded crime data (PRCD) suggest that crime has dropped dramatically (with variation in timing, magnitude, and trajectory) in Western industrialised countries since the 1990s (Aebi and Linde, 2010; Tseloni et al., 2010; van Dijk et al., 2012b; Tonry, 2014; ONS, 2017). Crime first started to decrease in the US. As such, initial studies focussed on the US context. For instance, Blumstein and Wallman (2006) published a collection of US-based studies that concentrated on violent crime. However, some scholars observed that other countries experienced falls in crime as well (Tseloni et al., 2010). For example, total crime (excluding fraud and computer misuse) recorded by the Crime Survey for England and Wales (CSEW) dropped by 67% in England and Wales between 1995 and 2015/16 (ONS, 2017; see Figure 3.1). Figure 3.1 also reveals four crucial points:

1. There is a significant difference between the CSEW and PRCD in terms of the total number/volume of crime.
2. The decline in total crime after the mid-1990s is more marked in the CSEW.
3. While total crime recorded by the CSEW decreased sharply and consistently, especially between 1995 and 2004/05, total police-recorded crime increased between 1997 and 2002/03 due to changes in Home Office Counting Rules (ONS, 2017).
4. It is evident that according to both data sources, total crime decreased after the mid-1990s if the period during which changes were applied to PRCD is ignored.

If we focus solely upon burglaries (excluding attempted burglaries), CSEW burglaries, for example, decreased by 68% between 1993 and 2015/16 (ONS, 2017; see Figure 3.2). Figure 3.2 also shows that both CSEW and PRCD burglaries started to decrease in 1993. It seems that the new Home Office Counting Rules enacted in 1999 did not affect PRCD burglaries as they continued to decline after 1999. This result might be due to the fact that burglary is generally well-reported to the police (ONS, 2017).

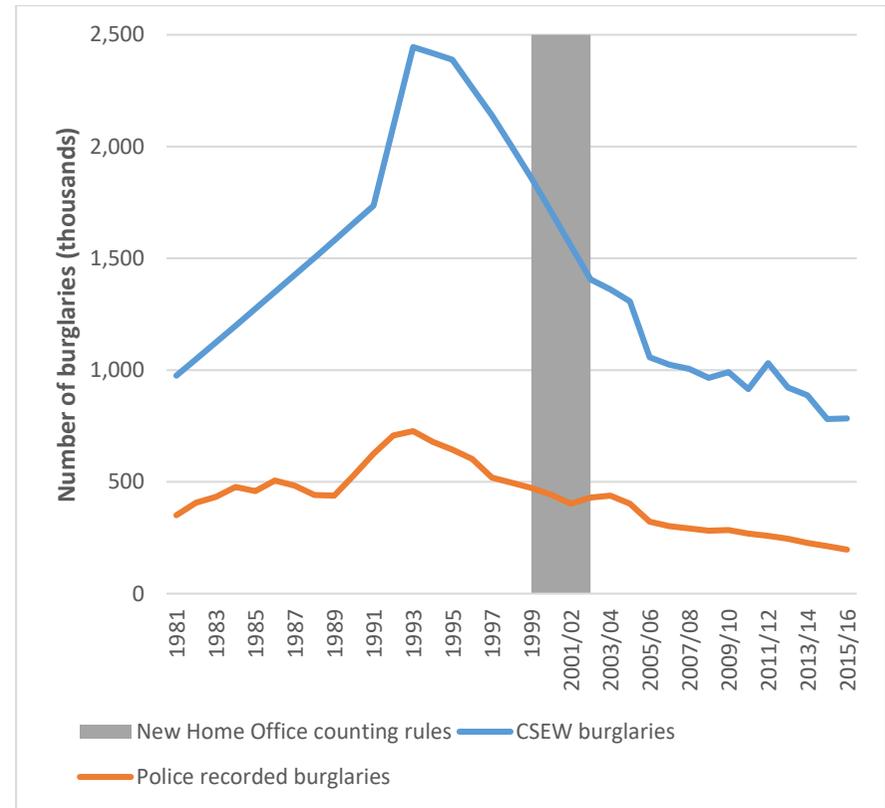
So, what might explain the fall in crime recorded by the CSEW and PRCD? This chapter seeks an answer to this question by critically reviewing the existing crime drop hypotheses

Figure 3.1: Number of total offences (thousands), the CSEW and PRCD, 1981-2015/16.



Source: Adapted from ONS (2017)

Figure 3.2: Number of burglaries (thousands), the CSEW and PRCD, 1981-2015/16



Source: Adapted from ONS (2017)

according to six categories (see Section 3.2). By doing so, it is hoped that it will become possible to accurately assess the relationship between POP and the burglary drop in England and Wales in Chapters 6 and 7. This chapter also reviews burglary risk and protective factors to be entered into the statistical models in Chapter 7.

3.2 The crime drop hypotheses

Many studies have attempted to explain possible reasons for the crime drop. However, they have not been able to offer convincing explanations to solve this puzzle (Zimring, 2007; Farrell et al., 2010; Tseloni et al., 2010). Therefore, it has become challenging to deduce reasonable outcomes from the existing studies for policy purposes. The remainder of this chapter critically reviews existing outstanding crime drop hypotheses under six sub-headings: (1) economic hypotheses, (2) offender-based hypotheses, (3) substance abuse hypotheses, (4) security- and opportunity-related hypotheses, (5) criminal justice system hypotheses, and (6) policing-related strategies (see Table 3.1, as adapted from Farrell et al., 2014).

Table 3.1: The crime drop hypotheses

Economic	Strong Economy Consumer Confidence
Offender-Based	Ageing Population Legalisation of Abortion Childhood Lead Exposure Civilising Process Immigration
Substance Abuse	Waning Crack Market Heroin Market in the UK
Security and Opportunity-Related	Improved Security The Keystone and Debut Crime The Internet Phone Guardianship
Criminal Justice System	Imprisonment Death Penalty “More Guns, Less Crime”
Policing-Related Strategies	More Police Community-Oriented Policing Intelligence-Led Policing Hot Spots Policing Repeat Victimization

3.2.1 Economic hypotheses

3.2.1.1 Strong economy

3.2.1.1.1 Rationale

This hypothesis suggests that a decrease in unemployment rates or growth in income have played a significant role in inducing the crime drop (Blumstein and Wallman, 2006; Zimring, 2007; Rosenfeld and Messner, 2009).

3.2.1.1.2 Empirical evidence

Rosenfeld and Messner (2009) analysed burglary trends across the US and European countries and concluded that a strong economy was one of the factors that contributed to the crime drop. They suggested two mechanisms for the crime drop: (1) “the structural similarities and interdependence of the world’s leading market economies”; and (2) “the major incentives and controls that shape acquisitive criminal behaviour in developed societies” (Rosenfeld and Messner, 2009: 450). In addition, Aebi and Linde (2010) suggested that the drop in property crimes was related to the changes in the socio-economic situation in Europe, while Brown (2015) concluded that 11% of offenders he interviewed cited the increase in affluence as the reason for the drop in property offences in Australia. On the contrary, Spelman (2005), drawing upon 68 studies which were conducted to examine the link between economy and crime, noted that the results were mixed depending on the level of aggregation being analysed (e.g. county versus nation). Spelman (2005) stated that studies examining the relationship at high levels of aggregation did not show any effect of unemployment on crime. Therefore, Spelman (2005) suggested disaggregation to understand the relationship between economy and crime, and found that one-quarter of the drop in property crime could be attributed to the booming economy in Texas. A more recent study by Baumer et al. (2012: 9) criticised this hypothesis and concluded that:

“Overall, we find moderately strong evidence that the assumed main effects of wages and unemployment rates in most previous studies are questionable. The influence of these economic conditions on contemporary crime trends is contingent on other conditions, and this may be one reason why past research yields highly inconsistent empirical patterns for these attributes”.

3.2.1.1.3 Critique

Mechanisms for this hypothesis do not appear convincing as the principal cause of the crime drop (Farrell et al., 2010; van Dijk et al., 2012b) as the increase in crime rates in the 1980s

can equally be explained by increased economic growth. Scholars argued that the wealthier people became, the more opportunities there were for offenders (e.g. more phones, more tablets) and the more crimes were committed in the 1980s. If this were the case, this hypothesis cannot be the principal explanatory factor for drops in crime (van Dijk et al., 2012b).

On a different note, Zimring (2007) concluded that Canadian economic growth was not similar to American economic growth. Therefore, this hypothesis cannot explain the decline in crime rates in Canada. This hypothesis is also unable to explain why some types of crime (e.g. phone thefts and internet crimes) increased if a strong economy decreases crime (Farrell, 2013; Farrell et al., 2014). Most importantly, Knepper (2012) questioned why property crime rates fell during the 2008 recession in England and Wales.

Overall, available evidence suggests that this hypothesis is not the main driver of the crime drop, but it is potentially worth analysing the effect of household desirability and attractiveness (which might be indicated by high household income, socio-economic status of the head of a household, owner-occupied households and number of cars - see Section 3.3 in this chapter) on burglary rates.

3.2.1.2 Consumer confidence

3.2.1.2.1 Rationale

This hypothesis proposes that when people earn more money, they do not tend to buy second-hand goods, thus undermining the sustainability of the stolen goods market. Therefore, property crimes decrease; offenders do not engage in risky activities anymore; and violence also reduces (Rosenfeld and Fornango, 2007; Rosenfeld and Messner, 2009).

3.2.1.2.2 Empirical evidence

Rosenfeld and Messner (2009) concluded that there is an association between increased consumer confidence and the decline in burglaries in the US and nine European nations, excluding the UK. Research in the UK context is limited.

3.2.1.2.3 Critique

Roeder et al. (2015) criticised Rosenfeld and Fornango (2007) and argued that using the Index of Consumer Sentiment is limited as a method as respondents could easily miscalculate the timing or importance of individual economic conditions. In addition, Rosenfeld and Fornango (2007) did not control for technological developments and other

crucial variables that may affect theft or burglary. Moreover, Farrell et al. (2011: 149) criticised the hypothesis by saying “we remain uncertain how this hypothesis reconciles with the improving economies and increasing crime rates of the post-World War II period, and the hypothesis appears largely untested in the absence of evidence relating to stolen goods”. Although consumer confidence declined with the reduction in the strength of the global economy in 2008/09, crime at this point was still decreasing (Farrell et al., 2015). It also does not appear to provide strong evidence for the variation in the crime drop between countries and crime types (ibid).

3.2.2 Offender-based hypotheses

3.2.2.1 Ageing population

3.2.2.1.1 Rationale

The relationship between age and crime has been an important research subject to scholars to date (e.g. Gottfredson and Hirschi, 1990; Blonigen, 2010). This hypothesis proposes that as a result of longevity and declining fertility rates, the number of young people (aged 16-24 and considered potential offenders) as a proportion of the overall population has decreased in many societies and crime rates have accordingly fallen.

3.2.2.1.2 Empirical evidence

Zimring (2007) compared the US crime trends with Canada and concluded that the ageing population seems to be one of the factors contributing to the crime drop in both countries. In addition, Baumer and Wolff (2014a; 2014b) asserted that there is a strong relationship between an ageing population and cross-national homicide downward trend. However, more recently, Kaylen et al. (2017) analysed the relationship between changes in individuals’ demographic characteristics and aggravated assault victimisations using the National Crime Victimization Survey in the US, but found no significant links between them.

3.2.2.1.3 Critique

It was argued by Blumstein and Rosenfeld (2008: 21) that “during the sharp crime drop of the 1990s; age composition changes were trending in the wrong direction: the number of 18-year-olds in the U.S. population was increasing while crime rates were declining for other reasons”. Additionally, Roeder et al. (2015) stated that the proportion of the US population aged between 15 and 30 did not essentially change from 2000 to 2013. Therefore, they concluded that the ageing population hypothesis did not work for the 2000s when crime rates were still decreasing. Further, if demographic changes account for the crime drop, then it is

not clear why some types of crime increase, such as phone theft and internet crimes (Farrell et al., 2014). In England and Wales, the ratio of old-to-young increased substantially during the early 1990s (ONS, 2017), when crime increased markedly. Therefore, the hypothesis is unlikely to be the cause of the crime drop in England and Wales. However, Tseloni (2006), using the CSEW 2000 sweep, found a statistically significant relationship between age and burglary rates in England and Wales. Hence, it is worth analysing the effect of age on burglaries in Chapter 7.

3.2.2.2 Legalisation of abortion

3.2.2.2.1 Rationale

This hypothesis proposes that abortion legalisation in the US in 1973 had an impact on the crime drop (Donohue and Levitt, 2001; 2004; 2008; Levitt, 2004). That is, after the legalisation was passed, fewer unwanted children, who are deemed potential future offenders, were born in the most ‘at risk’ groups, and therefore crime rates went down.

3.2.2.2.2 Empirical evidence

According to Donohue and Levitt (2001), legalised abortion was the primary reason for the falls in murder, property and violent crimes in the US in the 1990s. However, Joyce (2004; 2009) criticised Donohue and Levitt and argued that they failed to acknowledge illegal or unreported abortion and fertility rates and concluded that there is little evidence to support their hypothesis. Also, Zimring (2007) criticised Donohue and Levitt (2001) in terms of methodology and conducted a more rigorous analysis, which considered the variation across states and found that there was no relationship between the abortion legalisation and the crime drop. Blumstein and Rosenfeld (2008) also found that property crimes did not drop until 1994, although the first cohort after the abortion legalisation celebrated their 21st birthdays. More recently, Shoesmith (2017) disaggregated Donohue and Levitt’s national panel-data models to the state level and found that their results in 2001, 2004 and 2008 articles were driven by high concentrations of teenage abortions in a few of the states, and concluded that unwanted pregnancy is not a significant factor.

3.2.2.2.3 Critique

Zimring (2007) was not convinced to consider this hypothesis as the main driver of the crime drop due to the variation of government policies and timings across European countries. Therefore, he criticised the methodology and core idea of the hypothesis and suggested that there is no evidence that it is applicable in other countries. Conversely, Dills et al. (2010)

found that while the hypothesis is accepted in Canada, France, and Italy, it is rejected in Denmark, Finland, Hungary and Poland. In Japan and Norway, crime decreased before the abortion legalisation, and indeed the decrease subsequent to the legalisation being enacted was not immediate. Also, this hypothesis cannot explain why e-crimes and phone theft increased (Farrell et al., 2010). In the UK, Kahane et al. (2008) conducted a study and found no effect of the abortion legalisation on the crime drop. They concluded that although abortion was legalised in the UK about five years earlier, total crime in the UK began to drop at about the same time as in the US.

3.2.2.3 Childhood lead exposure

3.2.2.3.1 Rationale

This hypothesis suggests that the decrease in early childhood lead exposure, which is linked to lower IQ scores and behavioural problems, is associated with the decline in crime in the US (Nevin, 2000; 2007; Stretesky and Lynch, 2004; Reyes, 2007).

3.2.2.3.2 Empirical evidence

Reyes (2007) found that the reduction in childhood lead exposure is responsible for the significant decline in violent crime in the US. However, the same author concluded that there is no statistically significant relationship between the decrease in early childhood lead exposure and property crimes, including burglary, in the 1990s.

3.2.2.3.3 Critique

Farrell et al. (2011) quite reasonably asked why some types of crime increase while others decrease if this hypothesis is correct. In addition, Dills et al. (2010) stated that the use of lead increased substantially between 1910 and 1970 and argued that if the hypothesis was correct, crime rates should have increased between 1930 and 1985. However, murder rates in the US decreased between 1930 and 1950.

As noted above, the critical point is that this hypothesis is confined to particularly violent crimes, and the proponent of the hypothesis did not report a statistically significant relationship between the decrease in early childhood lead exposure and the burglary drop, which is the focus of the current study.

3.2.2.4 Civilising process

3.2.2.4.1 Rationale

The very basic idea of this hypothesis is that the more educated society is, the less violent crime is committed (Ouimet, 2002).

3.2.2.4.2 Empirical evidence

In his extensive research on the decline in homicide across Western countries, Eisner (2014) argued that a number of factors associated with pacified behaviour in communities caused decreases in crime. They include the establishment of states and criminal justice systems, disciplining policies that control the daily life of individuals and the diffusion of literacy, which support conscience and self-control (see also Pinker, 2011). According to LaFree (1998), these factors increased trust in political institutions, improved economic well-being, increased support for criminal justice, welfare and educational institutions in the 1990s (see also Lappi-Seppala and Lehti, 2014). Ouimet (2002) also proposed that the civilising process may have played a considerable role in the crime drop. However, Farrall (2017) argued that there is no real evidence to accept the hypothesis because all suggestions proposed by the proponent of this hypothesis are vague. He also asked why crime rates increased between 1960 and 1990 if the hypothesis is correct.

3.2.2.4.3 Critique

Farrell et al. (2014) argued that the terms “increasing trust” and “increasing support”, which are used to support this hypothesis, are “extremely general” and “extremely unclear” in terms of explaining falls in crime ranging from property crimes to domestic violence (see also Tcherni-Buzzeo, 2019). In addition, Farrell et al. (2014) asked that if the civilisation of society reduces homicide substantially, why would mobile thefts and internet-related crime increase. Besides, it is unclear why there are still some quite significant differences both within countries and between countries (Farrell et al., 2014).

3.2.2.5 Immigration

3.2.2.5.1 Rationale

This hypothesis argues that the rise of immigration caused a decline in crime rates (Sampson, 2008; Stowell et al., 2009; Lee and Martinez, 2009; Wadsworth, 2010).

3.2.2.5.2 Empirical evidence

A number of studies conducted in the US concluded that there is a relationship between the increase in immigration and the decrease in crime (Sampson, 2008; Stowell et al., 2009; Lee and Martinez, 2009; Wadsworth, 2010). More recently, Ousey and Kubrin (2018) conducted a comprehensive review and meta-analysis of US-based studies and concluded that the relationship between immigration and crime is negative but very weak. Importantly, as this study examines the burglary drop in England and Wales, it should be noted that the late 1990s/early 2000s' wave of immigration slightly increased property crime while the wave after 2004 did not have any impact on crime rates in England and Wales (Bell et al., 2013).

3.2.2.5.3 Critique

The hypothesis still needs clearer and more convincing evidence to explain why phone theft or e-crime, for example, increase if immigration accounts for the crime drop. The hypothesis also cannot “accommodate the variable trajectories of crime in different countries and for different crime types” (Farrell et al., 2014: 448). Immigration was rising not only in the 1990s but also before the 1990s (Farrell, 2013). Overall, it seems that this hypothesis cannot account for the burglary drop that has been experienced in England and Wales since the 1990s. However, Sampson and Groves (1989) found that ethnic heterogeneity is one of the main factors affecting crime rates due to a lack of trust amongst ethnic groups in a community. It also affects social ties in a community, which may lead to increased crime rates. Therefore, it should be included in the analysis at both household- and PFA level to increase the power of the analysis.

3.2.3 Substance abuse hypotheses

3.2.3.1 Waning crack market

3.2.3.1.1 Rationale

The basic rationale behind this hypothesis is that the decline in the crack market caused the crime drop (Levitt, 2004).

3.2.3.1.2 Empirical evidence

Levitt (2004: 181) noted: “[a]lthough the research is limited, I nonetheless believe that crack has quite likely played an important role in the decline in homicide in the 1990s, at least for homicide”. More importantly, the same author’s study found no impact of the waning crack market on property crime, which is the focus of this thesis. Berg et al. (2016) used individual-level data from the Pittsburgh Youth Study to assess whether the 1990s crime drop reflected

a decrease in prevalence and incidence of offending. However, they did not find a significant difference in illegal drug sales during the period.

3.2.3.1.3 Critique

Farrell et al. (2014) are not convinced that this hypothesis can explain the discrepancies with the trends in crime across different countries (see also Zimring, 2007; Aebi and Linde, 2010). Notably, it does not seem to account for the decrease in burglary, and car theft in England and Wales (Farrell et al., 2014) since the patterns of drug use were different from the US (Morgan, 2014). Finally, this hypothesis fails to offer a convincing explanation of why some types of crime increase while others fall (Farrell et al., 2014).

3.2.3.2 Heroin market in the UK

3.2.3.2.1 Rationale

This hypothesis proposes that crime rates dropped due to the decrease in heroin usage in the UK (Bennett et al., 2008).

3.2.3.2.2 Empirical evidence

Although many studies have examined the relationship between drug use and crime (see Bennett et al. 2008 for a comprehensive review), research on the long-term relationship between the heroin market and the crime drop in the UK is limited. A Home Office report written by Morgan (2014) suggested that the decreased use of heroin had a significant impact on the crime drop in the UK. However, the study is far from being convincing, as will be discussed in the next section.

3.2.3.2.3 Critique

The use of heroin increased in the 1980s and then dropped in the 1990s. Farrell et al. (2014) argued that this decline might have been due to improved security. The idea behind this suggestion is that since offenders commit crime as a means of financing heroin usage, improved security prevented offenders from committing a crime and then the heroin usage dropped as the offenders could not finance heroin. Overall, improved security caused the crime drop rather than the decline in the heroin market. They also argued that if the decline in the heroin market is responsible for the crime drop in the UK, why would phone theft and e-crime increase? In addition, Pierce et al. (2015) stated that previous research mostly focussed on the relationship between drug usage and acquisitive crimes and, therefore, the link between the falls in violent or sexual crimes and the decrease in heroin usage is unclear.

A particular critique of Morgan (2014) is that the study used PRCD, which is not recognised as a national data source by the ONS. Therefore, Morgan's (2014) conclusions should be read with caution.

3.2.4 Security and opportunity-related hypotheses

3.2.4.1 Improved security

3.2.4.1.1 Rationale

This hypothesis proposes that increased security of homes and vehicles decreased offender opportunities, and crime therefore fell (Farrell et al., 2011).

3.2.4.1.2 Empirical evidence

Proponents of the security hypothesis (Farrell et al., 2010; Farrell et al., 2011; Farrell, 2013; Farrell et al., 2014; Tseloni et al., 2017) argued that improved security is the primary driver of the crime drop. Mainly, they studied burglary and vehicle-related theft in England and Wales. For instance, Farrell et al. (2014) concluded that temporary vehicle theft (for joyriding or transportation) fell by 76% and permanent vehicle theft (for selling) fell by 44% in England and Wales between 1995 and 2001. They proposed that this was due to the extensive use of central locking systems, tracking devices and electronic immobilisers as deterrent mechanisms. In terms of the decline in burglary, Tseloni et al. (2017) concluded that there is strong evidence that improved security caused the burglary drop in England and Wales in the 1990s. However, Tseloni et al. (2017) noted that the findings presented in the study do not prove the security hypothesis for the global crime drop. They concluded that the use of window locks, internal lights on a timer and external lights on a sensor and deadlocks on doors (in combination) can reduce burglaries considerably.

3.2.4.1.3 Critique

One of the limitations of the security hypothesis is the lack of evidence concerning its effect on other types of crimes, such as violence (Tonry, 2014). The security hypothesis draws upon opportunity-related theories (e.g. routine activity theory and situational crime prevention). According to Tonry (2014), although situational crime prevention initiatives reduce property crimes, it is not conceivable to associate them with the drop in lethal and sexual violence. Second, homicide figures have tracked similar trends in the Western developed countries for 50 years. However, the implementation of situational crime prevention strategies has varied across countries. Therefore, Tonry (2014) argued that the hypothesis cannot be the leading cause of the precipitate drop in crime rates. The proponents

of the security hypothesis have developed the keystone and debut crime¹² hypotheses to respond to these criticisms.

3.2.4.2 The keystone and debut crime hypotheses

3.2.4.2.1 Rationale

Farrell et al. (2011) proposed two more hypotheses to confront the criticisms aimed against the security hypothesis: the keystone and debut crime hypotheses (see also Farrell et al., 2014; Farrell et al., 2015). The first hypothesis proposes that “there is an analogy with the removal of the keystone from an arch wherein the other stones tumble, such that this relationship has been term the keystone hypothesis” (Farrell et al., 2014: 474). For instance, once a possible keystone crime (e.g. shoplifting and car theft) is removed, that might lead to declines in other crime types (Farrell et al., 2014). The second hypothesis suggests that property crimes, such as burglary and car theft, are debut offences by which offenders start their careers. Therefore, preventing those types of crime may prevent offenders from becoming career criminals. For instance, reducing property crime (e.g. burglary) may reduce violent crimes.

3.2.4.2.2 Empirical evidence

Previous research regarding the impact of these hypotheses on the crime drop is limited. Farrell et al. (2015) acknowledged that further evidence is required from other countries with high-quality analytic approaches and data signatures to accept or reject these hypotheses. It was suggested by Tseloni et al. (2017) that future research could test the relationship between these hypotheses and the drop in acquisitive crimes using longitudinal career criminal data.

3.2.4.2.3 Critique

Tonry (2014) argued that it is impossible to think that lesser incentives to commit burglaries or thefts may lead to fewer killings and rapes. Rather, he suggested that deeper forces of causal cross-national salience are at work. Recently, Tcherni-Buzzeo (2019) argued that there are important differences between property crimes and violent crimes, particularly in terms of offender motivation. Therefore, more research is needed. It should be noted that these hypotheses have been suggested to explain the decreases in other types of crime. Therefore, this is outside of the scope of this thesis, which focusses on burglary.

¹² Although the debut crime hypothesis is related to offender-based hypotheses, which are discussed in Section 3.2.2, it is discussed here to provide all responses of the proponents of the security hypothesis together against the criticisms.

3.2.4.3 The Internet

3.2.4.3.1 Rationale

This hypothesis proposes that a series of crimes, which are committed via the Internet, has become the new avenue for crime, especially amongst the young people who spend a lot of time at home in front of their computers (Aebi and Linde, 2010). Therefore, street crime rates dropped.

3.2.4.3.2 Empirical evidence

Despite the vast use of the Internet, there has been little research on the relationship between the use of the Internet and the crime drop to date (Farrell et al., 2014). Exceptions are the studies that were published by Griffiths and Sutton (2013; 2015); however, the evidence they provided (Griffiths and Sutton, 2013) was anecdotal. Griffiths and Sutton (2015) revisited the Crime Substitution Hypothesis that they proposed in 2013. However, they did not conduct an experimental study.

3.2.4.3.3 Critique

The widespread use of the Internet started in the mid-1990s in the US. However, crime rates started to decrease in the US in 1991. Therefore, it seems implausible to suggest that crime fell owing to Internet usage (Farrell et al., 2014; Farrell and Birks, 2018). Further, if the crime drop is an international phenomenon (Tseloni et al., 2010), the hypothesis should be valid in other countries as well. However, the Internet arrived too late (even in Western developed countries) for this to be plausible. There was less than one internet user per 1000 population across the World in 1990 (Aebi and Linde, 2010). Hence, the hypothesis cannot explain the crime drop in England and Wales (Farrell et al., 2014).

3.2.4.4 Phone guardianship

3.2.4.4.1 Rationale

This hypothesis proposes that crime fell owing to the increased use of phones that provided people with more security (Klick et al., 2012).

3.2.4.4.2 Empirical evidence

Baumer and Wolff (2014) suggested that the evidence in relation to the effect of using mobile phones on crime rates in the US is limited. Klick et al. (2012) associated the decrease in crime rates with cell phone ownership. However, they acknowledged that their estimates needed to be read with caution as they might have omitted variables that correlated well with

cell phone ownership and crime. More recently, Orrick and Piquero (2015) revisited Klick et al. (2012) and investigated the effect of using cell phones on the drop in property and violent crimes in the US. They found a statistically significant negative relationship between phone usage and property crime rates.

3.2.4.4.3 Critique

Farrell et al. (2014: 457) argued that “if mobile phones reduce crime via guardianship, we might expect any effect to be mainly upon personal crime because phones are carried on the person”. It should be noted that a limitation of previous studies is that they use police-recorded and aggregated crime data at the national level. However, as it has been already noted several times, PRCD is not a reliable resource and, as Goldstein (1990) suggested, the nature of crime types is different. Therefore, they should be analysed separately and thoroughly using alternative data resources (e.g. victimisation surveys). Overall, this hypothesis is unlikely to be associated with the burglary drop in England and Wales (Farrell et al., 2014).

3.2.5 Criminal justice system hypotheses

3.2.5.1 Imprisonment

3.2.5.1.1 Rationale

This hypothesis proposes that the increase in incarceration coincides with the decrease in crime rates. The basic idea is that incarceration deters offenders from committing crime. In addition, if offenders are sent to prison, they cannot commit crimes any more (Zimring, 2007).

3.2.5.1.2 Empirical evidence

Some scholars claimed that this hypothesis had a role in the decline in crime rates. For example, Levitt (2004) examined ten variables that might be related to the crime drop and found that imprisonment has played a significant role in reducing crime rates (58% for violent crime, 41% for property crime) in the US. More recently, Brown (2015) concluded that 10% of the offenders (n = 994) who participated in the study cited increased imprisonment as the reason for the fall in property crime in Australia. On the contrary, Baumer and Wolff (2014) suggested that an increased prison population played only a small role in inducing the crime drop in the US.

3.2.5.1.3 Critique

Firstly, this hypothesis is limited concerning the timing and external validity (Farrell et al., 2010; Farrell et al., 2011; van Dijk et al., 2012b; Farrell et al., 2014). For example, prisoner rates have been falling since the 1980s in Finland, where crime rates started to decrease in the 1990s (van Dijk et al., 2012b). In addition, the prison population was already high in the US before the dramatic decline in crime occurred (Farrell, 2013; Farrell et al., 2014). Zimring (2007: 619) also argued that “whatever was driving the decline in the United States was also operating in Canada. ... But ... Canada in the 1990s did not increase its imprisonment”. Also, the prison population has been steadily rising in England and Wales since the 1940s (Berman, 2013). If imprisonment is the cause of the crime drop, why it could not stop increasing crime rates in the US and England and Wales in the 1980s, and why did crime rates decrease in Canada in the 1990s?

Secondly, this hypothesis fails to explain the variation in decreases in different types of crime. For example, Aebi and Linde (2010: 265) noted that “...if an increase in imprisonment should have an influence on the crime rates..., it is difficult to understand why this influence should be exerted on certain crimes and not on others”. That is, this theory fails to explain the increase in phone theft or e-crime in different countries (Farrell et al., 2014). More importantly, Rosenfeld and Messner (2009) found no significant relationship between burglaries, which is the focus of this thesis, and imprisonment in their comparative study between Europe (including England and Wales) and the US.

3.2.5.2 Death penalty

3.2.5.2.1 Rationale

This hypothesis proposes that increased use of the death penalty deters future offenders, and crime rates fall (Levitt, 2004).

3.2.5.2.2 Empirical evidence

Using a panel dataset (1977-1996) covering 3,054 counties in the US, Dezhbakhsh et al. (2003) suggested that the relationship between the implementation of capital punishment and the decline in homicide in the US is significant. However, according to a comprehensive research by Lappi-Seppälä and Lehti (2014), which analysed the relationship between the death penalty and lethal violence in 235 countries across six continents between 1950 and 2010, there is no correlation between capital punishment and the decline in lethal violence (see also Levitt, 2004; Rosenfeld and Messner, 2009; Roeder et al., 2015).

3.2.5.2.3 Critique

Ouimet (2002) suggested that although crime rates have declined in both Canada and the US, Canada has not employed aggressive policing strategies that some U.S. states have applied. More importantly, this hypothesis cannot explain the dramatic decline in burglaries in England and Wales, where there is no application of the death penalty.

3.2.5.3 “More guns, less crime”

3.2.5.3.1 Rationale

This hypothesis proposes that as a result of laws allowing concealed weapons, crime fell dramatically, owing to the associated deterrence and guardianship (Lott and Mustard, 1997).

3.2.5.3.2 Empirical evidence

Lott and Mustard (1997) used cross-sectional time-series data (1977-1992) from the US counties and suggested that if those states that did not allow citizens to carry concealed weapons had implemented the right-to-carry a concealed gun provisions in 1992, they would have prevented approximately 1,570 murders, 4,177 rapes, and over 60,000 aggravated assaults per year (see also Plassmann and Whitley, 2003). However, Ayres and Donohue (2003) criticised Lott and Mustard (1997) and argued that they did not acknowledge the fact that the presence of guns almost certainly lead to killings and increased crime. In terms of statistical analysis, Ayres and Donohue (2003) extended the state and county data, ran more rigorous statistical models and concluded that evidence supporting a relationship between these laws and crime reduction is limited, sporadic, and extraordinarily fragile. More recently, Donohue et al. (2017) conducted a comprehensive assessment using panel data and found that laws allowing citizens to carry a concealed weapon increased aggregate violent crime rates by 13-15% ten years after adoption.

3.2.5.3.3 Critique

Firstly, this hypothesis is limited in relation to external validity. For example, Dills et al. (2010: 270) noted that “...hypotheses [this hypothesis is one of them] that find some support in US data for recent decades are inconsistent with data over longer horizons or across countries” (see also Tcherni-Buzzeo, 2019). Secondly, the hypothesis cannot explain the increase in some types of crime (e.g. phone theft and e-crime) (Farrell, 2013). Thirdly, gun ownership is mostly associated with violent crimes (e.g. aggravated assault, homicide, robbery), not property crimes (Cook and Ludwig, 2002; Kleck, 2004), which are the focus of this thesis. More importantly, this hypothesis cannot explain the dramatic decrease in

burglaries in England and Wales where carrying a gun (unless you are specialist police or army officer) is prohibited.

3.2.6 Policing-related hypotheses

3.2.6.1 More police

3.2.6.1.1 Rationale

Eck and Maguire (2006: 208) stated that “[a]cross time and place, one of the most common reactions to increases in crime is to hire more police officers”. That is, this hypothesis suggests that if the number of police officers recruited increases, crime rates decrease.

3.2.6.1.2 Empirical evidence

Previous studies about the role of hiring more police officers in the crime drop yielded mixed results. Some suggested that recruiting more police officers has an impact on reducing crime figures (Marvell and Moody, 1996; Levitt, 2004). Sherman et al. (1998) also concluded the same result indirectly, in that “the absence of police is likely to lead to an increase in crime”. However, more recently, Roeder et al. (2015: 42) found no significant effect of hiring more police officers on crime rates at the national level in the US, stating that:

“One possible reason for this finding is the simultaneity between these two variables, meaning policing and crime can affect each other. For example, in response to more crime, a city may hire more police; similarly, when that city hires more police, it would expect less crime. It is difficult, statistically speaking, to break this simultaneous causal connection and isolate the effect of policing on crime”.

3.2.6.1.3 Critique

Although it was asserted that recruiting more police officers reduced violent crime by 12% and property crime by 8% in the US (Levitt, 2004), Ouimet (2002: 46) stated that: “[c]rime trends in Canada are very similar to those observed in the US...[however] Canada has not increased the pro-rata number of police officers”. This happened in Australia and New Zealand as well (van Dijk et al., 2012b). That is, there is no simultaneity between increased numbers of police and the crime drop in those countries. In addition, Eck and Maguire (2006) concluded that there is no evidence to support this hypothesis because violent crime rates fell dramatically in big cities in the US where the number of police officers did not increase.

On a different note, the majority of existing studies come from the US. In a review by Bradford (2011), only two studies (out of 13) examining this relationship came from England

and Wales. One of them analysed the relationship between more police and the decline in robberies (Machin and Marie, 2011), whilst the focus of the other was limited to London (Draca et al., 2011). Therefore, further analysis in this regard is needed.

3.2.6.2 Community policing

3.2.6.2.1 Rationale

Community policing (or neighbourhood policing in the UK) aims to reduce crime by working with the community (Tilley, 2008).

“Community policing requires organisational decentralisation, patrol designed to facilitate two-way communication between the police and public, *a commitment to broadly focused problem-oriented policing*, responsiveness to citizens’ demands, problems and priorities, and help for neighbourhoods to solve crime problems on their own” (Skogan and Hartnett, 1997, cited in Tilley, 2008: 377, emphasis added).

3.2.6.2.2 Empirical evidence

Previous research regarding the impact of neighbourhood policing on crime rates yielded mixed results. For instance, Sherman et al. (1998) concluded that while Neighbourhood Watch (also known as block watch, apartment watch, home watch and community watch) and community meetings do not work, door-to-door initiatives do. In addition, Bennett et al. (2008: 34) conducted both a narrative review and a meta-analysis and concluded that:

“The main findings of our narrative review were that just over half of the schemes evaluated (19) showed that Neighbourhood Watch was effective in reducing crime, while only six yielded negative effects. The main finding of the meta-analysis was that Neighbourhood Watch was associated with a relative reduction in crime of between 16 and 26 per cent”.

A systematic review by Gill et al. (2014: 423), which covered 25 studies, concluded that “the results of this systematic review of community-oriented policing (COP) strategies provide robust evidence that community policing increases satisfaction with police, elements of police legitimacy, and citizen perceptions of disorder...[but] we do not find evidence that COP reduces fear of crime or officially recorded crime”.

3.2.6.2.3 Critique

Neighbourhood policing in the UK has a long history (Bennett et al., 2006; 2008; 2009) but “[e]fforts to introduce earlier forms of community policing in England and Wales have been

characterised by implementation failure, as well as cultural and organisational marginalisation” (Quinton and Morris, 2008: 3). After this failure, the National Reassurance Policing Programme (NRPP) came onto the policing agenda and was first carried out at the ward level from 2003 to 2006 (Quinton and Morris, 2008; Longstaff et al., 2015). After an evaluation study (Tuffin et al., 2006) produced positive findings, the UK government wanted to roll it out in England and Wales between 2005 and 2008 (Quinton and Morris, 2008). However, this target “did not last long” due to the economic crisis (Longstaff et al., 2015: 3). The important point to note is that efforts to roll out neighbourhood policing do not coincide with the dramatic decline in crime rates, which started in the mid-1990s. Second, although Neighbourhood Watch, an element of neighbourhood policing, was found effective by some studies, there are two main limitations to the studies included in Bennett et al. (2008). These include (1) having “rarely wholly equivalent or sometimes not equivalent” comparison and experimental areas; and (2) using PRCD (Bennett et al., 2008: 34). Therefore, the results of those studies should be read with caution.

3.2.6.3 Intelligence-led policing

3.2.6.3.1 Rationale

Intelligence-led policing aims to reduce crime rates through targeting repeat, prolific and dangerous offenders and hot spots (Sparrow, 2016).

3.2.6.3.2 Empirical evidence

Research on the impact of intelligence-led policing on the crime drop is limited. For example, John and Maguire (2004) examined the early efforts (a 21-month project funded by the Targeted Policing Initiative) of mainstreaming intelligence-led policing in three police forces (Lancashire, Surrey and the West Midlands) between 2001 and 2002. They concluded that “In short, the NIM [National Intelligence Model] was not yet being applied in the manner envisaged by its designers, and it would, therefore, be unreasonable to make any firm judgements about the ‘effectiveness’ of the Model on the basis of, for example, movements in crime rates in the three ‘pilot’ forces” (John and Maguire, 2004: 41).

3.2.6.3.3 Critique

The implementation of intelligence-led policing is far from problem-free (John and Maguire, 2004). A quote from an interviewee clearly shows the difficulty of understanding intelligence-led policing in practice: “I gave up on the CD-ROM, couldn’t understand it. I love intelligence and wanted to learn, but the terminology was very user-unfriendly. It is

academically approached with little thought for the people actually using it” (Bullock et al., 2006: 19). Secondly, as discussed above, the effectiveness of intelligence-led policing is not known due to limited research. Thirdly, widespread implementation of intelligence-led policing does not coincide with the crime drop as “...the NIM became the required business model of police services in England and Wales *in April 2004*” (Ratcliffe, 2008: 274, emphasis added). “Intelligence-led policing is still evolving in a definitional sense...As a result, an evaluation of intelligence-led policing is currently difficult as the goalposts are still moving” (Ratcliffe, 2008: 278). Therefore, it is unlikely that intelligence-led policing is one of the mechanisms behind the dramatic crime drop that started in England and Wales in the mid-1990s.

3.2.6.4 Hot spots policing

3.2.6.4.1 Rationale

Using hot spots policing, the police aim to prevent crime through channelling resources into hot spots where crime is concentrated (Sparrow, 2016).

3.2.6.4.2 Empirical evidence

Early studies examining the effect of hot spots policing did not produce promising results. However, more recent studies showed that hot spots policing can have a significant impact on crime. A systematic review by Braga et al. (2014: 19), which included 19 studies, concluded that:

“[T]he results of our updated systematic review and meta-analysis provide strong support for the basic conclusions of the original Campbell review [Braga et al., 1997]; hot-spots policing programs generate modest crime control gains and are likely to produce a diffusion of crime control benefits into areas immediately surrounding targeted high-activity crime places”.

Importantly, Braga et al. (2014) concluded that if the POP approach is applied at hot spots, the effect is more significant. For instance, a randomised control trial conducted by Taylor et al. (2011) compared different types of policing strategies at hot spots and found that crime rates dropped by 33% owing to the implementation of a problem-oriented approach 90 days after the application.

3.2.6.4.3 Critique

Existing studies only looked at the short-term effect of hot spots policing on crime at a certain place and time (Weisburd and Telep, 2014). They also tested mainly whether hot spots policing contributed to the New York City crime drop (e.g. Eck and Maguire, 2006; Zimring, 2011) but failed to reach a firm conclusion about its role due to limited data (e.g. Weisburd et al., 2014).

3.2.6.5 Repeat victimisation

3.2.6.5.1 Rationale

This hypothesis is reviewed under policing-related hypotheses because the scanning stage of the SARA framework (see Chapter 2, Section 2.7.1) identifies recurrent problems and their characteristics (e.g. repeat burglary victimisation). In other words, POP encourages implementers to target repeat victimisation. This hypothesis suggests that a large proportion of the fall in crime rates is associated with a fall in repeat victimisation (Thorpe, 2007).

3.2.6.5.2 Empirical evidence

Previous research showed that the distribution of crime is not equal (Weisburd, 2015). That is, a victim of burglary, for example, is very likely to experience a burglary again (Ellingworth et al., 1997; Pease, 1998; Tseloni and Pease, 2005). However, “[t]here is scarce evidence on the victimisation divide [or crime inequalities] in relation to the crime drop” (Hunter and Tseloni, 2016: 2).

3.2.6.5.2 Critique

According to the limited research regarding the role of the drop in repeat victimisation in the overarching crime drop, this hypothesis sounds rational. Ignatans (2015: 245) suggested that “the reduction in repeat victimisation may demonstrate the effectiveness of targeted crime prevention techniques” in England and Wales, such as POP that aims to reduce recurrent crime problems (Goldstein, 1990). Therefore, this present thesis seeks to identify whether there is a relationship between the long-term drop in repeat burglary victimisations and POP, which has not been examined to date, particularly in the context of England and Wales.

3.2.6.6 Summary of policing-related hypotheses

3.2.6.6.1 Empirical evidence

The impact of policing on crime has been argued for decades. Some scholars suggested that police do not matter (Gottfredson and Hirschi, 1990; Bayley, 1994; Levitt, 2004).

Conversely, some suggested that police do matter (Kelling and Sousa, 2001; Skogan and Frydl, 2004; Spelman, 2005; Rosenfeld et al., 2007; Zimring, 2007; 2011). Eck and Maguire (2006) largely supported the first view. They concluded that an increase in the number of police officers and community policing “probably had no influence on national rates of violent crime”. In addition, zero-tolerance policing had “little ...effect on violent crime in New York, and no evidence at nationwide”. However, they concluded that directed patrols in hot spots and POP are plausible hypotheses.

Blumstein and Rosenfeld (2008) argued that Eck and Maguire’s (2006) conclusions are a reflection of limited and poor-quality research. There is a growing body of robust research suggesting that some of the innovative policing strategies, which have been applied in the US, the UK, Australia and other developed countries over the last three decades, reduce crime (Skogan and Frydl, 2004; Weisburd and Eck, 2004; Tilley, 2010; Weisburd et al., 2010; Braga et al., 2014; Weisburd and Telep, 2014). Regarding the UK context, a review by Goldblatt and Lewis (1998: 1) had already asserted that “It had become increasingly clear that research evidence produced over the previous 40-50 years indicated that certain approaches to reducing crime would be more effective than others. It was not true that ‘nothing works’”. Regarding the US context, Kelling and Sousa (2001: 18-19) concluded that the police have a significant role in reducing crime rates along with other factors such as “demographics, drug use patterns, imprisonment rates, prosecutorial and court policies, the economy, probation and parole policies, weapon availability and so on”. In terms of the crime drop, Kelling and Sousa (2001) suggested that effective policing strategies are broken-windows policing, CompStat, and problem-solving-based initiatives, if they are applied meticulously. Though Harcourt and Ludwig (2006; 2007) reanalysed the Kelling and Sousa (2001) data and did not find that broken-windows policing produced significant reductions in serious crimes in New York City between 1989 and 1998.

A review of publications in policing from various countries (Versteegh et al., 2013) suggested that integration and synchronisation of community policing, POP and intelligence-led policing seems to be promising. They concluded that policing could affect crime rates and certainly matters. Furthermore, Brown (2015) interviewed 994 offenders to understand the causes of the property crime decline in Australia. According to these offenders, some of the causes are as follows (Brown, 2015: 1-4):

- improved security (31%, n = 145)

- *improved policing* (20%, n = 94)
- increased affluence (11%, n = 51)
- increased imprisonment (10%, n = 46)
- improved community responses (8%, n = 36)
- changes in drug use (7%, n = 31)
- changes in the market for stolen goods (4%, n = 17)
- changes in crime recording (1%, n = 5).

According to the above list, improved policing is the second-most frequently given response, which was divided into two by Brown (2015: 4): (1) better policing (10%, n = 45) and (2) more policing (7%, n = 35). Finally, Ignatans (2015: 331) suggested that “it appears that policing strategies and prevention of repeat victimisation are the likely factors behind the decrease in crime rates”.

3.2.6.6.2 Critique

The first critique of policing strategies is that the emergence of some of the policing strategies does not coincide with the crime drop. For example, Ouimet (2002) argued that police forces only started to apply some of the innovative policing strategies (e.g. CompStat) after the 1990s crime drop. Secondly, there are cities or countries that experienced a decline in crime but did not implement the policing strategies that were suggested as one of the reasons for the crime drop elsewhere. For example, although Canadian crime trends moved in tandem with the US crime trends, Canadian criminal justice agencies did not implement policing approaches that were applied in the US, such as zero-tolerance policing (Farrell et al., 2014; Tonry, 2014). Farrell et al. (2014) cited Eck and Maguire (2006) to support this idea. However, Eck and Maguire (2006) did not criticise, for example, POP, which is the primary focus of the current study. They even concluded that POP is a plausible policing strategy. Another critical point is that Eck and Maguire (2006) only examined violent crime, which is outside of the scope of the current study.

The argument in relation to the timing of policing strategies may be correct for strategies developed after the mid-1990s. However, the researcher argues that Goldstein developed POP in 1979, and since then it has been implemented across various countries including the US, the UK, Scandinavia, Continental Europe, South America, Africa, Australia and New Zealand (Wortley and Mazerolle, 2008; Eck, 2014). Therefore, it precedes the decline in

burglaries in England and Wales and “reached enough police agencies at the beginning of the 1990s” (Eck and Maguire, 2006: 244).

Finally, it should be noted that “...most of what police deal with is incidents that are non-criminal in nature” (Scott et al. 2016: 254). Therefore, while it is evident that some of the policing strategies are effective in certain circumstances and particular contexts, spending too much time on non-criminal incidents might have prevented the police from substantially reducing burglaries in England and Wales.

3.2.6.6.3 Gaps in knowledge

Existing studies examining the effect of policing strategies on the crime drop mainly focussed on New York City (Bowling, 1999; Kelling and Sousa, 2001; Rosenfeld et al., 2007; Zimring, 2011; Weisburd et al., 2014). There is a lack of research investigating whether there is a long-term relationship between the falls in crime rates and policing strategies at the national level in the US (Roeder et al., 2015), Australia (Brown, 2015), and, to the researcher’s knowledge, in the UK. Particularly, there has been no research examining the long-term relationship between POP and the crime drop either at the national or PFA (or lower) level in England and Wales (Telep and Weisburd, 2012; Weisburd and Majmundar, 2018). Therefore, it seems that proposing the idea that policing strategies have not affected the crime drop is an overstatement. In addition, according to rigorous evaluations, there are policing strategies which are effective in reducing crime and disorder (e.g. Skogan and Frydl, 2004; Weisburd and Eck, 2004; Weisburd et al., 2008; Weisburd et al., 2010; Tilley, 2010; Weisburd and Telep, 2014; Braga et al., 2014).

There is one more vital point to be noted before concluding this section. Existing studies show that there has seen considerable development regarding policing over the last decades. There are now various innovative policing strategies to be applied to reduce or prevent crime. For example, Sparrow (2016) asked senior police managers to list the policing styles they use for their operations. The list is as follows:

- community policing
- neighbourhood policing
- problem-oriented policing
- broken-windows policing
- zero-tolerance policing
- hot spots policing

- situational crime prevention
- intelligence-led policing
- predictive policing
- CompStat
- evidence-based policing.

Sparrow also noted that these strategies are used simultaneously. Therefore, it becomes difficult to determine the effect of any particular policing strategy (Telep and Weisburd, 2016). However, according to Sparrow (2016), these policing strategies are reduced forms of POP (see also Kirby, 1997; Bullock, 2007; Tilley, 2008; Scott et al., 2008). Eck (2006: 127) also stated that “there is no alternative to a problem-oriented approach”. Overall, it seems that the overarching policing strategy in England and Wales has been POP, which is why the present study examines whether there was a relationship between POP and the burglary drop in England and Wales.

3.3 Burglary risk and protective factors

Most of the hypotheses that have been discussed in this chapter are concerned with the crime drop at the country level. This section briefly reviews burglary risk and protective factors at the household and lower area level (e.g. neighbourhood). For example, routine activity and social disorganisation theories (see Chapter 2, Section 2.2) suggest that a household may attract a burglary for a number of reasons (Tseloni and Thompson, 2018: 109-110), including:

- the physical features of a property (including physical security) and its immediate surroundings
- the household’s socio-economic characteristics, such as household composition and income
- the household’s routine activities, such as whether they are away from home a lot
- the population profile of the neighbourhood
- the interplay of all the above.

Previous studies (Kennedy and Forde 1990; Rountree and Land 1996; Ellingworth et al. 1997; Osborn and Tseloni 1998; Tseloni 2006; 2014) have examined the above factors in detail. Tseloni (2014) summarised the independent risk and protective factors associated with household crimes in general, and burglary in particular. The risk (indicated via R) and protective (indicated via P) factors associated with household crimes are as follows:

- being a lone parent (R)
- living in an inner city (R)
- being a social renter (R)
- living in a terraced house (R)
- household affluence, which is indicated by having three or more cars (R)
- household affluence, which is indicated by an over £30,000 household income (R)
- area affluence, which is indicated by the average number of cars per household in the area (P)
- victimisation history (e.g. prior burglary and assault) (R).

When household crimes are disaggregated into burglary, the risk (indicated via R) and protective (indicated via P) factors associated with burglary (including attempted burglaries) are as follows (Tseloni, 2006; 2014; Tseloni and Thompson, 2018):

- being a lone parent (R)
- living in an inner city (R)
- being a social renter (R)
- living in a flat, second floor or above (P)
- household affluence, which is indicated by having three or more cars (R)
- length of residence in an area, 1-2 years (R)
- area affluence, which is indicated by the average number of cars per household in the area (P)
- high area poverty (R)
- percentage of young people (15-24) in an area (R)
- high population density (R)
- victimisation history (e.g. prior burglary, assault and car theft) (R)

When burglary with entry (the focus of this thesis) and attempted burglary are separated, the risk (indicated via R) and protective (indicated via P) factors associated with burglary with entry are as follows (Tseloni, 2014):

- being a lone parent (R)
- being a social renter (R)
- household affluence, which is indicated by having three or more cars (R)
- living in a terraced house (R)

- household reference person's ethnicity, ethnic minority (P)
- household reference person's socio-economic status, non-manual (R)
- victimisation history (e.g. prior burglary and car theft).

There are also interacting risk and protective factors associated with crime victimisation. For example, an affluent couple with children experiences more crimes compared to a non-affluent couple with children. Likewise, a non-affluent elderly couple living in a deprived inner city area experiences more property victimisations compared to a non-affluent elderly couple living in an affluent area (Tseloni, 2014). Therefore, context is crucial for victimisation studies. Overall, previous research (Simmons et al., 2002, cited in Tseloni et al., 2018) found that:

“The young are at more risk than the old; single adult households with children are more at risk than those without children; the poorer are at more risk than the richer; renters are at more risk than owner-occupiers; the unemployed are more at risk than the employed; those living in flats or maisonettes are more at risk than those living in detached houses; those who go out more are at greater risk than those spending more time at home; those living in inner cities are more at risk than those living in rural areas; those in public (also known as social or council) housing are more at risk than those living in private housing; and those living in areas with high levels of physical disorder are more at risk than those living in areas with low levels”.

This present study, therefore, controls for the above attributes of households and areas when assessing whether POP had a statistically significant effect on the mean number of burglary victimisations in 1997 and 2003/04, separately, in Chapter 7.

3.4 Chapter summary

This chapter (along with Chapter 2) provide the basis to develop the primary hypothesis of this thesis: there will be a relationship between the implementation of POP and the drop in both CSEW and PRCD burglaries at the PFA level in England and Wales between 1988 and 2007/08. For this, it critically reviewed existing crime drop hypotheses under six headings. It can be argued that most of the hypotheses discussed in this chapter do not seem to explain the crime drop England and Wales has experienced since the 1990s. Concerning policing, previous research suggested that situational crime prevention techniques reduce crime. The relationship between POP and situational crime prevention is also well recognised (Scott, 2000; Goldstein, 2003). However, most of the existing studies are not rigorous (Weisburd et

al., 2010), and they broadly examined the effects of specific POP responses (e.g. situational crime prevention techniques) on specific crime types within a limited period. The long-term impact of POP on crime is still not known, as Weisburd and Majmundar (2018: 15) asserted: “there has not been study of whether a problem-oriented approach used widely in a city would reduce overall crime in that jurisdiction”. Therefore, a thorough analysis is needed to identify whether POP played a role in the burglary drop in England and Wales whilst controlling for burglary risk and the protective factors (e.g. characteristics of households and PFAs) that were identified in this chapter.

CHAPTER 4

METHODOLOGY

4.1 Introduction

Chapters 2 and 3 conducted a thorough literature review on POP and the crime drop, and identified a significant gap in knowledge: no research has explored the role of problem-oriented policing (POP) in the crime drop in England and Wales or, indeed, across the world to date (Weisburd and Majmudar, 2018). Therefore, the main aim of this thesis is to explore whether there was a relationship between the implementation of POP and the burglary drop at the PFA level in England and Wales between 1988 and 2007/08¹³.

The empirical component of the thesis is divided into three phases (chapters 5-7). This chapter details the data and methods used in chapters 5-7 in order to accomplish the main aim and objectives of the thesis (see Chapter 1, Section 1.2). The structure of the chapter is as follows. Firstly, an overview of the data used in the three phases is provided, followed by a detailed presentation of individual data sources. Secondly, the chapter discusses the selection of the variables used in Chapter 7, which tests whether POP had a statistically significant effect on burglaries between 1995 and 2003/04. Thirdly, a detailed analysis plan (research design) for three phases is provided. Finally, a summary of the chapter is provided.

4.2 Overview of data

Phase one (Chapter 5) develops a methodology for the identification of highly POP-committed police forces in England and Wales over time. For this, it uses two indicators of commitment to POP selected by the researcher. These indicators include:

- problem-oriented projects that were submitted to the Tilley and Goldstein Award schemes by police forces in England and Wales between 1997 and 2008 ¹⁴ (<https://popcenter.asu.edu/>)
- problem-oriented projects that were applied by police forces in England and Wales as part of large-scale government-supported crime reduction programmes which applied a problem-oriented approach, such as

¹³ The reasons for choosing burglary and certain time periods (1988-2007/08 in Chapter 6; 1995-2003/04 in Chapter 7) to be analysed and the units of analysis can be found in sections 4.8.1, 4.9.2 and 4.9.3, respectively.

¹⁴ The first problem-oriented project submission to the award schemes by a police force (the West Midlands) in England and Wales was in 1997. Since the last point in time to be analysed is 2007/08, the present study uses problem-oriented projects that were submitted to the award schemes between 1997 and 2008.

- a. the Safer Cities Programme (1988-1998) (Tilley and Webb, 1994; Ekblom et al., 1996; Sutton, 1996; Hirschfield et al., 2001)
- b. the Crime Reduction Programme (1999-2002) (Tilley et al., 1999)
 - i. the Reducing Burglary Initiative (1999-2002) (Hope et al., 2004; Millie and Hough, 2004; Homel et al., 2004; Hirschfield, 2007)
 - ii. the Targeted Policing Initiative (1999-2000) (Bullock et al., 2002; Bullock and Tilley, 2003).

Phase one also reviews the related literature to supplement and triangulate the findings from the analysis of the two indicators of commitment to POP and identify the policing strategies of police forces to be able to distinguish the effect of POP on burglaries in Chapters 6 and 7.

Phase two (Chapter 6) is an initial attempt to explore whether POP has played a role in the burglary drop at the PFA level in England and Wales or otherwise. It uses both the Crime Survey for England and Wales (CSEW) (ten sweeps from 1996 to 2007/08) and police-recorded crime data (PRCD) (from 1988 to 2007/08) to compare trends in burglaries amongst the most similar PFAs¹⁵ in England and Wales.

Phase three (Chapter 7) employs two separate statistical analyses: (1) multilevel negative binomial regression (Cameron and Trivedi, 1986; Tseloni, 2006) and (2) Pearson (point-biserial) correlation (Tabachnick and Fidell, 2013), respectively, to examine whether there was a *statistically significant* relationship between POP and burglaries between 1995 and 2003/04. For the first analysis, Phase three uses the 1998 and 2003/04 CSEW sweeps, the 1991 and 2001 UK Censuses and police workforce (strength) statistics (the Chartered Institute of Public Finance and Accountancy - CIPFA). For the second analysis, it uses the CSEW sweeps from 1996 to 2003/04. Both analyses use problem-oriented projects to construct the independent variable. The following sections detail these data sources, acknowledges their limitations, and provides reasons for selecting them.

4.3 Problem-oriented projects

Previous research concerning the implementation fidelity of POP in England and Wales is limited. For example, Her Majesty's Inspectorate of Constabulary examined the state of problem solving in the police service *nationally* (HMIC, 1998), which was followed up by another report (HMIC, 2000) to monitor the associated progress. Read and Tilley (2000)

¹⁵ See Chapter 4, Section 4.9.2 for a definition.

then published a research report that accompanied the inspection. They produced and used a problem-solving checklist for their inspection (see Appendix 4.1). However, they did not report the level of commitment of police forces to POP separately. Some years later, Bullock et al. (2006) examined the development of POP in Lancashire and Hampshire¹⁶ and found that six factors were significant in its development and delivery within these police forces:

1. leadership and management
2. practical help
3. analysis and evaluation
4. training
5. spreading good practice
6. rewards and incentives.

Therefore, for an ideal categorisation of all 42 police forces in terms of their (organisational)¹⁷ commitment to POP, sending the ‘problem-solving checklist’ to them would be the first option; examining whether the six factors that were found to be significant in the development and delivery of POP in Lancashire and Hampshire are present in all 42 police forces would be the second. However, both options were not feasible due to limited time and resources and retrospective nature of the current study. Therefore, to overcome this limitation, the researcher selected two indicators of commitment to POP that are available to the public (Sections 4.3.1.3 and 4.3.2.3 provide more reasons for selecting these indicators along with the limitations to using them).

4.3.1 Projects submitted to the Goldstein and Tilley awards

The first indicator that Chapter 5 (Phase one) uses is problem-oriented projects that were submitted to the Tilley and Goldstein Award schemes by police forces in England and Wales between 1997 and 2008. Sections 4.3.1.1 and 4.3.1.2 explain the development of the award schemes and review the nature of the projects, respectively.

4.3.1.1 Development of the Goldstein and Tilley awards

The Goldstein Award scheme was first introduced in 1993 to identify outstanding police forces and officers in the US and around the world (e.g. the Netherlands, Canada, Australia,

¹⁶ Bullock et al. (2006: 12) noted that Lancashire and Hampshire “can be considered to be amongst the UK’s very best in terms of the vigour and resources that have gone into it [POP]”.

¹⁷ The commitment to POP can be categorised into two groups: ‘organisational’ and ‘individual’ commitment. This thesis is concerned with organisational commitment to POP as assessing individual police officers’ commitment to POP is beyond the researcher’s capability due to the retrospective nature of the study.

and the UK) that are effective in reducing crime, disorder, and fear of crime via application of a problem-oriented approach. The Police Executive Research Forum (PERF) administered the Goldstein Award scheme between 1993 and 2007. The Tilley Award scheme was launched in 1999 by the then UK Home Office Policing and Reducing Crime Unit to share good examples in relation to the implementation of POP across police forces and partner agencies in the UK (<https://popcenter.asu.edu/>). The Tilley Award scheme ultimately ceased in 2010 due to financial issues. However, South Yorkshire Police received a Police Transformation Fund Award (£6.35 million) in 2017 and officially opened the Tilley Award for application on 7th September 2018 for the first time in eight years (South Yorkshire Police, 2018).

The process of entering a project to the award schemes is as follows (Bullock et al., 2006). Police forces and their partner organisations are invited to submit projects that apply a problem-oriented approach to reduce crime and disorder. They can also submit projects on organisational support and partnership working in relation to POP. The overarching aim of the award schemes by this invitation is to share the best POP projects and support frontline delivery of POP and partnership. Once the invitation is announced, police forces submit their projects that they consider as exemplars of the problem-oriented approach. Applicants are required to use a standard application form which should include the following information (Bullock et al., 2006):

- details of the project (the title, police force, partner agency involvement, contact details and the names of endorsing senior representatives)
- a summary of the project (explanation of the problem, the main responses to the problem and results - maximum 400 words)
- a more extended project report (maximum 4000 words)
- an endorsement letter from a senior representative (Assistant Chief Constable or above – this indicates that the project was found sufficiently successful to be submitted).

Once the projects are submitted, they are examined by a judging panel including senior police officers, academics with expertise in POP, and previous award winners. Both schemes apply a similar judgement procedure to select ‘finalist’ and ‘winner’ projects from all submissions (‘others’). The judging panel uses the following criteria whilst assessing the projects:

- objectives of the project (s)

- use (quality) of data to define the problem (s)
- depth of analysis of the problem (s)
- providing realistic responses to the problem (s)
- depth of evaluation of the response (s)
- working with community and partner organisations
- written presentation
- coherence of the project (s) (<https://popcenter.asu.edu/>; Bullock et al., 2006).

Based on the above criteria, the project entries ('the others') are shortlisted ('the finalists') for further consideration. Following that, the judging panel assesses and scores 'the finalists'. The scores range from 0 (no credit) to 7 (superior). Each judge's scores are collated, and the three highest scores are determined as 'the winners' (Bullock et al., 2006). Having identified 'the winners', they are announced at annual national POP conferences in the US and the UK. Police forces and officers are given a certificate as an incentive and 'the winners' of the Tilley Award scheme receive funding to attend conferences (including the Goldstein Award scheme in the US) to present their outstanding projects (Bullock et al., 2006).

4.3.1.2 Nature of projects

Since this thesis explores the relationship between POP and the burglary drop at the PFA level in England and Wales between 1988 and 2007/08, the analysis is limited to the projects submitted to the award schemes by police forces in England and Wales between 1997 and 2008. The total number of the award entries to be reviewed in Phase one is 771 once duplications are removed (745 Tilley Award and 26 Goldstein Award submissions). In terms of the lengths of the projects, while a handful started during the same year as being submitted to the award schemes, the majority began two or more years before. The projects targeted a variety of crime problems ranging from particular crime types in specific areas, such as car theft in a car park, to overall crime in specific neighbourhoods or estates. Anti-social behaviour and youth-related nuisance seemed to be the main problems tackled over time. With regard to burglary, one hundred and thirteen projects targeted burglary.

The quality of the projects varied as well. In other words, the projects had problems with each step of the SARA framework (see Chapter 2, Section 2.7.1). Bullock et al. (2006) analysed a randomly selected 150 (out of 503) problem-oriented projects that were submitted to the Tilley Award scheme between 1999 and 2005. They identified that:

1. The projects targeted an extensive range of crime problems.

2. While at least one partner agency was mostly involved at some stage, the majority of the projects had been carried out by police forces.
3. The quality of analysis in the projects varied widely, more in-depth analysis of the data was required in many cases.
4. The projects mainly used police recorded crime data.
5. Problems regarding data sharing between partners and the quality of the data had been encountered in most cases.
6. Analysts did not use the literature effectively, which could have helped understand the nature of the crime problems.
7. The objectives of the projects were relatively well specified.
8. Most responses had been applied well or reasonably well.
9. The majority of the projects tended to involve reactive responses.
10. Less than half of the projects evaluated the responses.
11. The quality of evaluations was generally poor.

However, they concluded that despite the above limitations, the efforts and enthusiasm of individual officers were laudable.

4.3.1.3 Limitations and reasons for selection

There are a number of limitations (along with the limitations noted in Section 4.3.1.2) to the use of these projects as an indicator of commitment to POP. Firstly, these projects are biased towards success because police forces are inclined to submit influential projects to win competitions. This means there might be other problem-oriented projects that have not been submitted to the award schemes. Secondly, the ideal indicator of commitment to POP is the proof of application of POP, as Goldstein envisaged. However, the majority of the projects submitted to the award schemes are far from representative of the typical POP application (Bullock et al., 2006, see Section 4.3.1.2). This said, that Bullock et al. (2006: 65) suggested that the number of projects submitted to the Tilley and Goldstein award schemes by Lancashire between 1999 and 2005 (n = 135) reflected “the *commitment* of this force to adopt problem-oriented policing (emphasis added)”. This is because, although the projects have limitations, the idea behind using them in this thesis is to measure the level of commitment of all 42 police forces to POP with the available data, not to examine the effects of those projects on burglary rates over time (see Section 4.3 for more general reasons for selecting the indicators). More importantly, “[t]he unit of work in problem-solving is known as a ‘problem,’ a ‘problem-solving project’ or a ‘POP project’” (Scott, 2000: 88). Overall, it

is argued that the more police forces submitted problem-oriented projects to the award schemes, the more they were committed to the implementation of POP.

4.3.2 Projects applied as part of government-supported crime reduction programmes

The second indicator of commitment to POP selected by the researcher to be used in Phase one is the projects which were applied by police forces as parts of large-scale government-supported crime reduction programmes that utilised problem-oriented approaches. These programmes include the Safer Cities Programme, the Crime Reduction Programme, the Targeted Policing Initiative, and the Reducing Burglary Initiative. Investigating the projects that were applied under these programmes supplement and triangulate the findings from the analysis of the first indicator.

4.3.2.1 The Safer Cities Programme

The Safer Cities Programme was introduced as part of a more comprehensive programme (Actions for Cities) to tackle a wide range of crimes, including residential burglary (Tilley, 1992). The first phase of the programme was launched in 1988 and finished in 1995 and covered 20 cities or boroughs (in the case of London) in England and Wales. Phase one was funded and managed by the Home Office. The second phase, which funded 30 projects as part of the Single Regeneration Budget, started in December 1993 under the supervision of the Department of Environment (Sutton, 1996) and ended in 1998 (Hirschfield et al., 2001). A central feature of Phase two was again applying burglary reduction initiatives (Mawby, 2001). Direct Line Insurance (Webb, 1997, cited in Mawby, 2001) funded a target-hardening burglary prevention initiative that operated in Plymouth, Merthyr Tydfil, Lambeth, Greenwich, Blackburn, Burnley and Manchester (Mawby, 2001).

4.3.2.2 The Crime Reduction Programme

Following a comprehensive literature review which identified a gap in knowledge in relation to what works in crime prevention (Goldblatt and Lewis, 1998), the then Labour government legislated the Crime and Disorder Act in 1998 and introduced the Crime Reduction Programme (Homel et al., 2004). The programme consisted of 18 streams and sought to encourage crime reduction projects to learn what works in crime prevention between 1999 and 2002. The total budget for the programme was around £400 million, out of which £24 million was spent on funding 246 anti-burglary projects to target neighbourhoods in England and Wales with a high number of burglaries. Another eight million was spent on the 'Locks for Pensioners' project to improve home security measures for pensioners living in low-

income households in neighbourhoods with a high number of burglaries. Additionally, one million was spent on distraction burglary projects to reduce distraction burglary amongst the elderly. Finally, one million was spent on staffing a distraction burglary taskforce (Bullock and Tilley, 2003).

Similar to the Safer Cities Programme (Ekblom et al., 1996), “[m]uch of the Crime Reduction Programme has followed the logic of problem-oriented policing...” (Bullock and Tilley, 2003: 11). From its streams, Phase one analyses the projects that were applied as part of the Targeted Policing Initiative (Bullock et al., 2002), and the Reducing Burglary Initiative (Hope et al., 2004; Millie and Hough, 2004; Hirschfield, 2007) as the Targeted Policing Initiative explicitly aimed to mainstream POP across the country, and the Reducing Burglary Initiative specifically targeted burglary using a problem-oriented approach.

4.3.2.3 Limitations and reasons for selection

Whilst acknowledging that there is a need for police forces to demonstrate a commitment to POP in order to be successful, there are a lot of other factors that determine success in grant applications. It is highly likely that there are forces who are committed to POP but whose track record in securing funding does not reflect this. In addition, there might be police forces simply ticking boxes in relation to the Home Office and senior officers within their force to secure funding.

With the above limitations in mind, there are a number of general and particular reasons for selecting these projects as the second indicator of commitment to POP. General reasons are as follows. Firstly, these are the only publicly available and the most appropriate sources to identify the level of commitment of all 42 police forces to POP in England and Wales retrospectively. Secondly, both the projects submitted to the award schemes and the projects funded as part of large-scale government-supported crime reduction programmes applied a problem-oriented approach. Thirdly, the projects mainly targeted repeat incidents, victims or targets (e.g. Kirkholt project), which is an effective way of reducing crime rates, as Goldstein (1979, 1990) proposed. Fourthly, the majority of the projects targeted burglaries as Laycock and Farrell (2003: 222) summarised:

“The requirement for the period 1996/7 was that forces should have developed a strategy to tackle repeat victimisation, and *most chose to concentrate upon residential and other forms of burglary*. This was probably because most of the published

research had been centred on domestic burglary reduction, and reducing *burglary was, by then, one of the central government priorities*” (emphasis added).

Finally, the researcher argues that police forces that received funding for the projects as part of government-supported programmes applied POP on a larger-scale compared to others. Therefore, it is highly likely that these projects improved the state of POP within police forces that received funding when compared to others (see Section 4.3 for more general reasons for selection).

Particular reasons for selecting these projects as an indicator of commitment to POP are as follows. Firstly, Ekblom et al. (1996) evaluated the first phase of the Safer Cities Programme creating an ‘action intensity score’, which refers to “the average amount of funds acting on each household over a given year” (Ekblom et al., 1996: 7, see also Bowers et al., 2004). Similarly, Phase one identifies each PFA where Safer Cities projects were applied and calculates the total amount of funding received for the projects by police forces. Secondly, the RBI was one of the streams of the Crime Reduction Programme. One of the conditions for the RBI projects to be funded was to apply them in areas comprising 3,000-5,000 households with a high number of burglaries (at least twice the national PRCD burglaries for each of the previous three years). If a small area experienced at least 100 burglaries per year, it was also eligible for funding (Tilley et al., 1999). Importantly, “criteria for selection included the novelty of the proposed strategy, the context (type of problem, location etc.) in which established methods were to be applied and the quality of the available data and data system” (Tilley et al., 1999: 2). Therefore, it can be argued that bidders were required to demonstrate their problem-solving skills to receive funding for an RBI project. Therefore, Phase one identifies police forces which received funding for the RBI projects and calculates the total amount of funding received for the projects by police forces. Finally, the proposals for the TPI projects were reviewed by a team of Home Office staff, policy officials and an external examiner based on the requirements noted in Table 4.1 (see also Homel et al., 2004). The application requirements clearly show that the reviewers were seeking to determine whether police forces were able to implement a problem-oriented approach to tackle the problems that they were seeking funding for. Therefore, the researcher argues that receiving funding for the TPI projects is an indicator of commitment to POP. Overall, it is argued that although the projects have some limitations, the researcher’s method is a ‘necessary evil’ to progress knowledge.

Table 4.1: Application requirements for TPI project proposals

Round-one
To provide a description of the problem
To indicate how the problem related to the findings from local crime and disorder audits and strategies
To show how the problem related to the local policing plan
To spell out how the problem would be tackled, specifying in particular whether the project would make use of: -structured crime/incident data -new structure/arrangements and -innovative tactics
To show what crime reduction targets could be achieved
To note related initiatives
To list other factors affecting the area
To indicate what resources would be required
Round-two
An outline of the size and the nature of the problem
A description of why the problem was worth tackling
An explanation of why the problem was amenable to a problem-oriented approach
Objectives/targets for dealing with the problem
An outline of funding required
Details of planned or ongoing initiatives
A timetable

Source: Bullock et al. (2003: 12)

4.4 The related literature

Phase one finally reviews the related literature to supplement and triangulate the findings from the analysis of the two indicators of commitment to POP and identify the policing strategies adopted by police forces in order to distinguish the effects of POP on burglaries in Chapters 6 and 7. It particularly reviews:

1. a number of projects that were submitted by police forces to the award schemes which explicitly reported the implementation of POP within police forces¹⁸
2. books and government reports that summarise the history of POP in England and Wales and that assess the level of implementation of POP in some police forces in England and Wales (e.g. Leigh et al., 1996; 1998; Read and Tilley, 2000; Bullock et al., 2006)
3. peer-reviewed articles (Hale et al., 2004; 2005; Heaton, 2009a; 2009b) that reviewed 366 of Her Majesty's Inspectorate of Constabulary (HMIC) reports to determine the policing styles of police forces in England and Wales prior to August 2001.

In terms of identification of policing styles of police forces, the chapter criticises previous studies listed in the third bullet point above and revises their findings. For this, it uses peer-reviewed published research, a number of Tilley Award submissions (which were POP-related organisational plans of police forces) and unpublished POP-related organisational plans of police forces¹⁹. The researcher acknowledges that the projects that were submitted to the award schemes and organisational plans are not peer-reviewed studies. However, they are nevertheless valuable as the projects were submitted to the award schemes with endorsement letters from senior representatives (Assistant Chief Constable level or above) which indicates that the projects were recognised within police forces as being successful and worthy of submission (Bullock et al., 2006). In addition, they are currently the only publicly available and most appropriate sources from which to conduct such an analysis.

4.5 The Crime Survey for England and Wales (CSEW)

The CSEW was previously known as the British Crime Survey (BCS). However, it has been called the CSEW since April 2012 to more appropriately reflect its geographical coverage (Flatley, 2014). It measured crime victimisations via face-to-face interviews until 1992. Since 1994, Computer-Assisted Personal Interviewing and Computer-Assisted Self-administered Interviewing (for sensitive questions) have been implemented (ONS, 2018).

¹⁸ <https://popcenter.asu.edu/content/unpublished-documents-case-studies>.

¹⁹ Ibid.

The CSEW was first conducted in 1982. Until 2001, eight sweeps were conducted, since when it has become an annual survey (Flatley, 2014). The CSEW “is viewed as a gold-standard survey of its kind” (Flatley, 2014: 199). Ten sweeps of the CSEW (from 1996 to 2007/08) are used in Chapter 6, which compares trends in both CSEW and PRCD burglaries in POP-committed PFAs with trends in their most similar PFAs that were not committed to POP to the same extent. Six sweeps of the CSEW (1996-2003/04) are utilised in Chapter 7, which tests whether there was a statistically significant effect of POP on the *mean* number of burglary victimisations (also controlling characteristics of households and PFAs and the number of police officers per 1000 residents in PFA) between 1995 and 2003/04.

4.5.1 Sampling and coverage

The sampling population of the CSEW consisted of residents aged over 16 living in England and Wales until January 2009. After that time, it was extended and now currently covers children aged between 10-15 years as well (Tseloni and Tilley, 2016), but which is beyond the scope of this thesis. The CSEW sampling frame from which the sample is selected is the Postcode Address File, “which is widely accepted as the best general population sampling frame in England and Wales” (ONS, 2018: 5). Once an eligible household is determined²⁰, an interviewer randomly selects an adult from that household for an interview. If it is applicable, the interviewer also randomly selects a child aged 10 to 15 years from the same household for an interview (ONS, 2018). Again, children aged 10 to 15 years are outside the scope of the thesis. Although the CSEW response rates vary from year to year, they have been consistently high, and the target sample sizes are always accomplished (ONS, 2018). There are 43 PFAs in England and Wales, and Table 4.2 presents the sample sizes (adults) achieved for the CSEW sweeps for 42 PFAs from 1996 to 2007/08²¹. The last row represents the total sample size for each sweep. The sample sizes of 1996, 1998 and 2000 CSEW sweeps at the PFA level are relatively low. However, the sample size of the CSEW then gradually improved from 2000 to 2007/08 (both at the PFA level and the national level) to increase the precision of estimates for PFAs (Lynn and Eliot, 2000).

²⁰ The CSEW does not cover the population living in vacant properties, second homes, non-residential addresses, care homes and student halls.

²¹ City of London is merged with the Metropolitan in the CSEW (ONS, 2018). The CSEW does not include a PFA-related variable prior to 1996 (Hele, 2019, personal email, 6 February 2019).

Table 4.2: The CSEW sample size (adults) by PFA, 1996-2007/08

Police Forces	1996	1998	2000	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Avon & Somerset	452	410	460	921	922	891	982	1,127	1,049	969
Bedfordshire	147	187	306	474	623	759	1,068	1,085	977	1,055
Cambridgeshire	274	264	299	583	589	735	1,018	1,068	1,023	989
Cheshire	280	289	367	653	753	774	983	1,060	1,041	964
Cleveland	141	97	320	590	763	816	964	971	1,041	1,067
Cumbria	160	118	304	548	644	777	1,034	1,080	931	1,031
Derbyshire	212	334	341	630	729	733	1,017	981	1,040	1,054
Devon & Cornwall	507	495	567	873	883	838	1,000	979	995	1,059
Dorset	68	25	305	581	694	788	1,043	1,033	988	903
Durham	178	312	318	568	737	777	1,002	959	1,047	991
Dyfed Powys	70	88	323	570	721	686	944	1,028	1,000	1,102
Essex	383	388	531	876	919	915	1,078	1,028	1,011	1,011
Gloucestershire	181	165	327	594	655	764	1,045	1,014	1,019	991
Greater Manchester	837	750	880	1,313	1,414	1,556	1,374	1,535	1,540	1,553

Table 4.2: The CSEW sample size (adults) by PFA, 1996-2007/08 (continued)

Police Forces	1996	1998	2000	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Gwent	213	125	345	701	779	821	896	1,041	1,042	1,004
Hampshire	442	420	611	981	1,002	1,009	1,047	1,096	1,075	995
Hertfordshire	163	209	322	579	635	719	999	1,167	1,065	1,058
Humberside	356	275	325	646	725	765	1,017	1,034	986	1,009
Kent	419	426	526	882	934	883	1,024	1,072	1,016	979
Lancashire	349	279	472	760	840	902	1,031	1,125	1,071	979
Leicestershire	266	309	280	614	652	738	990	1,077	992	993
Lincolnshire	306	161	327	563	817	755	945	1,086	1,039	1,015
Merseyside	549	409	479	847	905	858	1,021	1,056	1,013	1,011
Metropolitan	2,559	2,385	2,186	2,921	3,322	3,449	3372	3,370	3,527	3,634
Norfolk	244	205	319	560	775	836	982	997	1,036	982
North Wales	202	275	314	599	748	771	883	1,043	1,001	1,071
North Yorkshire	172	126	305	577	607	731	995	999	1,021	1,037
Northamptonshire	171	74	333	630	682	692	904	1,064	1,013	1,104

Table 4.2: The CSEW sample size (adults) by PFA, 1996-2007/08 (continued)

Police Forces	1996	1998	2000	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Northumbria	652	546	543	779	867	826	934	1,032	1,066	1,028
Nottinghamshire	388	285	359	586	678	759	882	1,033	1,093	1,050
South Wales	367	302	445	726	755	737	918	1,098	1,045	1,075
South Yorkshire	465	462	469	701	863	813	968	998	1,078	1,025
Staffordshire	395	388	401	740	628	718	948	1,017	999	1,106
Suffolk	165	172	299	653	701	723	953	1,083	1,098	992
Surrey	263	58	285	720	800	827	920	1,012	1,068	963
Sussex	583	417	519	877	828	693	1,029	1,041	1,080	1,069
Thames Valley	723	693	710	983	1,178	1,210	1,272	1,233	1,238	1,195
Warwickshire	201	129	311	724	698	776	1,069	1,074	1,104	1,057
West Mercia	147	279	425	640	766	811	908	1,074	1,054	999
West Midlands	962	760	779	1,341	1,396	1,449	1,544	1,595	1,398	1,543
West Yorkshire	545	654	733	1,118	1,110	1,096	1,124	1,264	1,241	1,219
Wiltshire	189	199	340	602	742	755	993	1,067	1,042	1,052
Total	16,346	14,944	19,410	32,824	36,479	37,931	45,120	47,796	47,203	46,983
Response Rate*	83%	79%	74%	73%	74%	75%	75%	75%	75%	76%

Sources: Researcher's calculations, the CSEW, 1996-2007/08

(*) ONS, 2018

4.5.2 Reference periods

Prior to 2000, respondents reported their crime-related experiences in the previous calendar year (for example, the 1996 CSEW measured the crime-related experiences of the respondents between January 1995 and December 1995 through interviews conducted in 1996). However, when the CSEW changed to continuous survey (2001/02 onwards), the respondents reported their crime-related experiences in the 12 months prior to being interviewed (for example, the 2002/03 CSEW measured crime-related experiences of the respondents between April 2001 and February 2003 through interviews conducted between April 2002 to March 2003) (ONS, 2018). Therefore, the CSEW sweeps are not directly comparable. Since the CSEW sweeps before 2001/02 report crime victimisations in the previous calendar year (for example, the 1996 sweep reported crime victimisations in 1995), the tables and figures will be labelled accordingly.

4.5.3 Questionnaire structure

The CSEW questionnaire has six parts: (1) sampled Household Details, (2) Main Questionnaire, (3) Demographics and Media Consumption Section, (4) Special Modules covering themed topics, (5) Victim Forms, and (6) *ad hoc* special topics modules. In order to cover as many themes as possible, the Special Modules are completed by a random sub-sample of the entire annual CSEW sample and/or alternate from year to year (Tseloni and Tilley, 2016). If respondents report crime experiences in the screener questions of the Main Questionnaire, they can then complete a maximum of five or six Victim Forms, depending on the year (ONS, 2018). They report the most serious crimes first ((1) rape and sexual assault, (2) robbery, (3) assault, (4) theft from a person, (5) burglary, (6) theft from a dwelling, (7) vehicle theft, and (8) vandalism) (Hales, 1993, cited in Tseloni and Tilley, 2016).

4.5.4 Questions asked

For the interviews, all respondents are asked to reply to the screener questions of the Main Questionnaire to record their crime experiences. The wording of the questions regarding crime experiences has been consistent over time to ensure their comparability (ONS, 2018), which means that there has been no change in the definition of burglary over the period the thesis analyses. However, specific terms, such as burglary, are not used in the surveys. For instance, the following questions are asked to determine whether a respondent has been a victim of burglary:

- If anyone got into the current residence to steal/try to steal? (YES/NO). If YES,
 - How many times has this happened?
- If anyone got into the previous residence to steal/try to steal? (YES/NO). If YES,
 - How many times has this happened?

If a respondent answers the above questions from the screener questionnaire as YES, victim forms are completed (a maximum of five or six depending on the year). This study uses the screener questionnaires since it is only interested in the number of victimisations rather than the nature or pattern of burglary.

4.5.5 Types of incidents reported

There are two kinds of incidents that the CSEW records: (a) household incidents, and (b) personal incidents. Answers to questions asked to a respondent per household refer to household incidents, and the current study deals with household burglary with entry (excluding attempted burglaries)²². On the other hand, personal incidents refer to crimes committed against respondents and their possessions (Flatley, 2014; Tilley and Tseloni, 2016). Personal incidents are outside the scope of this research.

4.5.6 Household weights

The CSEW raw data is first weighted by Kantar Public (CSEW contractor), after which the ONS applies calibration weighting to adjust for differential non-response (ONS, 2018). There are two main weights: (1) the core household weight, and (2) the core individual weight. This study uses the core household weight in Phase two (Chapter 6). It is calculated as follows: “Core household weight equals w_1 (weight to compensate for unequal address selection probabilities between PFAs - given some areas are more populated than others) multiplied by w_2 (“address non-response weight” to compensate for the observed variation in response rates between different types of neighbourhood - based on region and neighbourhood classification indicators) multiplied by w_3 (dwelling unit weight, which relates to the number of dwelling units in a household, to compensate for situations in which only one dwelling unit can be selected in multiple “dwelling unit” households)” (ONS, 2018: 93).

²² See Section 4.8.1 for reasons.

4.5.7 Validity of the CSEW

Statisticians, criminologists and the UK government have largely drawn upon two data sources to measure crime: the CSEW and PRCD. The CSEW, as the only crime-related national statistics in England and Wales, is more widely used to analyse crime trends compared to PRCD. It has been “viewed as a gold-standard survey” (Flatley, 2014: 199) as PRCD has several shortcomings, such as political pressure, the dark figure (unreported crimes), and changes in recording processes (Tilley et al., 2018). The CSEW has had a considerable influence on criminological thinking and understanding of victimisation risk and repeat victimisation (Flatley, 2014). There is a substantial body of peer-reviewed studies (using the CSEW) which have shaped crime prevention policies (e.g. Tseloni et al., 2018). The success of those studies depends on the associated wealth of data as the CSEW provides socio-demographic characteristics of individuals, households and areas, the nature and consequences of victimisation experience, and public attitudes to crime and crime-related issues (Flatley, 2014).

4.5.8 Limitations of the CSEW

Despite its reputation as a gold-standard survey, there are inevitable methodological limitations to the CSEW, such as “sampling error, and the inherent imprecision around survey estimates” (Flatley, 2014: 199). A respondent’s lack of ability to recall incidents and the possibility of misinforming interviewers are further inherent limitations. Moreover, participants may not want to report incidents in detail, especially in relation to sex offences. Furthermore, participants may misinterpret questions and interviewers may record responses in the wrong way. Coders who determine crime categories may give the wrong codes to crimes as well (Flatley, 2014).

4.6 Police data

The thesis also uses PRCD burglaries as the level of reporting of burglaries to the police compared to other offence types is relatively high (ONS, 2017). This data has been derived from publicly available Office for National Statistics (ONS) and Home Office publications. In particular, Chapter 6 uses PRCD in order to compare trends in both CSEW and PRCD burglaries in highly POP-committed PFAs with the trends in the most similar PFAs to them but which were not committed to POP to the same extent. The definition of police-recorded burglary has been consistent over time (ONS, 2017)²³. Chapter 7 also uses police workforce

²³ See Section 9 of the Theft Act 1968 and Appendix 1.1.

(strength) data to construct a variable at the PFA level: the number of police officers per 1000 residents in a PFA (Sozer and Merlo, 2013).

4.6.1 Limitations of police recorded crime data

There are a number of limitations to PRCD. Firstly, “[u]nlike the CSEW, recorded crime figures do not include crimes that have not been reported to the police or incidents that the police decide not to record” (Flatley, 2017: 5). This was “the primary motive for launching the survey [the CSEW] over 30 years ago” (Flatley, 2014: 194). Further limitations of the PRCD are as follows: (a) “non-standardised recording practice across police forces and over time” and (b) “changes in offence classification and legal definitions over time” (Tseloni and Tilley, 2016: 4). For instance, van Dijk et al. (2012b: 305) argued that “almost everywhere a degree of statistical net widening seems to have taken place, which has inflated the police count of violent crime. In our view, police figure of violent crime has, in recent years, been increasingly inflated”.

4.6.2 Concluding remarks regarding police-recorded crime data

Although there are several limitations to PRCD, the researcher argues that burglary is one of the crime types that are not affected by these limitations to any considerable extent. The related literature suggests that citizens consistently report burglaries to the police, particularly for insurance purposes (Tarling and Morris, 2010). Therefore, although this study utilises the CSEW as the main data source for the analysis, it also uses PRCD to test whether there is a relationship between POP and burglary rates and to compare and identify the differences between trends in the two data sources at the PFA level in England and Wales between 1988 and 2007/08.

4.7 The UK Census data

The UK Census is conducted every ten years to count population and households (since 1801). Currently, the ONS conducts the Census via questionnaires. Householders complete questionnaires and send them back either via post or the Internet. “Census statistics help paint a picture of the nation and how we live. They provide a detailed snapshot of the population and its characteristics”²⁴. That is, they can be used for a comprehensive, detailed, and importantly, comparative analysis (ibid). Chapter 7 uses the 1991 and 2001 UK Censuses to construct structural control variables at the PFA level in 1997 and 2003/04,

²⁴ <https://www.ons.gov.uk/census/2011census>.

separately. Census data come from the official labour market statistics of the ONS.²⁵

4.8 Variable selection

Chapter 7 employs regression analysis. Therefore, on the left-hand side of the equation, there is a dependent variable, which here is the number of burglary victimisations that a household experiences within a reference period. On the right-hand side of the equation are the independent variable and control variables. After briefly discussing the dependent and independent variables, this section justifies the selection of the control variables used in Chapter 7. The control variables are divided into two groups: (1) departmental control variables, and (2) structural control variables. The structural control variables have two levels: (1) micro/household and (2) macro/PFA. Figure 4.1 portrays the structure of the variables.

4.8.1 Dependent variable

This section explains a number of general and specific reasons for selecting burglary with entry for use as the dependent variable in the empirical analysis. Details of the nature of the dependent variable used in Chapters 6 and 7 can be found in sections 4.9.2 and 4.9.3. The general reasons are as follows. Firstly, considering the projects submitted to the Goldstein and Tilley award schemes by police forces in England and Wales²⁶ and the related literature (Laycock and Farrell, 2003)²⁷, a considerable number of these projects targeted burglary. In addition, the large-scale government-supported crime reduction programmes that were discussed in Section 4.3.2 funded a number of anti-burglary projects that used a problem-oriented approach (e.g. the Reducing Burglary Initiative). For instance, Read and Tilley (2000: v) reported that “the commonest targets for problem-solving amongst the initiatives returned [from the questionnaire conducted across 43 PFAs in England and Wales] were burglary, vehicle crime, drugs and youth”. Secondly, the “survey identification of persons whose homes have been burglarised probably is more accurate than identification of any other offences” (Schneider, 1981: 832).

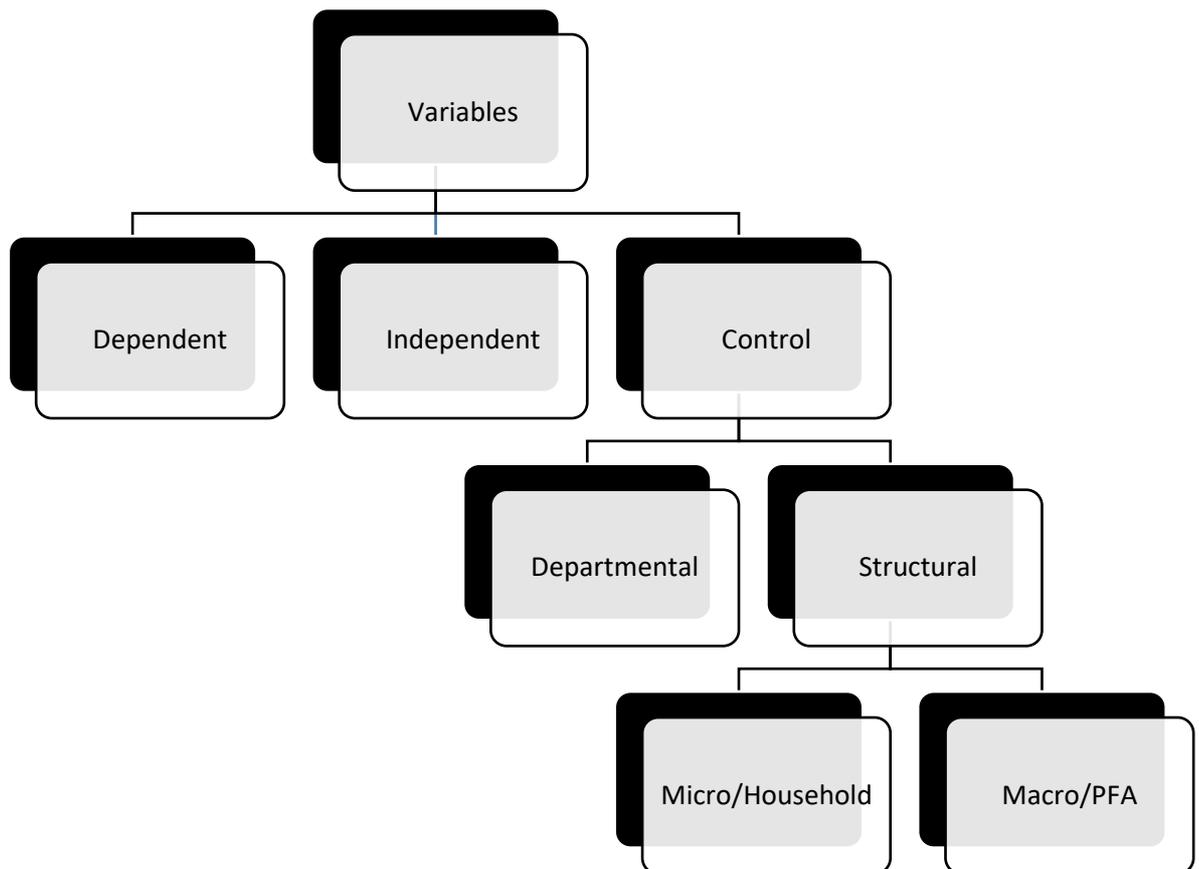
Thirdly, although they are not limited to burglary, the impacts of burglary victimisation are not only financial (Dubourg et al., 2005) but also psychological (Maguire, 1980; Beaton et al., 2000).

²⁵ <https://www.nomisweb.co.uk/>.

²⁶ <https://popcenter.asu.edu/content/case-studies-and-databases>.

²⁷ <https://popcenter.asu.edu/content/situational-crime-prevention-database-home>.

Figure 4.1: Structure of the variables used in Chapter 7



The specific reason is as follows. The CSEW has two categories concerning burglary in a dwelling: (1) burglary with entry; (1a) burglary with loss; (1b) burglary with no loss; and (2) attempted burglary. PRCD has five categories: (1) burglary in a dwelling; (2) attempted burglary in a dwelling; (3) distraction burglary in a dwelling; (4) attempted distraction burglary in a dwelling; and (5) aggravated burglary in a dwelling. In other words, although the CSEW provides disaggregated data (e.g. burglary with loss), PRCD does not. Therefore, it makes more sense to focus on burglary with entry considering the associated data availability.

4.8.2 Independent variable

The independent variable, which is created, for the first time, by the researcher in Chapter 5, is the *level of commitment of police forces to POP*. It has four categories coded as (3) high-commitment, (2) medium-commitment, (1) low-commitment and (0) no-commitment to POP. This variable is crucial to our examination of whether POP has a statistically significant independent effect on burglaries - whilst controlling for characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA - in England and Wales in 1997 and 2003/04, separately, or otherwise. To construct this variable,

the researcher selects and uses two indicators of commitment to POP. The researcher also reviews the related literature (e.g. Leigh et al., 1996; 1998; Read and Tilley, 2000; Scott, 2000; Hale et al., 2004; 2005; Bullock et al., 2006; Heaton, 2009a) to complement the findings from the analysis of the two indicators (see Section 4.9.1 for details).

4.8.3 Control variables

This thesis uses two types of control variables: (1) departmental, and (2) structural. There is one departmental control variable: the number of police officers per 1000 residents in a PFA. The data for the departmental control variable comes from the Chartered Institute of Public Finance and Accountancy (CIPFA) police actuals, which were provided by the third supervisor of this thesis (Dr James Hunter). Structural control variables have two levels. Micro-/household-level structural control variables come from the 1998 and 2003/04 CSEW sweeps and macro/PFA-level structural control variables come from the 1991 and 2001 UK Censuses.

4.8.3.1 Departmental control variable

The departmental control variable of this study is the *number of police officers per 1000 residents in a PFA*. The hypothesis of ‘more police, less crime’ depends on opportunity-related theories such as rational choice theory. According to this theory, offenders first weigh up the costs and benefits of committing a crime relative to legal alternatives and then commit the crime if they think they will profit from it (see Chapter 2, Section 2.2.2). One of the possible costs that potential offenders consider is the risk of being arrested by police officers on the streets whilst committing burglary.

However, demonstrating an effect of more police on crime/burglary is not an easy task and previous research yielded mixed results. On the one hand, Eck and Maguire (2006: 209) criticised this hypothesis by stating “Some of the cities experiencing the greatest reductions in crime did do without increasing the number of officers”; on the other, several studies suggested a negative relationship between the number of police officers and crime (Lin, 2009), particularly residential burglary (Marvell and Moody, 1996; Lindstrom, 2013).

Eck and Maguire (2006) found that previous studies used different analysis strategies/designs (e.g. cross-sectional versus longitudinal), sample sizes (e.g. 15 versus 1000), time periods (e.g. one year versus 10 years), dependent (e.g. aggregate versus individual crimes) and independent variables to measure police strength (e.g. number of police officers, number of police employees, and police expenditures) to analyse the

relationship between number of police officers and crime. The majority did not check simultaneity, although “The most difficult problem facing researchers attempting to unravel the relationship between police and crime is to determine if more police reduce crime or if more crime increases police hiring” (Eck and Maguire, 2006: 209). Importantly, all studies they reviewed used police recorded crime data. Recently, Machin and Marie (2011) also asserted that there are weaknesses in research designs and analyses of previous studies that did not consider many of the issues that might affect both police numbers and crime (e.g. social change, deployment of the police resources in the prevention, investigation and detection of burglary). Bradford (2011: 5) also suggested that “Despite improvements compared with earlier years, almost all [studies] suffer from potentially significant methodological and conceptual flaws.”

Although the evidence supporting the assertion that more police reduce burglaries is not strong, this study uses number of police officers per 1000 residents as a departmental control variable while exploring the effects of POP on burglaries recorded by the 1998 and 2003/04 CSEW sweeps. Details about the calculation of the departmental control variable can be found in Section 4.9.3.

4.8.3.2 Structural control variables

According to the victimisation theories, there are a number of factors affecting victimisation. These can be classified as:

- demographic and socio-economic characteristics of individuals and their households
- individuals’ routine activities (Cohen and Felson, 1979; Miethe et al., 1987; Kennedy and Forde, 1990)
- characteristics of areas (Shaw and McKay, 1942; Sampson and Groves, 1989; Trickett et al., 1992; Tseloni, 2006)
- interactions of these factors (Kennedy and Forde, 1990; Trickett et al., 1995; Tseloni et al., 2002).

Therefore, drawing upon previous research (Cohen and Felson, 1979; Sampson and Groves, 1989; Kennedy and Forde, 1990; Trickett et al., 1992; Trickett et al., 1995; Osborn and Tseloni, 1998; Tseloni et al., 2002; Kershaw and Tseloni, 2005; Tseloni, 2006), and using the 1998 and 2003/04 CSEW sweeps (for micro-structural control variables) and the 1991 and 2001 UK Censuses (for macro-structural control variables), a number of structural

control variables can be constructed. It is hoped that controlling the number of structural control variables along with the departmental control variable will strengthen the analysis, which aims to identify whether POP had a statistically significant independent effect on burglaries in England and Wales in 1997 and 2003/04, separately.

4.8.3.2.1 Household-level structural control variables

This section discusses the selection of micro-/household-level structural control variables by referring to the related theory for each variable. Details regarding the preparation of the variables and their respective categories (dummy variables) that enter the statistical models in Chapter 7 at the household level can be found in Section 4.9.3 and Appendix 4.2.

Individuals can protect their households through social or physical *guardianship* (Meier and Miethe, 1993). *Length of residence* in an area can be given as an example of social guardianship. This is because living in an area for a long time increases the chance of having strong social networks, which reduces the risk of victimisation (Trickett et al., 1995). In addition, *the number of adults and children under 16 in a household* and whether *the house is empty during the weekday proxy guardianship*. The idea is that the more a household is left unoccupied, the more likely it is for that household to experience victimisation (Trickett et al., 1995; Osborn and Tseloni, 1998).

The characteristics of individuals and their households determine their *suitability, accessibility and desirability* to be targeted by an offender (Miethe and Meier, 1990). For instance, *type of area* (e.g. inner city, urban, or rural) and *type of accommodation* (e.g. detached house, semi-detached house, flat, etc.) proxy *the accessibility* concept (Tseloni, 2006). For a burglar, it takes more time to reach a household in a rural area when compared to an inner city area as offenders typically select targets that are closer to their home addresses (Bowers and Johnson, 2017). Similarly, it necessitates more effort for an offender to access a flat compared to a cottage (Tseloni and Thompson, 2018).

The value of targets refers to *desirability*. Therefore, *annual household income, socio-economic status (social class) of the head of household, tenure, and number of cars* indicate *desirability/attractiveness* (see Chapter 3, Section 3.2.1.1.3)

Family disruption is one of the factors decreasing informal social control and collective efficacy in a community, which may be a burglary protective factor (Hirschfield and Bowers, 1997). As a result, delinquency and crime rates increase (Sampson and Groves, 1989;

Hirschfield et al., 1995). Therefore, *lone parent household* is also included in the analysis as a proxy for family disruption at the household level.

Ethnic heterogeneity affects crime rates due to a lack of trust amongst ethnic groups in a community (Sampson and Groves, 1989). It also affects social ties in a community that may lead to increased crime rates. Therefore, it is included in the analysis at both household- and PFA level (see Chapter 3, Section 3.2.2.5.3).

Finally, *age of the head of household* is included as victimisation risks decrease by age (Tseloni et al., 2002; Tseloni, 2006).

4.8.3.2.2 Area-level structural control variables

Constructing macro/PFA level structural control variables (in addition to micro-/household-level structural control variables) are crucial to be able to provide a more comprehensive picture of burglary victimisation. Data relating to these variables come from the 1991 and 2001 UK Censuses. Details regarding the preparation of the variables that enter the statistical models in Chapter 7 at the PFA level can be found in Section 4.9.3.

Social disorganisation theory argues that “socioeconomic status, residential mobility, ethnic heterogeneity, family disruption” (Sampson and Groves, 1989: 774), and urbanisation (Shaw and McKay, 1942; Osborn et al., 1992) are the key factors contributing to crime and delinquency. Drawing upon previous research (e.g. Tseloni, 2006) a number of variables indicative of poverty are selected. They include:

1. the percentage of lone parent households
2. households without a car
3. households renting from a housing association
4. households renting from a local authority
5. the mean number of people per room.

On the other hand, *owner-occupied households* and *households with a professional²⁸ head* are chosen as an indicator of affluence (see Chapter 3, Section 3.2.1.1.3).

²⁸ “This major group covers occupations whose main tasks require a high level of knowledge and experience in the natural sciences, engineering, life sciences, social sciences, humanities and related fields. The main tasks consist of the practical application of an extensive body of theoretical knowledge, increasing the stock of knowledge by means of research and communicating such knowledge by teaching methods and other means. Most occupations in this major group will require a degree or equivalent qualification, with some occupations requiring postgraduate qualifications and/or a formal period of experience-related training” (ONS, 2010: 53).

Low residential stability may increase the likelihood of becoming a victim of a crime since it may indicate a low level of community/social guardianship (Trickett et al., 1995). *The percentage of households renting privately and the percentage of households that moved in the last 12 months* are included in the study as a proxy of *residential mobility*.

Another factor affecting crime rates is *ethnic heterogeneity*, as discussed previously. At this level, *ethnic diversity* indicates the percentage of Black and Asian (Indian, Pakistani, and Bangladeshi) and people from other backgrounds in a PFA.

Urbanisation is another proxy of a lack of social control in the community. In urbanised areas, social participation, integration and control of delinquency are low (Shaw and McKay, 1942). In the present study, this is indicated by *population density* (Tseloni, 2006: 210).

Young people aged between 16-24 are considered to be motivated offenders (Cohen and Felson, 1979) because of the long history of the age-crime curve, which has been observed to consistently adopt a similar shape over the decades (Hirschi and Gottfredson, 1983; Matthews and Minton, 2018). That is, the proportion of people who commit crime increases in adolescence and teenage years and then falls from the early twenties (Moffitt, 1993; Loeber et al., 2012).

In addition to the PFA-level structural control variables coming from the UK Census data, a variable, *region*, which is derived from the CSEW, is included “to capture omitted effects operating at a higher level of aggregation” (Tseloni, 2006: 211).

Although a number of key factors associated with burglary at the household and PFA levels have been identified for inclusion in the analysis, the researcher acknowledges “the complexity of the natural and built environment, the political, economic, social and cultural contexts and structures of areas and the actions of individuals and corporate bodies within areas” (Bottoms and Wiles, 1992, cited in Trickett et al., 1995: 274). That is, this study is limited to the variables discussed above due to the lack of data.

4.9 Analysis plan

The empirical analysis consists of three phases. Each phase addresses different research questions using different methods. Each of them constitutes a separate chapter. Details of the three phases are provided in the following sections.

4.9.1 Phase one

Phase one (Chapter 5) argues that “simply counting the number of agencies that claim to be using ... [a policing strategy] ... is a poor indicator of the diffusion of the innovation” (Eck and Maguire, 2006: 245). As such, Chapter 5 addresses the following three research questions:

1. Which police forces in England and Wales were highly committed to POP?
2. What were the policing strategies of police forces in England and Wales?
3. What was the level of commitment of police forces in England and Wales to POP in 1997 and 2003/04, separately?

Chapter 5 makes an original contribution to knowledge by addressing the above questions. To do so, Chapter 5 conducts a descriptive analysis of the two indicators of commitment to POP selected by the researcher and reviews the related literature to triangulate and supplement the findings from the analysis of the two indicators. The first indicator of commitment to POP is the number of problem-oriented projects submitted to the Tilley and Goldstein Award schemes by police forces in England and Wales between 1997 and 2008. There are 889 projects available on <https://popcenter.asu.edu/>. Once the duplications are removed, there are 771 projects to be reviewed in Chapter 5. Chapter 5 identifies the total number of project submissions for each police force between 1997 and 2007/08. Following that, Chapter 5 categorises police forces into four groups in terms of the level of commitment to POP (see Chapter 5, Section 5.2 for details). It then selects highly POP-committed police forces to be included in the analysis of Chapter 6, which compares trends in both CSEW and PRCB burglaries in highly POP-committed PFAs (according to the first indicators) with the trends in their most similar PFAs (see Section 4.9.2 for a definition), which were not committed to POP to the same extent. Chapter 5 also uses the project submissions to identify:

- the type of crime targeted in each project
- the number of anti-burglary projects submitted by each police force
- the starting and submission year of each project.

Following the analysis of the first indicator, Chapter 5 analyses the second indicator of commitment to POP (problem-oriented projects that were applied by police forces as parts of large-scale government-supported crime reduction programmes). These include:

- the Safer Cities Programme projects (Tilley and Webb, 1994; Ekblom et al., 1996; Sutton, 1996; Hirschfield et al., 2001)
- the Reducing Burglary Initiative projects (Hope et al., 2004; Millie and Hough, 2004; Homel et al., 2004; Hirschfield, 2007)
- the Targeted Policing Initiative projects (Bullock et al., 2002; Bullock and Tilley, 2003).

Similar to the analysis of the first indicator, Chapter 5 identifies police forces that received funding for the government-supported projects. Following this, Chapter 5 calculates the total number of projects and their budget for each police force. Chapter 5 then selects police forces, which received a considerable amount of funding for the projects, to be included in the analysis of Chapter 6, which compares trends in both CSEW and PRCD burglaries in highly POP-committed PFAs (according to the second indicator) with the trends in their most similar PFAs, which were not committed to POP to the same extent. Whilst analysing the two indicators of commitment to POP, Chapter 5 also proposes ten hypotheses to be tested in Chapter 6.

Reviewing the related literature (e.g. Leigh et al., 1996, 1998; Read and Tilley, 2000; Scott, 2000; Bullock and Tilley, 2003; Bullock et al., 2006), Chapter 5 finally triangulates and supplements the findings from the analysis of the two indicators of commitment to POP. It also revisits previous studies on policing strategies of police forces in England and Wales (Hale et al., 2004; 2005; Heaton, 2009a; 2009b), which reviewed 366 HMIC reports published between 1990 and August 2001 and revises their findings. Based on the findings from the above analyses, Chapter 5 finishes with constructing the independent variable of the analysis of Chapter 7: the level of commitment of police forces to POP in 1997 and 2003/04.

It should be emphasised that although the researcher cited scholars who argued that all other forms of proactive policing strategies are a reduced form of POP (e.g. Sherman and Eck, 2002; Eck, 2014; Sparrow, 2016) in the literature review chapters whilst relating POP to other innovative policing strategies, the level of commitment of police forces to POP was calculated by considering explicit POP-related activities of police forces prior to 1997 and 2003/04, separately, and the related literature that explicitly reported police forces that applied POP at some point in time. This is because the researcher acknowledges the fact that taking a very broad definition of POP makes measuring POP in police forces more difficult

and other so-called reduced forms of policing would need to be represented in the commitment variables.

4.9.2 Phase two

Phase two (Chapter 6) is an initial exploration of the role of POP in the burglary drop in England and Wales. Based on the findings from the analysis of the two indicators of commitment to POP and the related literature review in Phase one, this phase compares trends in both CSEW and PRCD burglaries in highly POP-committed PFAs with the trends in their most similar PFAs, which were not committed to POP to the same extent, between 1988 and 2007/08. Phase two addresses the following research question:

Was the drop in both CSEW and police recorded burglaries between 1988 and 2007/08 much greater in highly POP-committed PFAs compared to their most similar PFAs, which were not committed to POP to the same extent?

The reason for choosing 1988 as the first point in time to be analysed is that the Safer Cities Programme, which applied a problem-oriented approach, started in 1988 and finished in 1998 (Ekblom et al., 1996, Sutton, 1996; Hirschfield et al., 2001). The reason for choosing 2007/08 as the end point for analysis is that CSEW data at the PFA level is only publicly available from 1995 onwards (using the CSEW 1996) to 2007/08 (inclusive)²⁹. Furthermore, although both CSEW and PRCD burglaries started to decrease in 1993, both data sources cover the sharpest burglary drop measured by the CSEW, 1997-2001/02 (Tseloni et al., 2017; see also Chapter 3, Figure 3.2). After a dramatic decrease, burglary trends remained relatively flat between 2006/07 and 2008/09 (see Figure 3.2). Therefore, using the CSEW 2007/08 as the end point for the analysis is an appropriate cut-off. Furthermore, in addition to the Safer Cities Programme (1988-1998), the decrease in burglaries coincides with the implementation of small- (e.g. project submissions to the award schemes between 1997 and 2008) and large-scale problem-oriented projects that were applied by police forces between 1999 and 2002 (see sections 4.3.1 and 4.3.2). Overall, the researcher argues that there might be a relationship between the implementation of POP and the burglary drop in England and Wales between 1988 and 2007/08.

It should be noted that whilst conducting the trend analysis and testing the hypotheses that are proposed in Chapter 5, Chapter 6 takes two important issues into account: (1)

²⁹ Hele (2019, personal email, 6 February 2019).

introduction year of POP within each PFA and (2) the level of commitment of police forces to POP. In addition, throughout the analysis in Chapter 6, ‘Most Similar Groups (MSGs)’ are used to make a more meaningful comparative analysis. The definition of MSGs is as follows:

“Most Similar Groups (MSGs) are groups of police force areas that have been found to be the most similar to each other based on an analysis of demographic, social and economic characteristics which relate to crime. ...*MSGs are designed to help make fair and meaningful comparisons between forces.* Forces operate in very different environments and face different challenges. It can be more meaningful to compare a force with other forces which share similar social and economic characteristics, than, for example, a neighbouring force” (HMICFRS, 2017, emphasis added).

The crime-related variables that were used to create MSGs are as follows:

- ‘hard-pressed’ neighbourhoods
- percentage of terraced households
- output area density
- percentage of overcrowded households
- percentage of single-parent households
- population sparsity
- long-term unemployed (HMICFRS, 2017).

Sampson and Groves (1989) suggested that these variables are highly correlated with burglary. Therefore, using MSGs for the analysis enables the researcher to identify whether POP had an impact on the burglary drop whilst implicitly controlling for certain related risk factors. At the time of writing, there were two MSGs (HMICFRS, 2017). The first MSGs were developed in 2003 using the 2001 Census. The second MSGs were revised by using more up-to-date data (the 2011 Census). The methodology and variables of both MSGs remained unchanged (HMICFRS, 2017). Chapter 6 uses the first MSGs since it focusses on the period from 1988 to 2007/08.

As an example, the most similar police forces to Lancashire are as follows: Leicestershire, Kent, Nottinghamshire, West Yorkshire, Essex, Northamptonshire, and Hertfordshire (see Appendix 4.3 for other groups). Here, it is essential to note that when two MSGs, which include the same police force (e.g. Essex), are compared, they may nevertheless not be

identical. For example, the Bedfordshire group includes Hertfordshire, Sussex, Hampshire, Essex, Thames Valley and Kent. However, the group of Essex includes police forces which are not included in the Bedfordshire group such as Avon and Somerset, Leicestershire, Devon and Cornwall and Cambridgeshire. The reason for this is that police forces are sorted according to their similarity to each other within a group. In other words, while the first two police forces within a group are the most similar to each other, the similarity between the first and the last police force within that group is the weakest (although the strength of this similarity is still strong enough to place the last force with the first force rather than allocating it to an alternative cluster).

Phase two uses both the CSEW and PRCD to compare trends in the *mean* number of burglaries in highly POP-committed PFAs with the trends in their most similar PFAs, which were not committed to POP to the same extent, over time. To calculate the *mean* number of burglaries per PFA using the screener questionnaires of the CSEW sweeps (1996-2007/08), a new ‘burglary’ variable is computed by combining the following four questions:

- If anyone got into the current residence to steal/try to steal (YrHoThef)? (YES/NO). If YES
 - How many times have you been a victim of (NYrHThef)?
- If anyone got into the previous residence to steal/try to steal (Prevthef)? (YES/NO). If YES
 - How many times have you been a victim of (NPrevthe)?

The computed burglary variable takes the values of 0, 1, 2, 3, 4, 5 or more. After computing the variable, the mean number of burglaries in the reference period per PFA is calculated using SPSS 24.0 (IBM Corp., 2016). Household weights are used.

To calculate the mean number of PRCD burglaries in a PFA, Chapter 6 uses PRCD by community safety partnership and PFA 1990-2001/02 (Home Office, 2016a) and 2002/02-2014/15 (Home Office, 2016b) and household projections for England and Wales local authority districts (which are aggregated to PFAs) (MHCLG, 2016). Using Microsoft Excel, the mean number of recorded burglaries per PFA is calculated using the following formula: the number of burglaries in a dwelling in a PFA/number of households in a PFA.

Having calculated the mean number of burglaries per PFA using both the CSEW and PRCD, Phase two creates time-series figures using Microsoft Excel to compare trends in the *mean*

number of burglaries in highly POP-committed PFAs with the trends in their most similar PFAs, which were not committed to POP to the same extent, over time.

Chapter 6 also compares trends in repeat burglary victimisations in highly POP-committed PFAs with the trends in their most similar PFAs, which were not committed to POP to the same extent, over time. To calculate the proportion of all burglary victims that suffered more than one burglary in the reference period in a PFA, the screener questionnaires from the CSEW sweeps are used. This time, the computed burglary variable takes the values of 0, 1, 2 or more (e.g. non-victim, single victimisation, and repeat victimisation). The calculation is as follows: the number of repeat burglary victimisations (2 or more) is divided by the number of total burglary victimisations (1 or more) and then multiplied by 100. Household weights are used. One limitation to be noted is that the CSEW only measures repeat victimisation in the reference period.

4.9.3 Phase three

Due to the complex nature of crime, studies that aim to examine whether a crime prevention intervention affects crime rates should control characteristics of individuals, households, and areas that might affect crime rates (see Section 4.8 for variable selection). As such, after an initial analysis in Phase two that explores whether POP played a role in the burglary drop in England and Wales between 1988 and 2007/08³⁰, Phase three addresses the following research question:

Did POP have a statistically significant effect on the mean number of burglary victimisations (also considering household composition and police force area characteristics and the number of police officers per 1000 residents in a PFA) between 1995 and 2003/04?

In other words, Phase three conducts two separate analyses to address the above research question: (1) multilevel negative binomial regression to determine whether POP had a *statistically significant* independent effect on the mean number of burglaries whilst controlling for the characteristics of both households and PFAs and the number of police officers per 1000 residents in a PFA in England and Wales in 1997 and 2003/04, separately,

³⁰ Phase two uses the most similar PFA groups to make more meaningful comparisons (HMICFR, 2017). However, those groups were developed using statistical models based on demographic, economic and social characteristics which relate to crime at the PFA-level (HMICFR, 2017). Therefore, Phase three goes one step further and control both household and PFA characteristics whilst analysing the relationship between POP and burglaries.

and (2) Pearson Correlation (Point Biserial correlation) to check bivariate correlations between POP (as a dichotomous variable) and the mean number of burglaries from 1995 to 2003/04.

The characteristics of households (micro-/household level structural control variables) come from the CSEW sweeps (1998 and 2003/04); the characteristics of PFAs (macro-/area-level structural control variables) come from the UK Censuses (1991 and 2001); and the number of police officers per 1000 residents in a PFA come from the police workforce statistics (CIPFA). In this phase, the software packages used are SPSS 24 (IBM Corp., 2016) and MLwiN 3.03 (Rasbash et al., 2019).

There are various reasons for selecting two points in time (1997 and 2003/04) for multilevel negative binomial regression. The reason for choosing 1997 as the first point in time to be examined is that only one police force (Surrey) was implementing POP on a large scale in England and Wales in 1996 (Leigh et al., 1996). Therefore, using the 1996 CSEW sweep, which is the first sweep providing data at the PFA level and that measures the crime victimisations in 1995, would not be appropriate. Instead, the researcher proposes that if Surrey was the only police force implementing POP on a large scale in 1996, it makes more sense to measure whether POP affected burglaries using the CSEW 1998, which measures the crime victimisations in 1997. There are four main reasons for selecting 2003/04 as the second point in time to be analysed. Firstly, all police forces were required to apply the National Intelligence Model (or ILP) by April 2004 (Maguire and John, 2006; Bullock et al., 2006). Secondly, neighbourhood policing gained popularity after 2006 (Bullock et al., 2006; Longstaff et al., 2015). In other words, there was a competition between policing styles, which makes it difficult to distinguish the effects of policing strategies on crime. Thirdly, the decrease in burglaries is remarkable between 1997 and 2003/04 (see Chapter 3, Figure 3.2). Finally, Chapter 5 suggests that the level of commitment of police forces to POP was higher in 2003/04 compared to 1997 (see Appendix 5.4). Overall, it is considered that an in-depth analysis of the effect of POP on burglaries in 1997 and 2003/04, separately, will give more accurate results in terms of the impact of POP on burglaries, if any.

4.9.3.1 Variable harmonisation and data cleaning

In order to ensure comparability between the 1998 and 2003/04 CSEW sweeps, variable harmonisation/recoding is carried out for some of the variables (see Appendix 4.2 for details). Table 4.3 presents the original names of the household structural control variables and their

Table 4.3: Household-level structural control variables

Variable name in the CSEW		Variable name explanation	Categories
1998	2003/04		
Hohage	Hrpage	Age	Count (16-99)
Ethnicid ³¹	Ethnic	Ethnicity	White Black Asian Other/Mixed/Chinese
Nadults	Nadults	Number of Adults	1 2 3+
Nchil	Nchil	Number of Children	0 1+
See Appendix 4.2		Lone Parent	Yes No
Tenharm	Tenharm	Housing Tenure	Owner Social Rented Sector Private Rented Sector
Tothhinc	Tothhin1	Household Income	Under £4,999 £5,000-£9,999 £10,000-£29,999 £30,000 or more No Response

³¹ Ethnicity of respondents, not Head of Household.

Table 4.3: Household-level structural control variables (continued)

Variable name in the CSEW		Variable name explanation	Categories
1998	2003/04		
Hohclass	Hrpsec2	Social Class of the Head of Household	Professional Intermediate Routine Never worked/inadequate description/armed forces
Cartot ³²	Cartot	Number of Cars	0 1 2 3+
Accharm1	Acctyp	Type of Accommodation	Detached Semi-detached Terraced Flat/Maisonette/Other Not Coded (only 2003)
Weekday	Weekday	Number of Hours Away from Home on a Day	Under 3 Hours 3-7 hours More than 7 Hours
Ysadharm	Ysadharm	Number of Years in a Residence	Under 2 Years 2-5 Years 6-10 Years More than 10 years
See Appendix 4.2		Area Type	Inner City Urban Rural

³² Missing cases were treated as zero because this question was only asked of respondents who owned or had regular use of a car during the reference period.

respective categories that are used for recoding in Chapter 7. Data is cleaned via SPSS 24.0 (IBM Corp., 2016). During the process of data cleaning, ‘do not know’ and ‘refused’ responses are recoded as missing (unless stated otherwise) and therefore omitted from the further analysis. Dummy variables are created for categorical structural control variables at the household level.

4.9.3.2 Constructing PFA-level variables

After identifying the household-level structural control variables (see Section 4.8.3.2.1) and recoding and cleaning them to ensure comparability between the CSEW 1998 and 2003/04 sweeps (see Appendix 4.2), the PFA-level structural control variables coming from the UK Censuses (1991 and 2001, see Section 4.8.3.2.2) are merged with the household-level structural control variables. The preparation process of the PFA-level structural control variables is as follows. Firstly, the data at the district level come from official labour market statistics (<https://www.nomisweb.co.uk/>). Secondly, the districts of each PFA are determined. Finally, data at the district level are aggregated to construct a variable at the PFA level.

In addition to the PFA-level structural control variables, there is one departmental control variable that is merged with the household-level variables: *the number of police officers per 1000 residents in a PFA* (Sozer and Merlo, 2013). This variable is constructed through the following calculation: (1) aggregation of the number of sergeants and constables³³, (2) division of this sum with the number of people living in the relevant PFA, and (3) multiplication of this result with 1000 (e.g. Avon and Somerset for 2003/04: $((486+2,570)/1,508,100)*1000=2.03$).

4.9.3.3 Principal component analysis

Having recoded and cleaned the household-level structural control variables; constructed the PFA-level structural and departmental control variables and merged them, Phase three (Chapter 7) continues with a principal component analysis (PCA) (Tabachnick and Fidell, 2013) because there is multicollinearity, which indicates a high correlation (e.g. .90) between the continuous structural control variables at the PFA level in 1997 and 2003/04, separately. Firstly, all continuous structural control variables at the PFA level are standardised to a mean of zero and a standard deviation of one prior to the PCA. Therefore, they contribute equally to the overall score of components that are constructed from the PCA (Osborn et al., 1992;

³³ These officers are in charge of frontline work and may have a deterrence effect.

Tseloni, 2006; Pease and Tseloni, 2014). Thereafter, the researcher follows Tabachnick and Fidell (2013: 661) to employ the PCA:

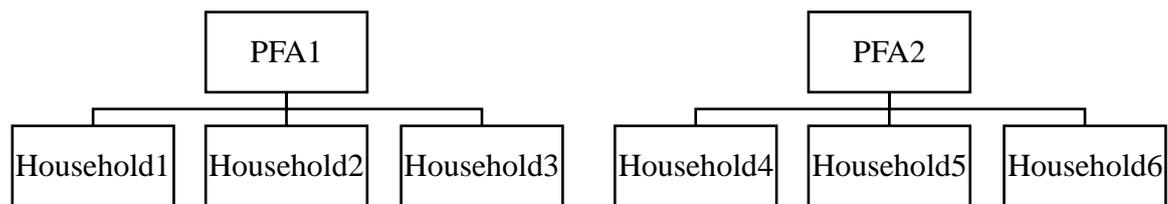
- selecting and measuring a set of variables
- preparing the correlation matrix
- extracting a set of factors from the correlation matrix
- determining the number of factors
- rotating the factors to increase the interpretability
- interpreting the results.

After conducting the PCA, a large set of variables at the PFA level reduces to a few components to be used as structural control variables at the PFA level.

4.9.3.4 Multilevel negative binomial regression

Phase three applies two-level (Snijders and Bosker, 1999; Raudenbush and Bryk, 2002) negative binomial regression modelling (Cameron and Trivedi, 1986) to test the relationship between the *mean* number of burglaries (dependent variable) and the level of commitment of police forces to POP (independent variable) whilst controlling for characteristics of households (level-1) and PFAs (level-2) and the number of police officers per 1000 residents in a PFA in 1997 and 2003/04, separately.

Figure 4.2: Structure of the data used in Chapter 7



There are a number of reasons for choosing this statistical method. Firstly, exposure to crime is due to where you live as well as who you are (Pease and Tseloni, 2014). Hence, the structure of the data (which is due to the CSEW sampling selection, see Section 4.5.1) is hierarchical (two-level), as portrayed in Figure 4.2. Once Figure 4.2 is scrutinised, it can be seen that there are two PFAs and six households residing in those PFAs. Likewise, there are 42³⁴ PFAs in England and Wales, and the number of respondent households residing in those

³⁴ City of London is merged with the Metropolitan in the CSEW (ONS, 2018).

PFAAs differs in each sweep of the CSEW (see Table 4.2). Given the structure of the data, the most appropriate method for use is multilevel modelling.

Secondly, the literature suggests that crime is not a random event, and is highly concentrated (Forrester et al. 1998; Pease and Tseloni, 2014; Weisburd, 2015). That is, the same individuals, households and places experience the majority of crimes. If crime was a random event, a Poisson model, which assumes crimes are random and independent (Nelson, 1980, cited in Thompson, 2014) would be used. Thirdly, the dependent variable of the current study is an overdispersed count variable as the variance exceeds the mean (see Table 4.4). Therefore, negative binomial regression modelling is used (Osborn and Tseloni, 1998).

Table 4.4: Observed frequency distribution of burglary victimisations (unweighted³⁵)

1997			2003/04		
Number of incidents	Frequency	%	Number of incidents	Frequency	%
0	14,262	97.2	0	36,947	98.4
1	356	2.4	1	542	1.4
2	40	0.3	2	34	0.1
3	7	0.0	3	10	0.0
4	4	0.0	4	9	0.0
5+	9	0.1	5+	8	0.0
Total	14,678	100.0	Total	37,550	100.0
Mean	0.036		Mean	0.020	
Variance	0.058		Variance	0.029	

The negative binomial model is as follows (Osborn and Tseloni, 1998: 314):

$$\Pr (Y_{ij} = y_{ij}) = \frac{\Gamma (y_{ij} + \nu) \nu^\nu \lambda_{ij}^{y_{ij}}}{Y_{ij}! \Gamma (\nu) (\nu + \lambda_{ij})^{\nu + y_{ij}}} \quad y_{ij} = 0, 1, \dots \quad [1]$$

Where $\nu = 1/\alpha$ is the precision parameter and Γ is the gamma function.

In this instance, the outcome variable y_{ij} is a count variable, which gives the number of burglary victimisations a particular household experiences within the reference period. In particular, y takes on values of 0, 1, 2, 3, 4, 5 or more where i denotes the household and j denotes the PFA.

Overall, “the hierarchical negative binomial model which can identify the amount of explained and unexplained heterogeneity between individuals or households and between

³⁵ Sampling weights are not used as suggested by Pillinger (2011).

areas and the nature of area crime rates clustering is the most complete currently available method of modelling crime” (Pease and Tseloni, 2014: 36). Put colloquially, by using multilevel negative binomial regression modelling, one can examine the effects of the:

- independent variable on the dependent variable
- control variables at the household level on the dependent variable
- control variables at the PFA level on the dependent variable
- interactions between the variables at different levels.

The reference household of the analysis has the following attributes. The age of the head of the reference household (HRP) was 51 in 1997 and 52 in 2003/04 (the sample mean age), and s/he is white with no children. The annual income of the household with two adults is between £10,000 and £29,999. The reference household has two cars, is of a professional social class and lives in an owned detached house in a rural South East area. The reference household is left unoccupied for more than 7 hours during the day, and the length of residence is more than 10 years.

Phase three follows five steps to conduct a multilevel negative binomial regression: (1) examining how well models fit the data, (2) making predictions, (3) interpreting coefficients, (4) calculating expected mean number of burglary victimisations for the reference household, and (5) calculating the intra-class correlation. The following sections detail the above process.

4.9.3.4.1 Assessing model fit

Phase three fits four models for 1997 and 2003/04, separately. Once a new model is estimated, a model fit assessment is conducted to examine whether the new model better fits the data than the previous model. For this, firstly, deviance (joint chi-square values) and relevant degrees of freedom (number of variables entering the models) for each model are calculated. Following that, the deviance values of the models are subtracted from each other. The difference between the degrees of freedom is also calculated. Finally, p-values are calculated through MLwiN³⁶ to determine which model best fits the data. The level of statistical significance is based on the p-values ($0.05 < p\text{-value} \leq 0.10$; $0.01 < p\text{-value} \leq 0.05$; and $p\text{-value} \leq 0.01$) (Trickett et al., 1995). As an example, the following calculation tests whether fictitious Model 2 better fits the data compared to fictitious Model 1 in 1997:

³⁶ The command used in MLwiN to calculate p-value is as follows: `cpro (deviance1-deviance2) (df1-df2)`.

Difference in deviance = $1687.000 - 127.000 = 1560.000$

Difference in degrees of freedom = $31 - 1 = 30$

Calculated p-value = $0.00 < 0.01$

4.9.3.4.2 Making predictions

All household and PFA characteristics enter the models to predict their effects on the *mean* number of burglaries in both 1997 and 2003/04, separately.

4.9.3.4.3 Interpreting coefficients

The independent variable and all structural control variables at the household level that enter the models in Phase three are categorical (except for continuous age). Categorical variables consist of dummy variables. Those dummy variables denote a category within a particular variable. If they fall into that category, they take the value one, otherwise zero. Categorical variables have $n-1$ dummy variables since one category is selected as the reference/base category (Suits, 1957). For instance, the ethnicity variable has four categories: (1) White, (2) Black, (3) Asian, and (4) Other/Mixed/Chinese. White is the base category, and the remaining categories are created as dummy variables to denote the remaining categories. In addition to the categorical variables at the household level, there are a number of continuous variables at the PFA level entering the models.

Once the above variables (both dummy and continuous) enter the models, they have either a positive or a negative estimated coefficient. The association between independent and control variables and the *mean* number of burglary victimisations is investigated by taking the *exponential* of these estimated coefficients ($\exp(b)$, see Equation 2 in the following section). The statistical significance of each estimate (based on a Wald test which is chi-squared distributed with 1 degree of freedom) is provided (Greene, 1997, cited in Tseloni, 2006). “The constant term summarises the effects of all the reference categories of the included nominal variables on the expected mean number of [burglaries] assuming zero age of the head of household and zero values for all the area census characteristics” (Tseloni, 2006: 218).

In sum, two-level negative binomial regression modelling is employed because of the nested structure of the data where households (level 1) are nested within PFAs (level 2) (see also Section 4.5.1). In addition, the overdispersed and concentrated structure of the dependent variable, which is a count variable, necessitates the usage of negative binomial regression rather than Poisson modelling.

4.9.3.4.4 Calculating expected mean number of burglaries for the Reference Household

In this phase, the expected mean number of burglary victimisations for the reference household is calculated using the following formula:

$$\lambda_{ij} = \exp(bx_{ij}) + e_{ij} \quad [2]$$

where $e_{ij} \sim \Gamma(v)$.

$$\text{In addition, its variance is given by } \text{var}(Y_{ij}) = \lambda_{ij} + \alpha\lambda_{ij}^2 \quad [3]$$

which allows for overdispersion (Tseloni, 2006).

As an example, the mean number of burglaries that the reference household experienced is calculated using the following formula:

$$\hat{\mu}_{ij} = \text{Exp}(\text{Intercept} + a * \text{HRPMeanAge} + b * \text{HRPMeanAge}^2)$$

which only takes the age of HRP of a potential victim household into account.

4.9.3.4.5 Calculating intra-class correlation

Phase three also calculates the intra-class correlation (ICC) (Snijders and Bosker, 1999) using the following formula:

$$\rho = \frac{\sigma_{u_0}^2}{\sigma_{u_0}^2 + \hat{\mu}_{ij} + \hat{\mu}_{ij}^2 * \alpha} \quad [4]$$

Where

$\sigma_{u_0}^2$ is level-2 variance;

$\hat{\mu}_{ij}$ is the mean number of burglaries;

α is estimated random parameter.

ICC gives the correlation of burglaries between two randomly selected households residing in the same randomly chosen PFA (Snijders and Bosker, 1999) and indicates persistent area unexplained heterogeneity (Tseloni and Pease, 2015).

4.9.3.5 Pearson (point-biserial) correlation

Phase three also checks bivariate correlations between POP (as a dichotomous variable: No-POP and POP forces) and the mean number of burglaries (as a continuous variable) from 1995 to 2003/04 via a special case of Pearson correlation (point-biserial) as the point bi-

serial correlation is used to define the strength of the linear relationship between one continuous and one dichotomous variable (Tabachnick and Fidell, 2013).

To conduct the analysis, the researcher first checks whether the assumptions of the point bi-serial correlation analysis hold. For example, the mean number of burglaries is not normally distributed for No-POP and POP forces from 1995 and 2003/04, as assessed by visual inspection of Normal Q-Q Plots. Therefore, a ‘logarithmic’ transformation (by taking the \log_{10} of the scores of the dependent variable) is applied to convert the data to normality (Tabachnick and Fidell, 2013). After this transformation, a second visual inspection of Normal Q-Q Plots suggests that the mean number of burglaries is approximately normally distributed for No-POP and POP forces from 1995 and 2003/04. The additional two assumptions of the point bi-serial correlation – having no significant outliers of the dependent variable in the two groups of the independent variable and homogeneity (e.g. the variance is equal in each group of the independent variable) (Tabachnick and Fidell, 2013) – are also met between 1995 and 2003/04. Nonetheless, the results presented in Chapter 7 (Section 7.4.4) should be interpreted with caution due to the above data transformation.

4.10 Chapter summary

This chapter set out the methodology of the empirical component of the current study that employs statistical analysis of secondary data to explore the role of POP in the burglary drop at the PFA level in England and Wales between 1988 and 2007/08. Firstly, the chapter reviewed the advantages and disadvantages of the data sources that are used in this thesis. Secondly, it discussed the reasons for selecting independent variables that enter the statistical models in Phase three. It also provided the reasons for selecting burglary and certain time periods for analysis in Chapters 6 and 7. It finally outlined the analysis plan.

Phase one (Chapter 5) conducts a descriptive analysis of two indicators of commitment to POP selected by the researcher and reviews the related literature to identify highly POP-committed police forces. It also revisits previous research on policing styles of police forces and revises their findings. Based on the findings of these analyses, it finally constructs an independent variable (the level of commitment of all 42 police forces to POP) to be used in Phase three. Phase two (Chapter 6) is an initial exploration of the extent to which POP has or has not played a role in the burglary drop at the PFA level in England and Wales over time. It compares trends in both CSEW and PRCD burglaries in highly POP-committed PFAs with the trends in their most similar PFAs, which were not committed to POP to the

same extent. Finally, Phase three (Chapter 7) employs both two-level negative binomial regression and Pearson correlation to examine whether there is a statistically significant relationship between the implementation of POP and the *mean* number of burglaries (also controlling for characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA) from 1995 to 2003/04.

CHAPTER 5

ANALYSING THE LEVEL OF COMMITMENT OF POLICE FORCES TO POP

5.1 Introduction

This chapter is the first phase of the empirical analysis in this thesis. It first conducts an original analysis for the first time to identify highly POP-committed police forces using two indicators of commitment to POP selected by the researcher:

- problem-oriented projects that were submitted to the Tilley and Goldstein Award schemes by police forces in England and Wales between 1997 and 2008 ³⁷ (<https://popcenter.asu.edu/>)
- problem-oriented projects that were applied by police forces in England and Wales as part of large-scale government-supported crime reduction programmes which applied a problem-oriented approach, such as
 - a. the Safer Cities Programme (1988-1998) (Tilley and Webb, 1994; Ekblom et al., 1996; Sutton, 1996; Hirschfield et al., 2001)
 - b. the Crime Reduction Programme (1999-2002) (Tilley et al., 1999)
 - i. the Reducing Burglary Initiative (1999-2002) (Hope et al., 2004; Millie and Hough, 2004; Homel et al., 2004; Hirschfield, 2007)
 - ii. the Targeted Policing Initiative (1999-2000) (Bullock et al., 2002; Bullock and Tilley, 2003).

Secondly, it reviews the related literature to complement and triangulate the findings from the analysis of the two indicators of commitment. Whilst conducting this analysis, the researcher also proposes ten hypotheses to be tested in Chapter 6. Thirdly, it revisits previous studies on policing styles of police forces in England and Wales (Hale et al., 2004; 2005; Heaton, 2009a; 2009b) and revises their findings. Fourthly, based on the findings from the above analyses, it constructs the independent variable of the analysis in Chapter 7: the level of commitment of police forces to POP. Finally, a summary of the chapter is presented.

³⁷ The first problem-oriented project submission to the award schemes by a police force (the West Midlands) in England and Wales was in 1997. Since the last point in time to be analysed is 2007/08, the present study uses problem-oriented projects that were submitted to the award schemes between 1997 and 2008.

5.2 Analysing indicator one: problem-oriented project submissions to the awards³⁸

Police forces in England and Wales submitted their problem-oriented projects primarily to the Tilley Award scheme. However, some of them also submitted their projects, which they submitted to the Tilley Award scheme, to the Goldstein Award scheme. In addition, some of the police forces submitted their projects to the Tilley Award schemes twice. Once the duplications are removed, the total number of the projects to be analysed in this chapter is 771.

This section categorises 771 problem-oriented projects into six categories (see Table 5.1):

1. Tilley Award Winner (TAW)
2. Goldstein Award Winner (GAW)
3. Tilley Award Finalist (TAF)
4. Goldstein Award Finalist (GAF)
5. Tilley Award Other (TAO)
6. Goldstein Award Other (GAO).

The difference between the categories is as follows. The project entries ('the others') are shortlisted ('the finalists') for further consideration. Following that, a judging panel assesses and score 'the finalists'. The scores range from 0 (no credit) to 7 (superior). Each judge's scores are collated, and the three highest scores are determined as 'the winners' (Bullock et al., 2006). Table 5.1 includes the Goldstein Award scheme categories, although the primary choice of the police forces was to submit their projects to the Tilley Award scheme. There are two reasons for this. Firstly, the Tilley Award scheme started in 1999, before which police forces submitted their projects to the Goldstein Award scheme. Secondly, e-copies of some of the project submissions by police forces in England and Wales only appeared in the Goldstein Award collection.

Table 5.1 shows that the majority of the project submissions consists of TAO submissions (704) followed by TAW submissions (21). This result is not surprising as the police forces in England and Wales submitted their problem-oriented projects primarily to the Tilley Award scheme. Importantly, categorising projects as 'others' does not necessarily mean they are too trivial to be included in the analysis. Previous research suggests that even weakly applied projects reduce crime rates (Weisburd et al., 2010).

³⁸ See Chapter 4, Section 4.3.1 for a detailed discussion on the award schemes and the project submissions.

Table 5.1: Tilley and Goldstein Award submissions by PFA, 1997-2008

Police Force	TAW	GAW	TAF	GAF	TAO	GAO	Total Number of Submissions	% of Total Submissions	Commitment
Lancashire	8		6	1	147	4	166	21.5%	H
Metropolitan	1	1	1	4	51	6	64	8.3%	H
Cleveland					40	3	43	5.6%	H
Merseyside	1				40	1	42	5.4%	H
Cumbria					42		42	5.4%	H
Avon and Somerset	4		3		33		40	5.2%	H
Greater Manchester	1			1	29		31	4.0%	M
South Wales					28		28	3.6%	M
Northumbria					28		28	3.6%	M
West Midlands	1				24	2	27	3.5%	M
South Yorkshire					19		19	2.5%	M
Hampshire		1	2		15	1	19	2.5%	M
Surrey				1	16		17	2.2%	M
Sussex	1		1		14		16	2.1%	M
North Wales					15	1	16	2.1%	M
Staffordshire	2		2	1	9		14	1.8%	M

Table 5.1: Tilley and Goldstein Award submissions by PFA, 1997-2008 (continued)

Police Force	TAW	GAW	TAF	GAF	TAO	GAO	Total Number of Submissions	% of Total Submissions	Commitment
Devon & Cornwall	1				11		12	1.6%	M
Nottinghamshire					12		12	1.6%	M
West Yorkshire			1		11		12	1.6%	M
Essex					9		9	1.2%	M
Northamptonshire			1		7		8	1.0%	L
Norfolk					8		8	1.0%	L
Suffolk					7		7	0.9%	L
Kent					7		7	0.9%	L
Hertfordshire					7		7	0.9%	L
Derbyshire					7		7	0.9%	L
Humberside			1		5		6	0.8%	L
Leicestershire	1				5		6	0.8%	L
Gwent					6		6	0.8%	L
Dorset					6		6	0.8%	L
Cheshire					6		6	0.8%	L

Table 5.1: Tilley and Goldstein Award submissions by PFA, 1997-2008 (continued)

Police Force	TAW	GAW	TAF	GAF	TAO	GAO	Total Number of Submissions	% of Total Submissions	Commitment
Wiltshire					5		5	0.6%	L
West Mercia					5		5	0.6%	L
Thames Valley					5		5	0.6%	L
Gloucestershire					5		5	0.6%	L
Cambridgeshire					5		5	0.6%	L
Lincolnshire					4		4	0.5%	L
Durham					4		4	0.5%	L
Dyfed-Powys					3		3	0.4%	L
North Yorkshire					2		2	0.3%	L
Warwickshire					1		1	0.1%	L
Bedfordshire					1		1	0.1%	L
City of London							0	0.0%	N
Total	21	2	18	8	704	18	771	100,0%	

Sources: Researcher's calculations, <https://popcenter.asu.edu/content/case-studies-and-databases>, 1997-2008

Note: (1) TAW: Tilley Award Winners; GAW: Goldstein Award Winners; TAF: Tilley Award Finalists; GAF: Goldstein Award Finalists; TAO: Tilley Award Others; and GAO: Goldstein Award Others. (2) H: High; M: Medium; L: Low; N: No

For instance, the number of ‘winner’, ‘finalist’ and ‘other’ projects submitted by Lancashire between 1997 and 2008 was 8, 7 and 151, respectively. According to Bullock et al. (2006: 65), the total number of submissions by Lancashire between 1999 and 2005 ($n = 135$) reflects “the commitment of this force to adopt problem-oriented policing”. Nevertheless, it is essential to note that although it *cannot* be said that the projects categorised as ‘other’ are trivial and ineffective, all projects submitted to the award schemes are biased towards success since they were ultimately submitted to win an award. This also alerts us to the fact that there might be other projects which were *not* submitted to the award schemes (Eck and Madensen, 2013). Therefore, any analysis on the effect of POP on crime rates drawing upon the project submissions must take publication bias into account (Eck and Gallagher, 2016) as well as other possible missing projects. However, this issue is outside the scope of the current descriptive analysis and indeed this thesis since the main idea of using the award submissions here is to identify the level of commitment of police forces to POP with the available data.

Table 5.1 also suggests that all police forces, except the City of London, submitted at least one project at some time between 1997 and 2008. The majority of the submissions come from Lancashire, Metropolitan, Cleveland, Merseyside, Cumbria and Avon and Somerset. Lancashire submitted projects in each year from 1999 to 2008. In contrast, Bedfordshire, Warwickshire, North Yorkshire, Dyfed-Powys, Durham and Lincolnshire submitted only a few problem-oriented projects. In the period spanning two decades, the City of London Police did not submit any projects.

Lancashire merits special mention here because this constabulary made its mark in the history of the award schemes by submitting a total of 166 projects (21.5%) between 1997 and 2008 (an average of 14 projects submitted per year). In other words, the total number of projects submitted by Lancashire was much higher than the total number of projects that were entered in the award schemes by other police forces. According to the proportion of ‘winner’ and ‘finalist’ projects, Lancashire was more successful compared to other police forces as well (see Table 5.1). These results reflect the commitment of Lancashire to the implementation of POP (see also Bullock et al., 2006). However, Bullock et al. (2006: 59) noted that

“Implementation has, nevertheless, been challenging, and it would be a mistake to think even in Lancashire...that problem-oriented policing has become embedded in

an unproblematic manner across the board. It appears largely to be associated with certain types of officers (beat officers) and to vary in intensity by Basic Command Unit”³⁹.

It is yet vital to note that after the introduction of intelligence-led policing to the policing agenda in England and Wales, “senior police managers in Lancashire were not keen to abandon the force’s commitment to POP and decided therefore to base their implementation of the NIM [National Intelligence Model] explicitly on the POP principles which had already been widely instilled among operational staff” (John and Maguire, 2003: 64). It can, therefore, be argued that Lancashire was rigorously committed to POP.

After an overview of the project submissions, the chapter categorises police forces into four groups in terms of their level of commitment to POP using the total number of project submissions of police forces: (H) high-commitment, (M) medium-commitment, (L) low-commitment and (N) no-commitment (see Table 5.1). The researcher argues that although submitting more projects does not necessarily mean that those police forces applied POP as Goldstein envisaged, using the total number of submissions is a reasonable way of determining the level of commitment to the implementation of POP (see Chapter 4.3.1.3 for more reasons). Since this is the first time such an identification has been established, the researcher determines the cut-off points for each category. The cut-off point of 5.2% has been chosen to determine highly POP-committed police forces because there is a significant difference in the percentage of total project submissions between Avon and Somerset (5.2%) and Greater Manchester (4.0%). A cut-off point of 1.0% has been chosen to determine police forces with low commitment to POP. The researcher argues that 1.0% is a psychological threshold. Police forces falling in the group between 5.2% and 1.0% in terms of the percentage of total project submissions are included in the medium commitment group.

Whilst identifying the level of commitment to POP, the researcher also takes the ‘winner’ and ‘finalist’ projects into account. That is, police forces with high commitment became either ‘winner’ or ‘finalist’ more frequently than their counterparts. The total number of TAW projects is 21, 14 of which were submitted by six police forces with high commitment (in particular, Lancashire won the Tilley Award eight times). Similarly, there are 18 TAF projects, ten of which were submitted by six police forces with high commitment (in particular, Lancashire became a finalist six times). These results indicate that those six police

³⁹ See Chapter 2, Section 2.8.3 for a definition.

forces were highly committed to POP.

Overall, according to the above descriptive analysis, Lancashire, Metropolitan, Cleveland, Merseyside, Cumbria and Avon and Somerset can be determined as being highly POP-committed police forces (5.2% cut-off point). Chapter 6 will compare trends in both CSEW and PRCD burglaries in these six PFAs with the trends in their most similar PFAs which were not committed to POP to the same extent. Hence, the first hypothesis to be tested in Chapter 6 is:

Hypothesis 1: There will be a sharper decrease in burglaries in highly POP-committed PFAs (according to the indicator one) when compared to their most similar PFAs which were not committed to POP to the same extent.

The overarching hypothesis is broken down into six sub-hypotheses:

Hypothesis 1.1: There will be a sharper decrease in burglaries in Lancashire when compared to the most similar PFAs to it which were not committed to POP to the same extent.

Hypothesis 1.2: There will be a sharper decrease in burglaries in the Metropolitan when compared to Greater Manchester.

Hypothesis 1.3: There will be a sharper decrease in burglaries in Cleveland when compared to Northumbria.

Hypothesis 1.4: There will be a sharper decrease in burglaries in Merseyside when compared to the West Midlands.

Hypothesis 1.5: There will be a sharper decrease in burglaries in Cumbria when compared to North Wales.

Hypothesis 1.6: There will be a sharper decrease in burglaries in Avon and Somerset when compared to Essex.

Before identifying the highly POP-committed police forces using the large-scale government-supported crime reduction programmes (the second indicator) and reviewing the related literature later in this chapter, the following section will thoroughly review the project submissions and will address the following three questions:

1. What types of crime were targeted by the projects?
2. When were the projects applied?

3. Where were the projects applied?

5.2.1 What types of crime were targeted, when and where?

The problem-oriented projects tackled a variety of problems such as burglary, car crime, gang culture, drug markets, antisocial behaviour, prostitution, vandalism, and so on. E-copies of the Tilley and Goldstein Awards submissions can be accessed through the centre for the POP website (<https://popcenter.asu.edu/>). Since the primary focus of this study is to analyse the role of POP in the decrease in burglaries in England and Wales over time, it is essential to examine anti-burglary projects in detail.

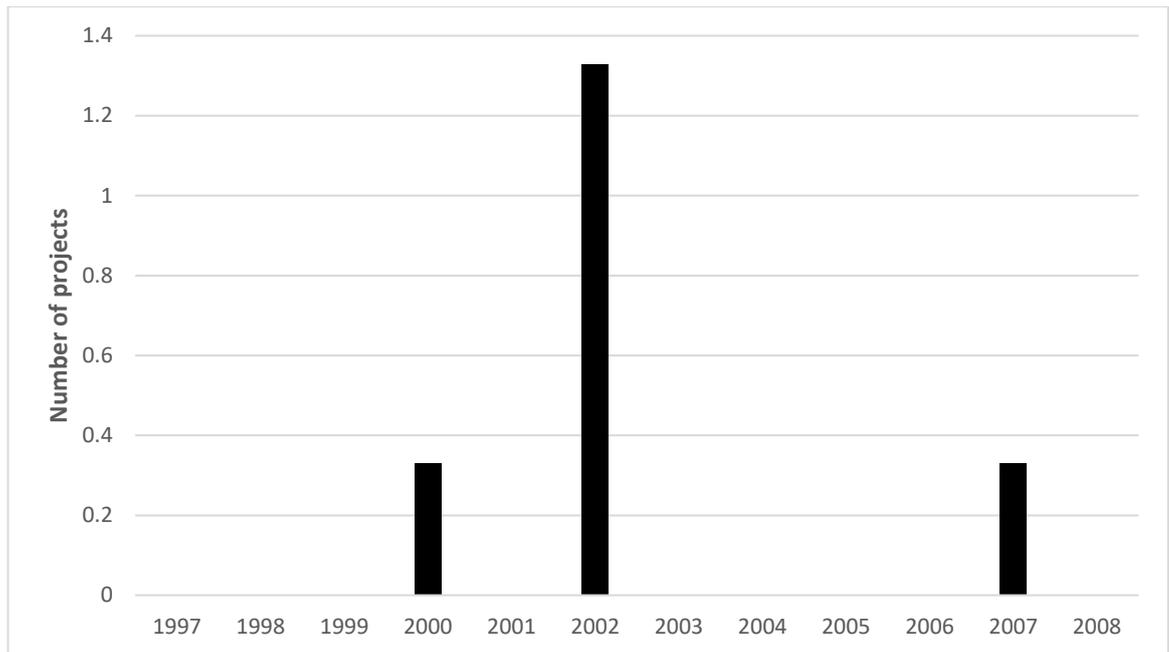
Figures 5.1, 5.2 and 5.3⁴⁰ display when the anti-burglary ‘winner’, ‘finalist’ and ‘other’ projects were submitted to the award schemes, respectively. The tables following the figures present both when those projects were implemented and submitted to the award schemes to be able to identify the effects of the projects on burglaries in PFAs where the projects were implemented over time more accurately.

The length of the winner projects in terms of time varied. For example, the ‘winner’ anti-burglary project, which was submitted by Devon and Cornwall in 2000, had been launched in 1999, one year before being submitted to the awards. The ‘winner’ anti-burglary project, which was submitted by Avon and Somerset in 2002, had been started in 2000, two years before being submitted to the awards. The ‘winner’ anti-burglary project, which was submitted by Lancashire in 2002, had been launched in 1998, four years before being submitted to the awards. Finally, the ‘winner’ anti-burglary project, which was submitted by Lancashire in 2007, had been launched in 2004, three years before being submitted to the awards. Given the variation between starting and submission years of the projects, it is hypothesised that *there will be a gradual decrease in burglaries in PFAs (where the winner projects were implemented) between the project starting year and submission year (Hypothesis 2)*.

All finalist anti-burglary projects had been started at least one year before being submitted to the awards (see Table 5.3). Therefore, it is hypothesised that *there will be a gradual decrease in burglaries in PFAs (where the finalist projects were implemented) between the project starting year and submission year (Hypothesis 3)*.

⁴⁰ The reason for having decimal numbers in the y-axis of figures 5.1, 5.2 and 5.3 is that projects targeting more than one crime problems are divided into the number of crime problems targeted.

Figure 5.1: Total number of anti-burglary winner submissions by year, 1997-2008



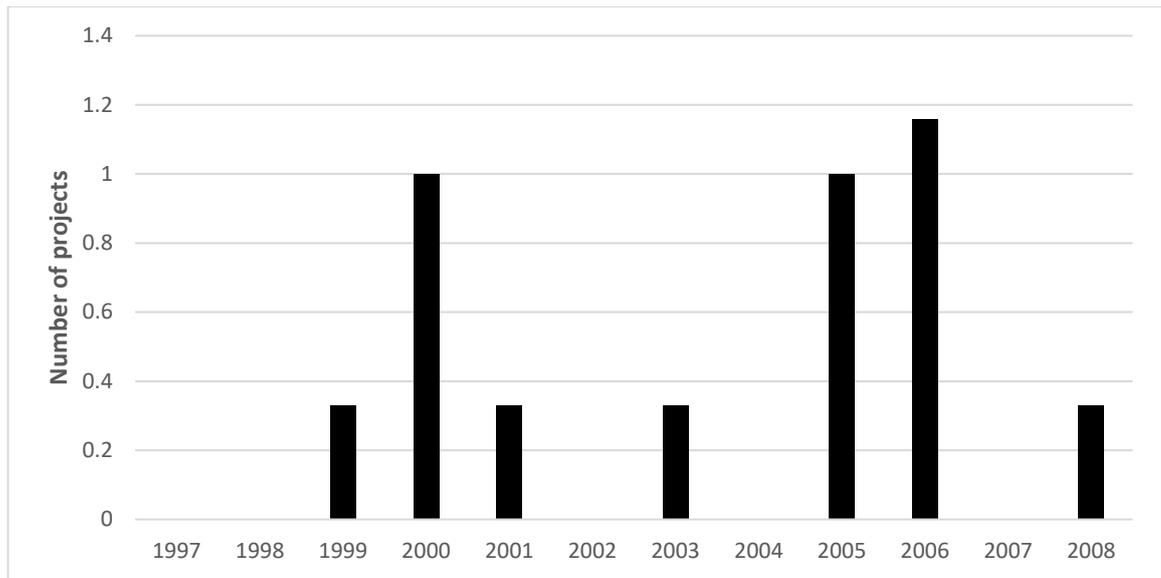
Source: Researcher’s calculations, <https://popcenter.asu.edu/>, 1997-2008

Table 5.2: Anti-burglary winner submissions by PFA and year, 1997-2008

Police Force	Starting Year	Submission Year
Devon and Cornwall	1999	2000
Avon and Somerset	2000	2002
Lancashire	1998	2002
Lancashire	2004	2007

Source: <https://popcenter.asu.edu/>

Figure 5.2: Total number of anti-burglary finalist submissions by year, 1997-2008



Source: Researcher’s calculations, <https://popcenter.asu.edu/>, 1997-2008

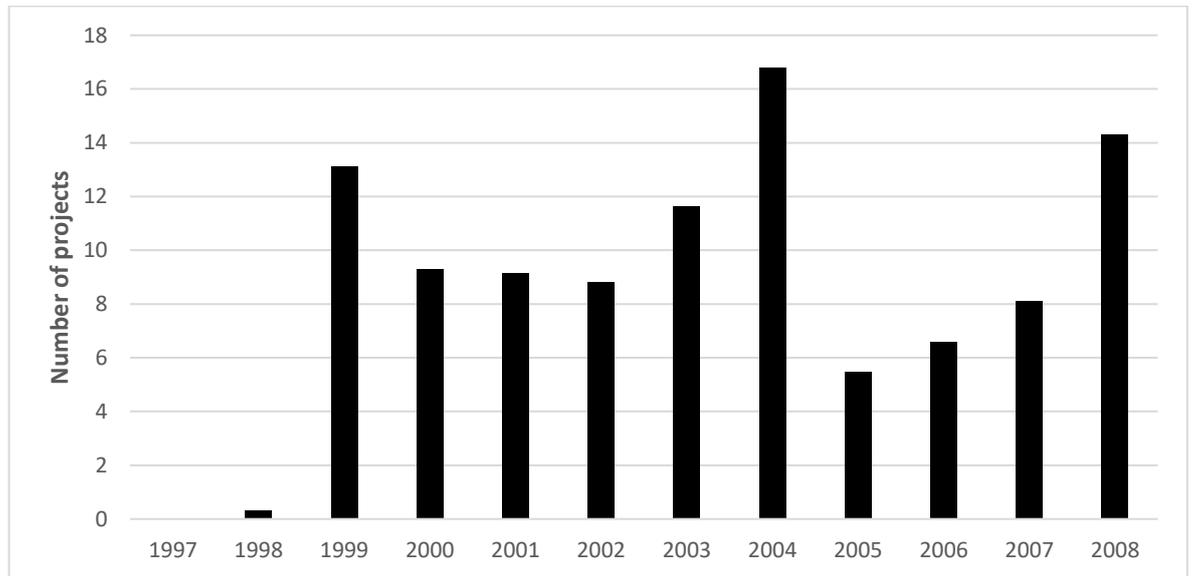
Table 5.3: Anti-burglary finalist submissions by PFA and year, 1997-2008

Police force	Starting Year	Submission Year
Avon and Somerset	1997	1999
Lancashire	1999	2000
Northamptonshire	1999	2001
Lancashire	2001	2003
Lancashire	2002	2004
Staffordshire	2002	2005
Avon and Somerset	2004	2006
Hampshire	2003	2006
Lancashire	2004	2006
Metropolitan	N/A	2006
Lancashire	2006	2008

Source: <https://popcenter.asu.edu/content/case-studies-and-databases>

Concerning the projects categorised as ‘others’, 48% of these had been launched one year before they were submitted to the awards; 28% had been started two years before they were submitted, and 22% had been undertaken three or more years before they were submitted. Only 2% were started in the same year when they were submitted to the award schemes.

Figure 5.3: Total number of anti-burglary other submissions by year, 1997-2008



Source: Researcher’s calculations, <https://popcenter.asu.edu/>, 1997-2008

The majority of the projects aimed to have a sustainable impact on crime rates after being submitted. However, the data as to whether they achieved their aims are limited in the e-copies of the projects. Hence, it has not been possible to conclude their enduring effects.

Finally, Table 5.4 shows that most of the anti-burglary projects were submitted in 1999, 2004 and 2008. Therefore, it is hypothesised that *the decreases in burglaries in England and Wales in 1999, 2004 and 2008 will be greater when compared to other years* (Hypothesis 4).

Having ascertained when the anti-burglary problem-oriented projects had been started and submitted, it is also important to identify in what kinds of places the projects were applied. The majority of the projects were implemented in specific areas where crime was clustered. While 92% of the projects were applied in specific areas, only 8% were applied throughout the PFA in question. The reason for targeting specific areas might be the fact that when problem-oriented methods are applied in hot spots, they are more effective in terms of reducing crime rates (Braga et al., 2014).

Table 5.4: Total number of anti-burglary submissions by category and year, 1997-2008⁴¹

Years	Winner	Finalist	Other	Total
1997	--	--	--	--
1998	--	--	0.33	0.33
1999	--	0.33	13.13	13.46
2000	0.33	1.00	9.31	10.64
2001	--	0.33	9.13	9.46
2002	1.33	--	8.80	10.13
2003	--	0.33	11.63	11.96
2004	--	--	16.79	16.79
2005	--	1.00	5.47	6.47
2006	--	1.16	6.60	7.76
2007	0.33	--	8.12	8.45
2008	--	0.33	14.29	14.62
Total	1.99	4.48	103.6	110.07

Source: Researcher's calculations, <https://popcenter.asu.edu/>, 1997-2008

Overall, analysis of the projects submitted to the award schemes (the first indicator of commitment to POP) indicates that the highly POP-committed police forces were Lancashire, the Metropolitan, Cleveland, Merseyside, Avon and Somerset, and Cumbria. The section also finds that the projects targeted a variety of problems such as burglary, car crime, gang culture, drug markets, antisocial behaviour, prostitution, vandalism, and so on. However, the section focusses on anti-burglary projects, and the majority of those projects were applied at least one year before they were submitted to the award schemes. The analysis also suggests that the majority of the projects were applied in small areas which might be a result of the fact that when problem-oriented methods are applied in hot spots, they are more effective in terms of reducing crime rates (Braga et al., 2014). The following section will identify highly POP-committed police forces using the second indicator of commitment (large-scale government-supported crime reduction programmes).

⁴¹ The reason for having decimal numbers in Table 5.4 is that projects targeting more than one crime are divided into the number of crimes targeted.

5.3 Analysing indicator two: problem-oriented crime reduction programmes

This section identifies highly POP-committed police forces by analysing the large-scale government-supported crime reduction programmes. These include the Safer Cities Programme, the Crime Reduction Programme, and two specific schemes emerging out of the Crime Reduction Programme: The Targeted Policing Initiative and the Reducing Burglary Initiative. They are chosen as indicators of commitment to POP for the reasons given in Chapter 4, Section 4.3.2.3.

5.3.1 The Safer Cities Programme

Table 5.5 presents PFAs (n = 20) which received funding for Phase one Safer Cities projects (including burglary reduction initiatives) with their budgets. The Metropolitan, the West Midlands, Greater Manchester, West Yorkshire, Avon and Somerset, Merseyside, Cleveland, Northumbria, Nottinghamshire, Humberside, Derbyshire and Leicestershire received funding to implement some Safer Cities projects. Table 5.6 shows PFAs where Phase two anti-burglary Safer Cities projects were implemented. Budget information is not publicly available for Phase two projects. It is important to note that all Safer Cities projects applied a problem-oriented approach using a variety of tactics ranging from target-hardening (situational) responses to offender-oriented activities (Ekblom et al., 1996; Sutton, 1996). In addition, the timing of the Safer Cities Programme coincides with the crime drop as “just under 300 [with an average of £8,700 funding] out of 500 burglary schemes were underway or completed by Summer 1992”, with the remaining projects being completed by 1995 when burglaries started to drop dramatically (Ekblom et al., 1996: xi; see Chapter 3, Figure 3.2). By 1995, 51.2% of the 2,300 Safer Cities projects with an identifiable physical target were targeted on dwellings. In terms of crime types, 33.3% of the projects targeted burglaries. Overall, 500 schemes (with a value of £4.4 million) were targeting domestic burglary (Ekblom et al., 1996). Therefore, it is hypothesised that *there will be a greater decrease in burglaries in PFAs that received funding for the Safer Cities projects compared to their most similar PFAs between 1988 and 1998* (Hypothesis 5).

5.3.2 The Targeted Policing Initiative

The Targeted Policing Initiative (TPI) was one of the main streams of the Crime Reduction Programme (see Chapter 4, Section 4.3.2.2). The TPI funded 59 projects (with a value of £30 million) over three years to reduce crime rates through the explicit use of POP (Bullock et al., 2002; Bullock and Tilley, 2003; Homel et al., 2004). Two rounds of competitive

Table 5.5: Phase one Safer Cities projects by city/borough, PFA and budget, 1989-1993

No.	City/Borough	Police Force	Safer Cities (£)	Levered-in (£)
1	Lewisham	The Metropolitan	1,195,759	1,318,822
2	Islington	The Metropolitan	642,290	177,033
3	Wandsworth	The Metropolitan	495,781	79,810
4	Tower Hamlets	The Metropolitan	134,365	19,405
5	Hammersmith and Fulham	The Metropolitan	Not available	Not available
6	Coventry	The West Midlands	879,573	842,512
7	Birmingham	The West Midlands	628,915	191,678
8	Wolverhampton	The West Midlands	595,950	1,792,268
9	Rochdale	Greater Manchester	796,574	595,860
10	Salford	Greater Manchester	496,704	162,867
11	Bradford	West Yorkshire	928,883	1,105,612
12	Bristol	Avon and Somerset	894,864	245,563
13	Wirral	Merseyside	855,624	1,692,081
14	Hartlepool	Cleveland	806,087	939,404
15	Middlesbrough	Cleveland	Not available	Not available
16	Sunderland	Northumbria	774,052	1,698,066
17	Nottingham	Nottinghamshire	709,839	1,067,024
18	Hull	Humberside	697,480	528,942
19	Derby	Derbyshire	Not available	Not available
20	Leicester	Leicestershire	Not available	Not available
Total (£)			11,532,740	12,456,947

Sources: Sutton (1996); Tilley and Webb (1994); Tilley (2016, personal e-mail); Mawby (2001)

Table 5.6: Phase two anti-burglary Safer Cities projects by city/borough and PFA, 1994-1998

No.	City/Borough	Police Force
1	Plymouth	Devon and Cornwall
2	Merthyr Tydfil	South Wales
3	Lambeth	The Metropolitan
4	Greenwich	The Metropolitan
5	Blackburn	Lancashire
6	Burnley	Lancashire
7	Manchester	Greater Manchester

Sources: Sutton (1996); Tilley and Webb (1994); Tilley (2016, personal e-mail); Mawby (2001).

bidding were held to fund the projects. The first round was held in early 1999 and funded 11 projects. The second round was held in 2000 and funded 27 projects (Bullock and Tilley, 2003). Table 5.7 presents the total number of TBI projects and the total amount of funding received for the TBI projects by police force between 1999 and 2002; further details about these projects can be found in Appendix 5.2. Although the TPI did not specifically target burglary (Hirschfield et al., 2001), some of the police forces received funding for projects targeting acquisitive crime in general and burglary in particular. Greater Manchester and Kent received funding for a project targeting acquisitive crime in 1999 and Avon and Somerset, and Derbyshire and West Yorkshire received funding for an anti-burglary TPI project in 2000 (see Appendix 5.2). Therefore, it is hypothesised *there will be a steeper decrease in burglaries in Greater Manchester and Kent after 1999 and Avon and Somerset, Derbyshire and West Yorkshire after 2000 compared to their most similar PFAs owing to the implementation of anti-burglary TPI projects* (Hypothesis 6).

5.3.3 The Reducing Burglary Initiative

The Reducing Burglary Initiative (RBI) was intended to reduce burglaries in targeted areas where they were the most prevalent. It ran between 1999 and 2002 and covered around two million households in England and Wales. There were three competitive rounds. Round one (1999), which funded 63 RBI projects, covered around 220,000 households that experienced around 18,000 burglaries in 1998. Round two (1999), which funded 161 projects, covered approximately 600,000 households that experienced nearly 44,000 burglaries per year. Round three (2000), which funded 23 projects, covered around 1.3 million households (The National Archives, 2006).

Table 5.7: Total number of TPI projects and the amount of funding received by PFA, 1999-2002

Police Force	Total Number of TPI Projects	Total Amount of Funding Received (£)	Police Force	Total Number of TPI Projects	Total Amount of Funding Received (£)
Metropolitan	10	6,500,000	West Mercia	1	512,000
Merseyside	5	2,322,000	Derbyshire	2	485,000
Sussex	2	1,906,000	Humberside	2	457,000
Greater Manchester	3	1,387,000	Hampshire	1	411,000
Avon and Somerset	2	1,280,000	Northumbria	2	373,000
Kent	2	1,206,000	Lincolnshire	1	268,000
Nottinghamshire	1	1,199,000	Surrey	1	222,000
West Yorkshire	3	1,196,000	North Wales	1	188,000
Northamptonshire	1	1,095,000	Cheshire	1	186,000
Devon and Cornwall	2	1,031,000	North Yorkshire	1	186,000
South Wales	2	1,000,000	Warwickshire	1	174,000
Cumbria	1	637,000	Cambridgeshire	1	167,000
West Midlands	2	607,000	Lancashire	1	103,000

Source: Researcher's Creation, the National Archives (2003a; 2003b)

Table 5.8: Total number of RBI projects and the amount of funding received by PFA, 1999-2002

Police Force	Total Number of RBI Projects	Total Amount of Funding Received (£)	Police Force	Total Number of RBI Projects	Total Amount of Funding Received (£)
West Midlands	40	£3,103,787	Durham	3	£108,800
Metropolitan	32	£1,089,960	Staffordshire	2	£198,452
West Yorkshire	27	£4,830,295	Bedfordshire	2	£143,300
South Yorkshire	18	£2,272,851	Dorset	2	£72,149
Greater Manchester	17	£1,756,933	Lincolnshire	2	£126,000
Northumbria	11	£740,861	South Wales	2	£74,400
Cleveland	10	£588,410	Suffolk	2	£54,700
Nottinghamshire	8	£2,621,701	Norfolk	2	£49,800
Avon and Somerset	8	£930,400	Kent	2	£29,400
Lancashire	8	£439,600	Sussex	1	£176,126
Humberside	6	£1,650,719	Essex	1	£79,145
Devon and Cornwall	6	£380,100	Gloucestershire	1	£39,352
Merseyside	6	£340,000	North Wales	1	£33,300
Leicestershire	6	£289,590	North Yorkshire	1	£17,065
Thames Valley	5	£350,130	Cumbria	1	£13,300
Derbyshire	4	£656,200	West Mercia	1	£10,100
Northamptonshire	4	£205,666	Cheshire	1	£8,500
Cambridgeshire	4	£131,800			

Sources: Researcher's Creation, The National Archives (2003c; 2006)

Table 5.8 presents the total number of RBI projects and the total amount of funding received for the RBI projects by police forces between 1999 and 2002. In particular, *the West Midlands, the Metropolitan and West Yorkshire* drew attention. The West Midlands received funding for 40 RBI projects (16% of all RBI projects with a value of £3,103,787); the Metropolitan for 32 RBI projects (13% of all RBI projects with a value of £1,089,960); and West Yorkshire for 27 RBI projects (11% of all RBI projects with a value of £4,830,295). “Criteria for selection included the novelty of the proposed strategy, the context (type of problem, location etc.) in which established methods were to be applied and the quality of the available data and data system” (Tilley et al., 1999: 2). Given the criteria to receive funding for a project, the researcher argues that the more funding a police force receives, the more it is committed to POP (see Chapter 4, Section 4.3.2.3 for further reasons). This is because West Yorkshire received funding for 26 projects, but the total amount of funding for those projects was much greater than the total amount of funding the West Midlands received for 40 projects and the Metropolitan received for 32 projects. Similarly, Nottinghamshire received £2,621,701 for eight projects, while South Yorkshire received £2,272,851 for 18 projects (see Table 5.8). In sum, while the total number of projects applied by a police force is important, the total amount of funding received for those projects should also be taken into account.

Having identified which police forces received funding for the RBI projects (see Appendix 5.3 for details), the West Midlands, West Yorkshire and South Yorkshire (in addition to the police forces selected in Section 5.2.1) are selected for inclusion in further analysis in Chapter 6 to explore the role of POP in the burglary drop, especially between 1999 and 2002.

The hypotheses to be tested in Chapter 6 are as follows:

Hypothesis 7: *There will be a greater decrease in burglaries in the West Midlands compared to its most similar PFAs between 1999 and 2002 owing to the implementation of RBI projects.*

Hypothesis 8: *There will be a greater decrease in burglaries in West Yorkshire compared to its most similar PFAs between 1999 and 2002 owing to the implementation of RBI projects.*

Hypothesis 9: *There will be a greater decrease in burglaries in South Yorkshire compared to its most similar PFAs between 1999 and 2002 owing to the implementation of RBI projects.*

5.4 Reviewing the related literature

This section reviews the related literature to identify highly POP-committed police forces and triangulates the findings from the analysis of the two indicators of commitment to POP. It starts by reviewing a remarkable report (Leigh et al., 1996), which not only summarises the implementation history of POP in England and Wales but also reviews a large-scale demonstration project, which was started in a Leicestershire Basic Command Unit⁴² in 1995.

Table 5.9: Early implementers of POP in England and Wales

Police force	Dates for Implementation
Surrey	1982
Metropolitan	1983-84
Northumbria	1991-94
Thames Valley	1992
West Yorkshire	1994
Merseyside	1995

Source: Leigh et al. (1996)

Table 5.9 shows the early implementers of POP. Leigh et al. (1996) stated that Surrey started to implement POP in 1982 and, at the time of writing the report (1996), only Surrey was implementing POP on a large-scale in England and Wales. The Metropolitan applied POP between 1983 and 1984. Northumbria established a dedicated Community Policing Unit, which ran from 1991 to 1994, to solve the underlying causes of problems in an estate. After the first attempt, Gateshead West Area Command of Northumbria Police introduced a Community-Oriented Problem-Solving (COPS) initiative, which followed the principles of POP, in 1998 (Northumbria Police, 1999). “It was developed by examining our existing procedures and policies carrying out research in other Police Forces and agencies in England and the U.S.A. as well as taking into account good practice identified by the Police Research Group” (ibid:1). Thames Valley was implementing POP, at least partly, since 1992, but was planning to adopt POP force-wide in 1997. In West Yorkshire, POP was introduced in Killingbeck, Leeds in 1994. Finally, in Merseyside, two proactive teams of officers were tasked to tackle problems in the Toxteth Sub-Division in 1995 (Leigh et al., 1996).

Leigh et al. (1998) published a follow-up report in 1998, which described the introduction of POP in Cleveland force-wide and the developments of POP in Merseyside. As noted

⁴² See Chapter 2, Section 2.8.2. for a definition.

above, Merseyside's interest in POP started in 1995 with 'Operation Pivot' (see Table 5.9). Thereafter, a small project team was established in 1997 to facilitate the mainstreaming of POP in Merseyside, and that team recommended that Merseyside should adopt a problem-solving approach as a force-wide philosophy from April 1998 (Gresty et al., 1997). Merseyside's team visited seven police forces that had already adopted a problem-solving approach, to carry out consultations. Those police forces were Surrey, Northumbria, Cleveland, Thames Valley, West Mercia, Leicestershire and the West Midlands (Gresty et al., 1997). In addition, "...since 1995 PRG [Police Research Group] has serviced a quarterly meeting of officers from diverse forces implementing or thinking of implementing POP. Cleveland and Leicestershire have provided core members. Officers from Surrey, Thames Valley, Northumbria, Merseyside, Devon and Cornwall, Lancashire, Warwickshire, Greater Manchester ... have also attended from time to time" (Leigh et al., 1998: 6). Leigh et al. (1998: 1) confirmed that following the publication of the first report "there has been an explosion of interest in POP in the past two to three years".

This section also reviews a number of project submissions to the award schemes, which were about organisational plans to implement POP (<https://popcenter.asu.edu/>). To remind the reader, these projects were submitted with an endorsement letter from a senior representative (Assistant Chief Constable or higher), which indicates that the projects were recognised within the forces as being successful and worthy of submission (Bullock et al., 2006). For example, a project that was submitted by Lancashire (2001a) noted that after the then Superintendent Mike Barton, who had been a keen exponent of POP (Durham Police, 2019)⁴³, was seconded to the training department of Lancashire Police in 1997, he was invited to conferences to introduce or reintroduce POP in a number of police forces including:

- Avon and Somerset
- Cumbria
- Devon and Cornwall
- Hertfordshire
- Leicestershire
- Merseyside
- The Metropolitan
- West Yorkshire

⁴³ <https://durham.police.uk/about-us/our-organisation/pages/our-executive.aspx> [Accessed on 24 April 2019].

- North Wales
- North Yorkshire
- South Wales
- Suffolk
- Thames Valley
- The West Midlands.

Following his visits to the police forces, Superintendent Mike Barton concluded that:

“I have researched the Forces where I have visited, and all are positive that the presentation *led to actual problem solving on the ground*...All are using the Beer Mat⁴⁴ as a model to sell POP. So, the Beer Mat is now [1999] being used across the UK to engage doubters and shift paradigms to problem orientation, a dream that I had at the start that I am proud to have achieved” (Lancashire Police, 2001a: 14, emphasis added).

His conclusion supports Leigh et al. (1998) and shows that many police forces were implementing POP by 1999. In addition, Scott (2000) wrote a remarkable report on POP with “the most comprehensive bibliography that has been compiled on problem-oriented policing” (Goldstein, 2000: vi, cited in Scott, 2000). In the report, he listed police forces prominently associated with POP, drawing upon the files and personal knowledge of himself and Goldstein, and various publications. Scott (2000) complements the above findings as police forces that are prominently associated with POP in the report are:

- Cleveland
- Lancashire
- Leicestershire
- The Metropolitan
- Merseyside
- Surrey
- Thames Valley.

The section also reviews more recent studies on POP (Bullock and Tilley, 2003; Bullock et al., 2006; Tilley and Scott, 2012). Bullock et al. (2006) analysed the implementation of POP

⁴⁴ This is a model that the then Superintendent Mike Barton developed to address the problem of ‘selling’ POP to the doubters and provide ideas for ‘converts’ to ‘sell’ POP to others.

in Lancashire and Hampshire. They stated that Hampshire started to implement POP in 2002 and has been one of the police forces most prominently associated with POP. Tilley and Scott (2012: 124) summarised senior police officers in the UK, who have implemented POP within their organisations:

“Many past and present senior police officers in the UK, for example, Mike Barton (Lancashire and Durham), Dr Stuart Kirby (Lancashire), Dr Steve Brookes (Leicestershire), Pauline Clare (Lancashire), Sir Kenneth Newman (MPS), Ian Macpherson (Norfolk and MPS), Sir Charles Pollard (Thames Valley), and Sir Paul Stephenson (Lancashire and MPS), have attempted to have their organisations implement it....Barrie Irving, when heading the British Police Foundation was also highly supportive in the UK”.

Table 5.10: Police forces which were implementing POP during the 1990s and the 2000s

Police Force	Source
Surrey, Metropolitan, Northumbria, Thames Valley, West Yorkshire, Merseyside	Leigh et al. (1996)
Surrey, Northumbria, Cleveland, Thames Valley, West Mercia, Leicestershire, West Midlands	Gresty et al. (1997)
Cleveland, Leicestershire, Surrey, Thames Valley, Northumbria, Merseyside, Devon and Cornwall, Lancashire, Warwickshire, Greater Manchester	Leigh et al. (1998)
Avon and Somerset, Cumbria, Devon and Cornwall, Hertfordshire, Leicestershire, Merseyside, Metropolitan, West Yorkshire, North Wales, North Yorkshire, South Wales, Suffolk, Thames Valley, West Midlands	Lancashire Police (2001a)
Cleveland, Lancashire, Leicestershire, Metropolitan, Merseyside, Surrey, Thames Valley	Scott (2000)
Lancashire, Hampshire	Bullock et al. (2006)
Lancashire, Durham, Leicestershire, Metropolitan, Norfolk	Tilley and Scott (2012)

Overall, analysis of the two indicators of commitment to POP and the related literature seems to be suggesting that the same police forces were committed to POP over time (see Table 5.10). Particularly, it seems that Cleveland, Lancashire, Leicestershire, Merseyside, the Metropolitan, Surrey and Thames Valley started to implement POP earlier when compared to other police forces and kept being committed to POP over time (Scott, 2000). In addition, Hampshire started to implement POP in 2002 and have been one of its exponents. Therefore,

this section hypothesises that *there will be a steeper decrease in burglaries in Cleveland, Hampshire, Lancashire, Leicestershire, Merseyside, Metropolitan, Surrey and Thames Valley compared to their most similar PFAs owing to be an early implementer of POP* (Hypothesis 10).

5.5 Policing strategies of police forces

Sections 5.2-5.4 identified highly POP-committed police forces using two indicators of commitment to POP introduced by the researcher and reviewing the related literature, separately. This section is concerned with the identification of policing strategies adopted by police forces over time. However, previous research on policing strategies of police forces in England and Wales is limited to only a few papers (e.g. Hale et al., 2004; 2005; Heaton, 2009a; 2009b). This section reviews these limited previous studies and revises their findings drawing upon previous research⁴⁵ to distinguish the effect of POP on burglaries over time.

Hale et al. (2004) examined 366 HMIC reports published between 1990 and August 2001 to identify policing strategies of police forces in England and Wales. They focussed on the most recent full inspection reports published between 1998 and 2001. To ensure the development of a style within a police force, they checked all previous reports since 1990.

A year later, Hale et al. (2005) published a follow-up paper which examined three HMIC families of forces (the most similar police force groups) to determine the extent of consistency between policing styles within the group. Hale et al. (2004) suggested that there were four policing styles that police forces were applying before 2001: intelligence-led policing (ILP), POP, partnership policing (Part) and geographic policing (Geog). Based on Hale et al. (2004; 2005), Heaton (2009a)⁴⁶ published an article and provided a table presenting policing styles of all 42 police forces (see Table 5.11). However, the researcher argues that there are a number of problems with their findings. Notably, it seems that Hale et al. (2004) misdefined policing styles; Heaton (2009a) misidentified policing styles of some of the police forces; Hale et al. (2004; 2005) and Heaton (2009a) did not mention when police forces introduced particular policing styles (particularly POP) within each PFA over time; and none of these studies examined the level of commitment of police forces to those policing styles. The following paragraphs discuss these limitations in detail.

⁴⁵ Previous studies include peer-reviewed articles, project submissions to the Tilley and Goldstein Award schemes and Home Office reports.

⁴⁶ Heaton is the second author of Hale et al. (2004) and third author of Hale et al. (2005).

According to Hale et al. (2004: 298) geographic policing “relies upon officers becoming sensitive to community needs and taking long-term responsibility for problem-solving, frequently in consultation with other agencies” (see Brownlee and Walker, 1998 for a detailed description). Although they defined this policing style as a geographic policing style, this is precisely what POP is (see Goldstein, 1979; 1990). For example, the then Superintendent Mike Nelson “firmly endorsed and enforced a sector-based geographic structure ensuring local accountability through a Sector inspector and promoted the ethos of problem-oriented policing” in Avon and Somerset at the beginning of 1997 (Avon and Somerset Police, 1999: 2). That is, Avon and Somerset implemented POP within neighbourhoods. One might define this kind of policing strategy as small-scale POP (or problem-solving policing) (Clarke, 1997; Scott, 2000) rather than geographic policing. However, defining this policing style as geographic policing is a misdefinition.

One of the policing styles Hale et al. (2004) defined was partnership policing. Partnership is one of the core components of POP (Goldstein, 1979; 1990). Goldstein himself emphasised that “it [POP] calls for the police to be more aggressive partners with other public agencies” (Goldstein, 1979: 257; see also Townsley et al., 2003). There is even a book entitled ‘Problem-Oriented Policing and Partnerships: Implementing an Evidence-Based Approach to Crime Reduction’ (Bullock et al., 2006), which could have been entitled “Just About Everything There is to Know About Problem-Oriented Policing in the UK” (Bryett, 2007: 840). Indeed, after the Crime and Disorder Act 1998, which requires the establishment of formal partnerships amongst the police, local authority, probation and health services, “the terms ‘problem-oriented partnership’ or ‘problem-oriented policing and partnership’ have come to be preferred to ‘problem-oriented policing’ though the underlying meaning remains the same” (Sidebottom and Tilley, 2010: 2, see also Newburn, 2002; Tilley, 2010; Tilley and Scott, 2012). Hale et al. (2004) also gave the Safer Cities Programme as an example of partnership policing, but the original report (Ekblom et al., 1996) explicitly noted that the Safer Cities Programme used a problem-solving approach, which first analysed crime problems/patterns and set objectives, then adopted tailor-made responses, and finally evaluated whether the response had actually worked. The above process refers to the SARA framework, which is a common way of implementing POP (see Chapter 2, Section 2.7.1).

Table 5.11: Policing strategies adopted by police forces before August 2001

No.	Police Force	Policing Style	No.	Police Force	Policing Style
1	Avon and Somerset	Geog/ILP	22	Lincolnshire	ILP
2	Bedfordshire	Geog/ILP	23	Merseyside	ILP/POP/Geog
3	Cambridgeshire	Geog/ILP	24	The Metropolitan	Various
4	Cheshire	ILP	25	Norfolk	Geog
5	Cleveland	POP/Part	26	North Wales	ILP
6	Cumbria	ILP	27	North Yorkshire	ILP
7	Derbyshire	None	28	Northamptonshire	Geog/ILP/Part
8	Devon and Cornwall	None	29	Northumbria	ILP/Part
9	Dorset	None	30	Nottinghamshire	ILP
10	Durham	ILP/POP/Part	31	South Wales	None
11	Dyfed Powys	Geog/ILP/Part	32	South Yorkshire	None
12	Essex	None	33	Staffordshire	ILP/POP/Part
13	Gloucestershire	Geog	34	Suffolk	Geog/ILP
14	Greater Manchester	ILP/POP/Part	35	Surrey	Geog/ILP
15	Gwent	Geog	36	Sussex	Geog/POP
16	Hampshire	ILP	37	Thames Valley	POP/Part/ILP
17	Hertfordshire	ILP/POP	38	Warwickshire	ILP/Geog/Part
18	Humberside	Geog	39	West Mercia	ILP/Part
19	Kent	ILP	40	The West Midlands	Geog
20	Lancashire	Geog/POP/ILP	41	West Yorkshire	ILP/Part
21	Leicestershire	Geog	42	Wiltshire	Geog/ILP/Part

Source: Heaton (2009a: 166)

Heaton (2009a) misidentified the policing styles of some of the police forces. Firstly, although the first large-scale POP development project was conducted in Leicestershire from 1995 to 1997, Heaton (2009a) claimed that before August 2001, the policing style of Leicestershire was geographic policing. This also reinforces the above argument about the discrepancy in the definitions of policing styles. In short, the policing style of Leicestershire was explicitly POP, but Heaton (2009a) misidentified it as being geographic policing. Secondly, Heaton (2009a) misidentified the policing style of Surrey and noted that Surrey had operated a geographic policing system for many years. However, Leigh et al. (1996: 12) noted that Surrey was “the only force currently [1996] implementing POP on a large scale

and in a way that closely resembles Goldstein's concepts. Indeed, Surrey has a longer history of interest in the tenets of POP than any other force in England and Wales". Thirdly, a team from Merseyside visited seven police forces, which had already implemented POP, to learn lessons from them. They included Surrey, Northumbria, Cleveland, Thames Valley, West Mercia, Leicestershire and the West Midlands (Gresty et al., 1997). So, it seems that the policing styles of Northumbria, West Mercia and the West Midlands were also POP. However, Heaton (2009a) misidentified the policing styles of those police forces as ILP/partnership policing, ILP/partnership policing, and geographic policing, respectively. Indeed, a project submission to the Tilley Award scheme by Northumbria Police (1999: 1) clearly stated that:

“Community-Orientated Problem Solving (C.O.P.S.) was introduced into the Gateshead West Area Command of Northumbria Police [in 1997] to improve the quality of service provided to the community and to reduce demand. It follows the principles of Problem Orientated Policing (P.O.P.) and utilises the S.A.R.A. problem-solving model”.

Fourthly, Heaton (2009a) claimed that North Wales implemented only ILP before August 2001. However, a project submission to the Tilley Award scheme by North Wales Police clearly shows that Gwynedd in North Wales (which is the second biggest geographical area in Wales) was implementing POP in 1999 (North Wales Police, 1999). Fifthly, West Yorkshire Police (1999: ii) noted that “POP has been embraced throughout the Division [Eccleshill], at all levels”. Finally, Cambridgeshire Police (1999: 5) stated that “POP is ingrained in everyday practice through a myriad of inter-locking daily habits. Results of assessments at every level led to an expansion of POP to the Division”.

There also seem to be problems with police forces which did not apply any policing styles. For instance, Heaton (2009a) claimed that South Yorkshire did not implement any policing strategies before August 2001. However, a project submitted to the Tilley Award scheme by South Yorkshire Police (2001) stated that they had established “the Community Safety and Problem-Oriented Policing Department” in 2000. In addition, Dorset Police (1999: 1) noted that “[i]t could be argued that the advent of the Charminster Beat Team Project [1998], based on the principles of problem-oriented policing (POP), marked a significant moment in the policing of the Bournemouth Division”. Likewise, Devon and Cornwall introduced POP in early 1999 (Devon and Cornwall Police, 2000). The above quotes contradict Heaton (2009a)

and reinforce the researcher's argument concerning misidentification of policing styles of some the police forces.

Finally, Hale et al. (2004; 2005) and Heaton (2009a) did not make any mention of when police forces introduced the policing styles they had identified (particularly POP) within each PFA over time. In addition, none of these studies examined the level of commitment of police forces to the policing styles. Ironically, although Hale et al. (2004; 2005) and Heaton (2009a) did not provide any data in relation to the year the policing styles within the PFAs were introduced and the level of commitment of police forces to policing styles, Heaton (2009a) analysed the relationship between policing styles and reduction in crime between 1992 and 2000. The researcher argues that without determining the year a policing style was introduced and the level of commitment to that policing style in a PFA, it is not possible to determine the effect of that policing style on crime over time. Besides, Heaton (2009a) used police-recorded crime data (PRCD), which has various limitations (see Chapter 4, Section 4.6).

Overall, it seems that although Hale et al. (2004) categorised policing styles into four groups, geographic and partnership policing styles are not themselves distinct from POP. That is why there are many problems with the categorisation of police forces in Table 5.11. Hale et al. (2004) should have categorised partnership and geographic policing as POP, or at least small-scale POP (or problem-solving policing). Police forces can implement more than one policing style simultaneously. However, if POP is applied at a lower level, this does not mean that it is geographic policing; rather, it is small-scale POP or problem-solving policing (Scott, 2000). It is therefore problematic when Hale et al. (2004) put a police force that applies ILP at a lower level within the group of police forces applying ILP and a police force which applies POP at a lower level within the group of police forces applying geographic policing. If one does so, it is highly likely that the impact of POP on crime rates within a PFA would be underestimated, as previous research suggested that even weak applications of POP (e.g. problem-oriented projects) can reduce crime rates (Weisburd et al., 2010; Braga, 2014; Laycock and Tilley, 2018). The same logic applies to partnership policing. It seems that the number of police forces that were implementing POP outnumbered the number of police forces that were applying ILP before August 2001, once geographic and partnership policing styles are categorised as POP and policing styles of some of the police forces are corrected. This argument is in line with a finding from Read and Tilley (2000): nearly all police forces purported to endorse POP by 2000.

Table 5.12: Revised policing strategies of police forces before August 2001

No.	Police Force	Policing Style	Introduction Year of POP	No.	Police Force	Policing Style	Introduction Year of POP
1	Avon and Somerset	POP/ILP	1997	12	Essex	None	N/A
2	Bedfordshire	POP/ILP	1998	13	Gloucestershire	POP	N/A
3	Cambridgeshire	POP/ILP	1999	14	Greater Manchester	ILP/POP	Early 2000s
4	Cheshire	ILP	N/A	15	Gwent	POP	1999
5	Cleveland	POP	1996	16	Hampshire	ILP	2002
6	Cumbria	ILP/POP	1997	17	Hertfordshire	ILP/POP	1999
7	Derbyshire	None	N/A	18	Humberside	POP	N/A
8	Devon and Cornwall	POP	1999	19	Kent	ILP	N/A
9	Dorset	POP	1998	20	Lancashire	POP/ILP	1998
10	Durham	ILP/POP	N/A	21	Leicestershire	POP	1995
11	Dyfed Powys	POP/ILP	N/A	22	Lincolnshire	ILP	N/A

Table 5.12: Revised policing strategies of police forces before August 2001 (continued)

No.	Police Force	Policing Style	Introduction Year of POP	No.	Police Force	Policing Style	Introduction Year of POP
23	Merseyside	ILP/POP	1995	33	Staffordshire	ILP/POP	1998
24	Metropolitan	Various	2001	34	Suffolk	POP/ILP	1998
25	Norfolk	POP	N/A	35	Surrey	POP/ILP	1982
26	North Wales	ILP/POP	1999	36	Sussex	POP	1997
27	North Yorkshire	ILP	N/A	37	Thames Valley	POP/ILP	1992
28	Northamptonshire	POP/ILP	N/A	38	Warwickshire	ILP/POP	N/A
29	Northumbria	ILP/POP	1997	39	West Mercia	ILP/POP	1997
30	Nottinghamshire	ILP/POP	2001	40	West Midlands	POP	1997
31	South Wales	None	N/A	41	West Yorkshire	ILP/POP	1994
32	South Yorkshire	POP	2000	42	Wiltshire	POP/ILP	N/A

A revised version of Table 5.11 is therefore needed (see Table 5.12). Geographic policing and partnership policing are exchanged for POP, and the policing styles of some of the police forces are corrected. These included Cumbria, Devon and Cornwall, Dorset, North Wales, Nottinghamshire, and South Yorkshire. Details about the year POP was introduced within each PFA and the level of commitment of police forces to POP can be found in the following section.

Overall, it seems that limited previous research (Hale et al., 2004; 2005; Heaton; 2009a; 2009b) misdefined policing styles, misidentified policing styles of some of the police forces, did not mention when police forces introduced policing styles within each PFA over time (except for a few cases), and exaggerated the application of ILP and trivialised the implementation of POP by police forces in England and Wales. Most importantly, previous research did not examine the level of commitment of police forces to policing styles.

5.6 Constructing the independent variable: the level of commitment to POP

This section makes an original contribution to knowledge and constructs the independent variable (the level of commitment to POP) of the analysis in Chapter 7, which examines whether POP had a *statistically significant* independent effect on the mean number of burglaries in 1997 and 2003/04, separately. Whilst constructing the independent variable, the section considers:

1. the introduction year of POP in a PFA
2. the total number of project submissions to the award schemes
3. the total number of large-scale government-supported crime reduction projects and the amount of funding received for them.

Each police force is given a numerical score depending on their commitment to POP (3 = high commitment; 2 = medium commitment; 1 = low; and 0 = no-commitment) in 1997 and 2003/04, separately. It should be noted that there were different commitment measurements for 1997 and 2003/04; in other words, while the researcher uses the literature on POP prior to 1997 and the Safer Cities projects to construct the independent variable for 1997, the 2003/04 independent variable is constructed using the literature on POP after 1997, the projects that were applied as part of Crime Reduction Programme, and the projects that were

submitted to the Goldstein and Tilley Award schemes. The detailed rationale for scoring⁴⁷ is as follows:

- If a police force introduced POP force-wide before 1997, the 1997 score is 3 (high commitment).
- If a police force introduced POP before 1997 but not force-wide, the 1997 score is 2 (medium commitment).
- If a police force was not mentioned in the related literature before 1997 but received funding for the Safer Cities projects, the 1997 score is 1 (low commitment).
- If a police force was not mentioned in the related literature before 1997 and did not receive funding for the Safer Cities projects, the 1997 score is 0 (no commitment).
- If the year POP was introduced to a PFA after 1997 *is known*, and that police force submitted a significant number of projects to the award schemes or applied projects with high budgets under the Crime Reduction Programme (e.g. Avon and Somerset, see Appendix 5.4), the 2003/04 score is 3 (high commitment).
- If the year POP was introduced to a PFA after 1997 *is known*, and that police force submitted a few projects to the award schemes or applied a few projects under the Crime Reduction Programme (e.g. Cambridgeshire, see Appendix 5.4), the 2003/04 score is 2 (medium commitment).
- If the year POP was introduced to a PFA before/after 1997 *is not known*, and that police force submitted a few projects to the award schemes and applied projects with high budgets under the Crime Reduction Programme (e.g. Humberside, see Appendix 5.4), the 2003/04 score is 2 (medium commitment).
- If the year POP was introduced to a PFA before/after 1997 *is not known*, and that police force submitted a few projects to the award schemes or applied a few projects under the Crime Reduction Programme (e.g. Lincolnshire, see Appendix 5.4), the 2003/04 score is 1 (low commitment).
- If a police force did not apply POP at all, the 2003/04 score is 0 (no commitment).

⁴⁷ See the 'explanation' column of Appendix 5.4 for the rationale for the given scores corresponding to the level of commitment of police forces to POP in 1997 and 2003/04.

5.7 Chapter summary

This chapter reported the findings of an original multifaceted analysis on POP-commitment of police forces in England and Wales. Firstly, it identified highly POP-committed police forces using two indicators of commitment to POP selected by the researcher and from reviewing the related literature. In particular, it analysed 771 problem-oriented projects that were submitted to the Tilley and Goldstein Award schemes by police forces between 1997 and 2008 (the first indicator). The researcher argued that with limitations of using these projects in mind, the total number of project submissions indicates the level of commitment to POP (see also Bullock et al., 2006). After identifying the total number of project submissions by police forces, the researcher categorised police forces into four groups in terms of commitment to POP: high-, medium-, low- and no commitment. Thereafter, the researcher selected highly POP-committed police forces to be included in the analysis of Chapter 6.

The second indicator was problem-oriented projects that were applied by police forces as part of large-scale government-supported crime reduction programmes (e.g. the Safer Cities Programme, the Targeted Policing Initiative and the Reducing Burglary Initiative). The literature suggested that to be able to save funding for those projects police forces were required to demonstrate their problem-solving skills. Therefore, the researcher argued that although there are limitations to using those projects, receiving funding for large-scale projects indicates the level of commitment to POP as well. After identifying the police forces which received funding for the projects and the total amount of funding they received, the researcher selected highly POP-committed police forces for inclusion in the analysis in Chapter 6.

Following the above analyses, the chapter reviewed the related literature to supplement and triangulate the findings from the analysis of the two indicators of commitment to POP. The chapter then shed new light on a body of research (Hale et al., 2004; 2005; Heaton, 2009a; Heaton, 2009b) which established the policing styles of police forces in England and Wales before August 2001 and examined the effects of policing styles on crime between 1992 and 2000. The researcher concluded that previous research (Hale et al., 2004; 2005; Heaton; 2009a; 2009b) misdefined policing styles, misidentified policing styles of some of the police forces, did not mention when police forces introduced policing styles within each PFA over time (except for a few cases), did not examine the level of commitment of police forces to policing styles, and exaggerated the application of ILP and trivialised the implementation of

POP by police forces in England and Wales. Drawing upon that criticism, the chapter revised Table 5.11, which was adapted from Heaton (2009a). According to the revised table (see Table 5.12), the majority of the police forces had implemented some form of POP at some point in time before 2001, which is consistent with the findings in the literature (Read and Tilley, 2000).

Based on the findings from the above analyses, the chapter finally constructed the independent variable for the analysis in Chapter 7 (the level of commitment of police forces to POP), which assesses whether POP had a statistically significant effect on burglaries (also controlling characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA) between 1995 and 2003/04. Each police force was given a numerical score depending on their commitment to POP (3 = high commitment, 2 = medium commitment, 1 = low commitment, and 0 = no commitment). In conclusion, this chapter made an original contribution to knowledge and provided the basis for an initial analysis of the extent to which POP played a role in the burglary drop in England and Wales in Chapter 6 or otherwise, and the statistical modelling in Chapter 7.

CHAPTER 6

ANALYSING THE RELATIONSHIP BETWEEN POP AND THE BURGLARY DROP: A COMPARATIVE TREND ANALYSIS

6.1 Introduction

Chapter 5 identified highly POP-committed police forces, revisited previous research regarding policing styles of forces over time and revised their findings, and determined the level of commitment of police forces to POP in 1997 and 2003/04, separately. Based on the findings and hypotheses from Chapter 5, this chapter is merely an initial exploration of the extent to which POP played a role in the burglary drop at the PFA level in England and Wales or otherwise before conducting a comprehensive statistical analysis in Chapter 7. In other words, the goal is to obtain an initial indication of whether there is any relationship between the level of POP commitment and burglary levels through addressing the following research question:

Was the drop in both CSEW and police-recorded burglaries between 1988 and 2007/08⁴⁸ much greater in highly POP-committed PFAs compared to their most similar PFAs, which were not committed to POP to the same extent?

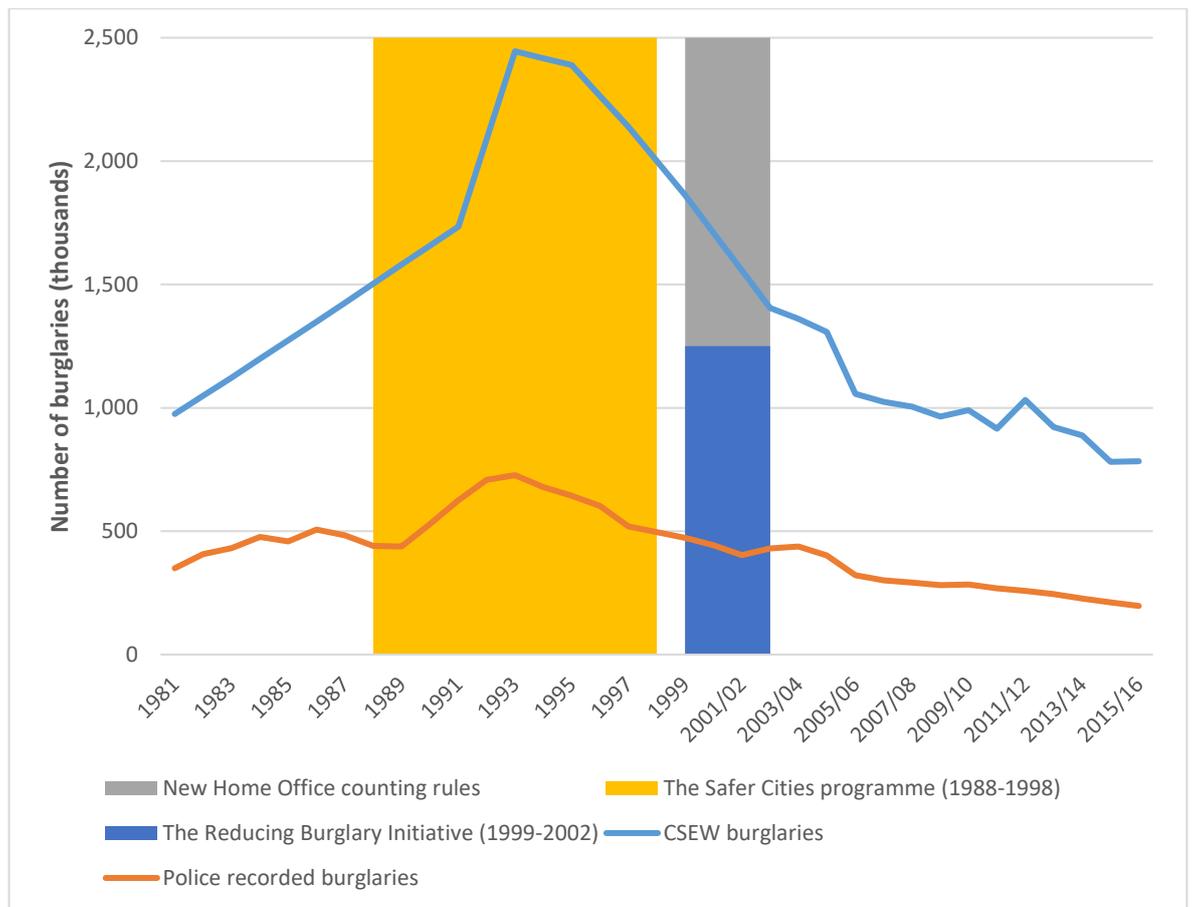
The structure of this chapter is as follows. It starts with an overview of trends in burglaries at the national level and briefly discusses whether there was a relationship between POP and the burglary drop at that level. It then tests the hypotheses proposed in Chapter 5 along with two additional hypotheses regarding repeat victimisation in four sections: (a) Testing hypotheses: problem-oriented project submissions (1), (b) Testing hypotheses: problem-oriented project submissions (2), (c) Testing hypotheses: problem-oriented crime reduction programmes, and (d) Testing hypotheses: the related literature. The chapter concludes by providing an appropriate summary.

6.2 Overview of crime trends

Figure 6.1 shows that burglaries recorded by the CSEW decreased by 59% from 1993 to 2007/08. PRCD burglaries also decreased steeply (60%) between 1993 and 2007/08 (ONS, 2017).

⁴⁸ The reasons for analysing the role of POP in the burglary drop *between 1988 and 2007/08* can be found in Chapter 4, Section 4.9.2.

Figure 6.1: Number of burglaries (thousands), the CSEW and PRCD, 1981-2015/16



Source: Adapted from ONS (2017)

What was the reason for this steep decline? Chapter 3 critically reviewed previous studies that attempted to explain the crime drop experienced, especially in the industrialised Western countries (including the UK) and noted that there is no one consistent explanation for this phenomenon. Some of the crime drop hypotheses may be candidates to explain the fall in crime in England and Wales, and some may not. Most importantly, it is still not known whether POP has had any effect on the burglary drop in England and Wales, particularly at the PFA level. Weisburd and Majmundar (2018: 15) noted that “there has not been study of whether a problem-oriented approach used widely in a city would reduce overall crime in that jurisdiction” (Weisburd and Majmundar, 2018: 15-16).

Police forces in England and Wales have been applying POP since the 1980s, and the decreases in burglaries coincide with the implementation of problem-oriented projects over time. Therefore, the researcher argues that there might be a relationship between the implementation of POP and the burglary drop at the national level. Particularly,

- The Safer Cities Programme started in 1988 and finished in 1998 (see Chapter 5, Section 5.3.1).
- Police forces submitted 771 problem-oriented projects to the award schemes between 1997 and 2008 (see Chapter 5, Section 5.2).
- The Targeted Policing Initiative (TPI) funded 59 projects (with a value of £30 million) between 1999 and 2002/03 to reduce crime rates through the explicit use of POP (see Chapter 5, Section 5.3.2).
- The Reducing Burglary Initiative (RBI), which targeted 2.18 million households in England and Wales, was applied between 1999 and 2002/03 (see Chapter 5, Section 5.3.3).

The decrease in burglaries between 2003/04 and 2007/08 could also be associated with the TPI and RBI projects as it is not outside of the realms of possibility that a project continues to have an impact after it finishes. The next section investigates whether there was a relationship between POP and the burglary drop at the PFA level.

6.3 Testing hypotheses

This section is divided into four sub-sections to test the hypotheses proposed in Chapter 5. Throughout the analysis, those most similar PFA groups are used to make more meaningful comparisons between police forces (HMICFRS, 2017). As noted in Chapter 4 (see Section 4.9.2), the crime-related variables that were used to create those groups are highly correlated with burglary (Sampson and Groves, 1989). Therefore, using those groups for the analysis enables the researcher to identify whether POP had an impact on the burglary drop whilst implicitly controlling for burglary-related risk factors.

The overarching period to be analysed in this chapter is 1988-2007/08. The reasons for choosing this period for analysis can be found in Chapter 4 (see Section 4.9.2). There are also particular periods within the overarching period to be analysed, which will be explained in each of the following sub-sections.

6.3.1 Testing hypotheses: problem-oriented project submissions (1)

Figures 6.2 to 6.10 compare trends in both CSEW and PRCD burglaries in highly POP-committed PFAs (which were identified in Chapter 5 using problem-oriented project submissions to the award schemes) with the trends in burglaries in the most similar PFAs to them which were not committed to POP to the same extent. The figures may also provide comparisons to the national burglary rates for interested readers. Figures 6.11 to 6.16

examine whether there was a gradual decrease in CSEW and PRCD burglaries in PFAs which became winners or finalists of the award schemes. Regarding the figures, the reader should consider the following notes throughout the chapter:

- The CSEW does not provide data at the PFA level prior to 1995 (using the CSEW 1996).
- The interpolated years for the CSEW data in Figure 6.3 and the subsequent figures are 1996, 1998 and 2000.
- Household weights are used to calculate the mean number of CSEW burglaries. Police-recorded figures account for population size (number of households) in PFAs.
- See Chapter 4, Section 4.9.2 for detailed information regarding the calculations of the mean number of CSEW and PRCD burglaries.

There are also two important points to be noted before conducting the analysis. Firstly, the year POP was introduced within each PFA should be considered to suggest that there is a relationship between the implementation of POP and the burglary drop in those PFAs. Secondly, it is vital to identify whether a police force applies more than one policing style in order to distinguish the effect of POP on burglaries. Considering these two issues, the particular periods to be examined here are:

1. 'flexible'
2. introduction year of POP-2003/04
3. 2004/05-2007/08.

The 'flexible' time period uses the year POP was introduced in a PFA⁴⁹ as the starting year. The end year is also flexible depending on the particular comparison of police forces. For example, Leicestershire introduced POP in 1995 (Leigh et al., 1998) and Lancashire in 1998 (Lancashire Police, 2000; 2001a; 2001b). Therefore, the present study examines whether there was a greater reduction in burglaries in Leicestershire compared to Lancashire from 1995 to 1998.

The second period also uses the year POP was introduced in a PFA as the starting year. The reason for selecting the end year as 2003/04 for this period is that all police forces were required to apply the National Intelligence Model (NIM) or intelligence-led policing (ILP) by April 2004 (Maguire, 2004). As noted in the previous paragraph, it is essential to identify whether a police force applies more than one policing strategy to distinguish the effect of

⁴⁹ See Appendix 5.4 for the introduction year of POP within each PFA.

POP on burglaries.

There are three reasons for selecting the 2004/05-2007/08 period. Firstly, although all police forces were supposed to apply ILP by April 2004, it seems that this did not, in fact, materialise. For example, John and Maguire (2004) examined the early efforts of mainstreaming ILP in three ‘pilot’ police forces (Lancashire, Surrey and the West Midlands) between 2001 and 2002. They concluded that “In short, the NIM was not yet being applied in the manner envisaged by its designers, and it would, therefore, be unreasonable to make any firm judgements about the ‘effectiveness’ of the Model on the basis of, for example, movements in crime rates in the three ‘pilot’ forces” (ibid:41). Secondly, the CSEW data at the PFA level is available to the public only from 1995 (using the CSEW 1996) to 2007/08 (inclusive)⁵⁰. Thirdly, and importantly, the number of project submissions to the award schemes after 2004 suggests that police forces kept applying POP (see Chapter 5, figures 5.1-5.3).

The six highly POP-committed police forces and the most similar PFAs to them that are analysed in this section are:

1. Lancashire versus Leicestershire; Kent; Nottinghamshire; and Hertfordshire (Hypothesis 1.1)
2. Metropolitan versus Greater Manchester (Hypothesis 1.2)
3. Cleveland versus Northumbria (Hypothesis 1.3)
4. Merseyside versus the West Midlands (Hypothesis 1.4)
5. Cumbria versus North Wales (Hypothesis 1.5)
6. Avon and Somerset versus Essex (Hypothesis 1.6).

This section focusses on Lancashire for two main reasons:

1. Lancashire has been one of the leading police forces in the implementation of POP in the UK and across the world (Bullock and Tilley, 2003; Bullock et al., 2006; Scott, 2000).
2. Lancashire submitted much more problem-oriented projects than the most similar PFAs to it (see Chapter 5, Table 5.1).

⁵⁰ Hele (2019, personal email, 6 February 2019).

Following this, the analysis continues with comparisons of the Metropolitan, Cleveland, Merseyside, Cumbria, and Avon and Somerset with the most similar PFAs to them, respectively.

6.3.1.1 Lancashire versus Leicestershire Police

Leicestershire introduced POP in 1995 (Leigh et al., 1996). Lancashire started to apply POP in 1998 (Lancashire Police, 2000; 2001a; 2001b). Therefore, there would be a greater decrease in burglaries in Leicestershire between 1995 and 1998.

Between 1995 and 1998, the decrease in CSEW burglaries in Lancashire (-37%) was much greater than the decrease in Leicestershire (-5%). However, the decrease in PRCD burglaries in Leicestershire (-36%) was greater than the decrease in Lancashire (-32%) (see Figure 6.2).

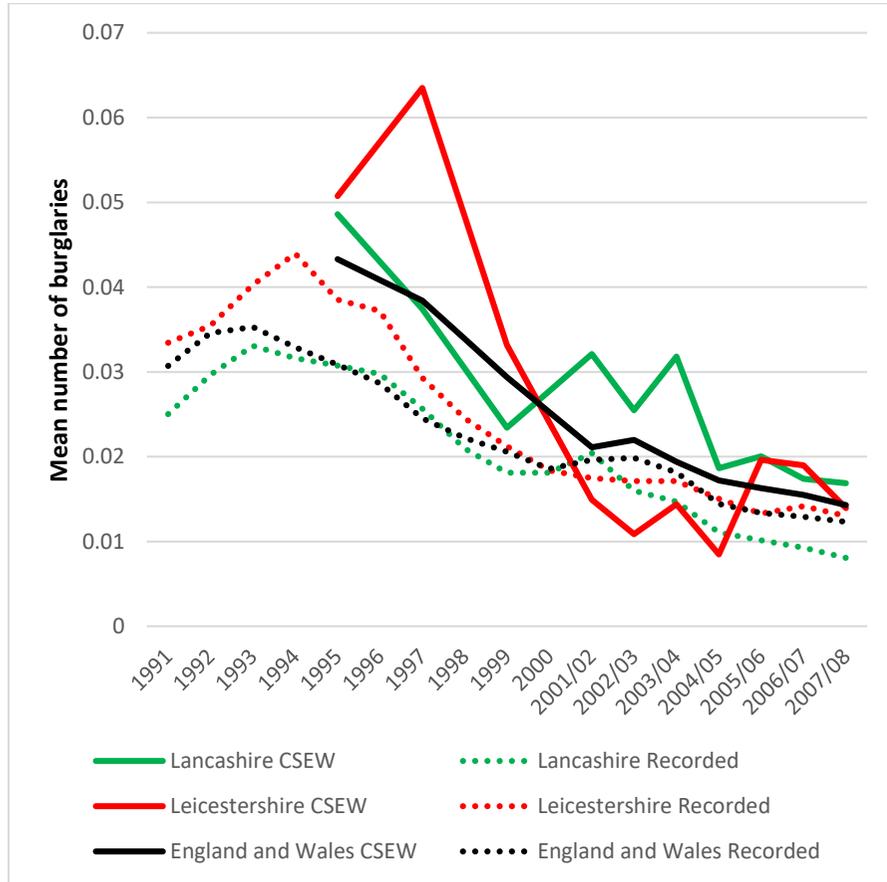
After Lancashire introduced POP in 1998, it submitted more projects than Leicestershire. However, it should be noted that Leicestershire was one of the earliest implementers of POP in the UK (Leigh et al., 1996). Nonetheless, there would be a greater decrease in burglaries in Lancashire compared to Leicestershire between 1998 and 2001/02⁵¹

Between 1998 and 2001/02, CSEW burglaries in Lancashire increased by 6%, whilst they decreased by 69% in Leicestershire. The percentage change in PRCD burglaries in Leicestershire was -29%, while it was -2% in Lancashire (see Figure 6.2). Therefore, Hypothesis 1.1 was rejected according to both data sources between 1998 and 2001/02. However, as noted above, Leicestershire also implemented POP rigorously, although it did not submit very many projects. It is therefore difficult to conclude whether POP influenced the burglary drop in this case.

Between 2002/03 and 2007/08, while CSEW burglaries in Lancashire dropped by 34%, they increased by 29% in Leicestershire. The decrease in PRCD burglaries was much greater in Lancashire (-50%) when compared to Leicestershire (-24%) (see Figure 6.2). It seems that integrating POP and ILP in Lancashire was a better method to reducing burglaries. However, it is difficult to distinguish the effect of POP from ILP. Though, as Sparrow (2016) suggested, ILP is a reduced form of POP. Therefore, Hypothesis 1.1 was tentatively accepted according to both data sources between 2002/03 and 2007/08.

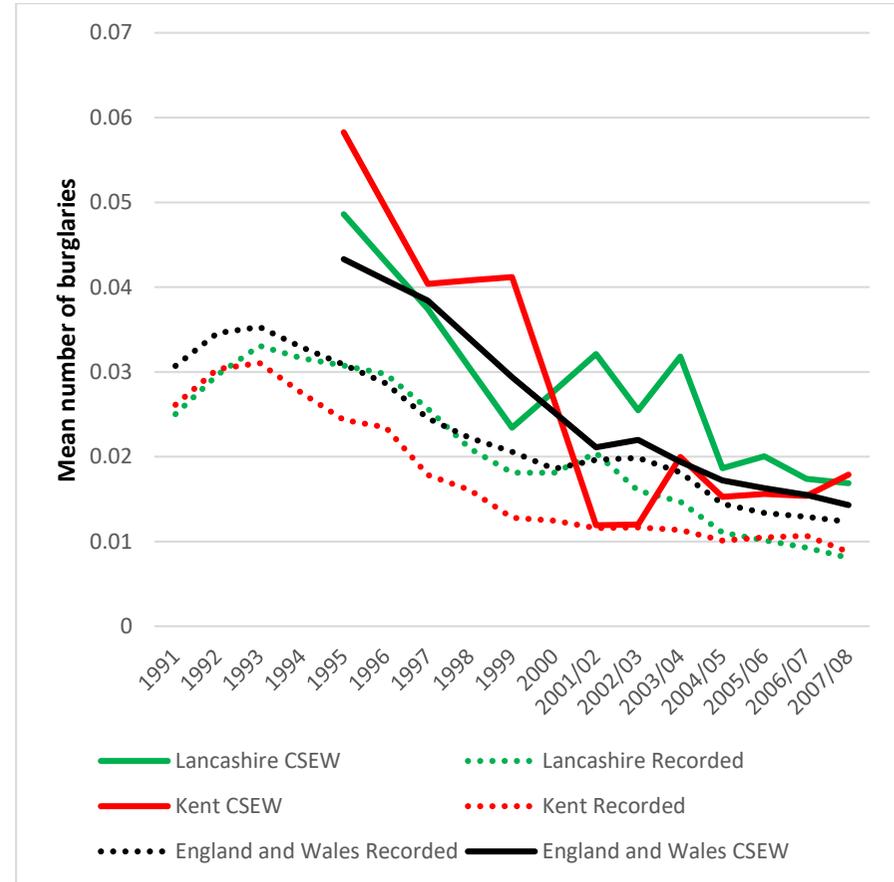
⁵¹ Lancashire was one of the 'pilot' police forces to implement intelligence-led policing between 2001 and 2002 (John and Maguire, 2004).

Figure 6.2: Mean number of burglaries in Lancashire and Leicestershire, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.3: Mean number of burglaries in Lancashire and Kent, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

6.3.1.2 Lancashire versus Kent Police

Kent had been implementing ILP since the mid-1990s and Lancashire introduced POP in 1998. Therefore, there would be a greater decrease in Lancashire when compared to Kent after 1998.

Between 1998 and 2001/02, while CSEW burglaries in Kent substantially decreased (-71%), they increased in Lancashire (6%). The percentage change in PRCD burglaries in Kent (-28%) was also greater than the percentage change in PRCD burglaries in Lancashire (-2%) (see Figure 6.3). Therefore, Hypothesis 1.1 was rejected according to both data sources between 1998 and 2001/02.

Between 2002/03 and 2007/08, however, CSEW burglaries in Kent increased by 49% while they decreased by 34% in Lancashire. In addition, the percentage change in PRCD burglaries in Lancashire (-50%) was much greater than the percentage change in Kent (-25%) (see Figure 6.3). These findings suggest that integrating POP and ILP in Lancashire was a better strategy to reducing burglaries compared to implementing ILP only in Kent between 2002/03 and 2007/08. Hypothesis 1.1 was therefore accepted according to both data sources between 2002/03 and 2007/08.

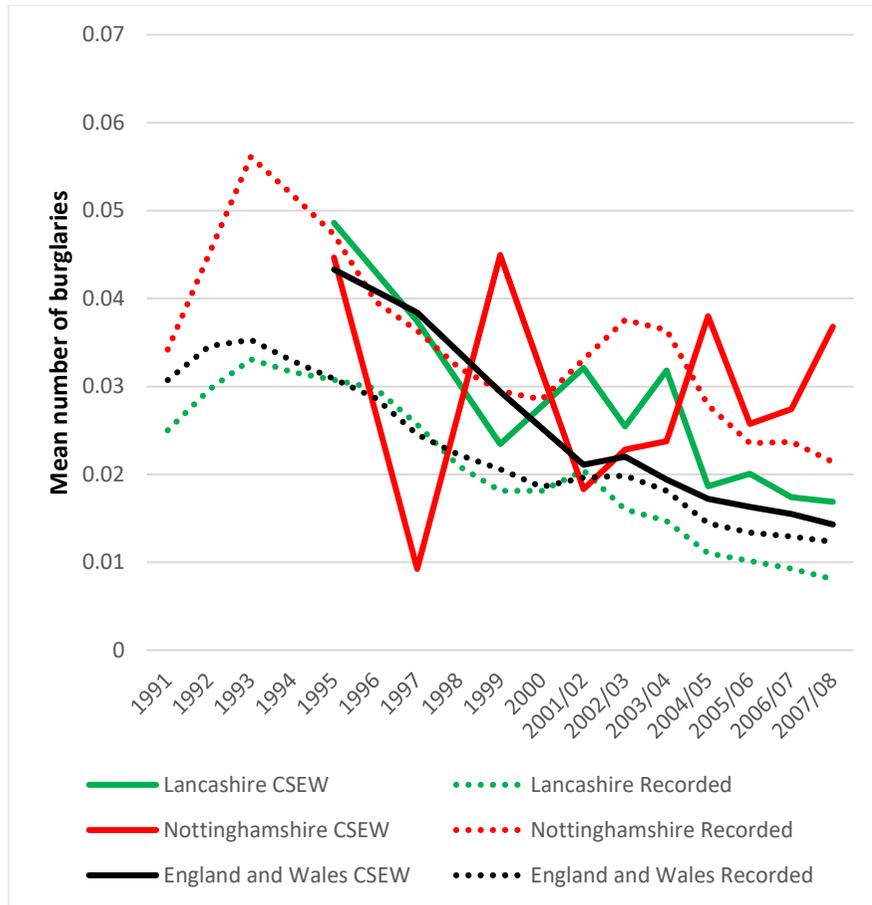
6.3.1.3 Lancashire versus Nottinghamshire Police

Nottinghamshire introduced POP in 2001 (Nottinghamshire Police, 2001) and in Lancashire in 1998. Therefore, there would be a greater decrease in Lancashire when compared to Nottinghamshire, especially between 1998 and 2001/02.

Between 1998 and 2001/02, while CSEW burglaries increased by 6% in Lancashire, they decreased by 32% in Nottinghamshire. However, PRCD burglaries decreased by 2% in Lancashire, while they increased by 3% in Nottinghamshire (see Figure 6.4). Therefore, Hypothesis 1.1 was accepted according to PRCD but rejected according to the CSEW between 1998 and 2001/02.

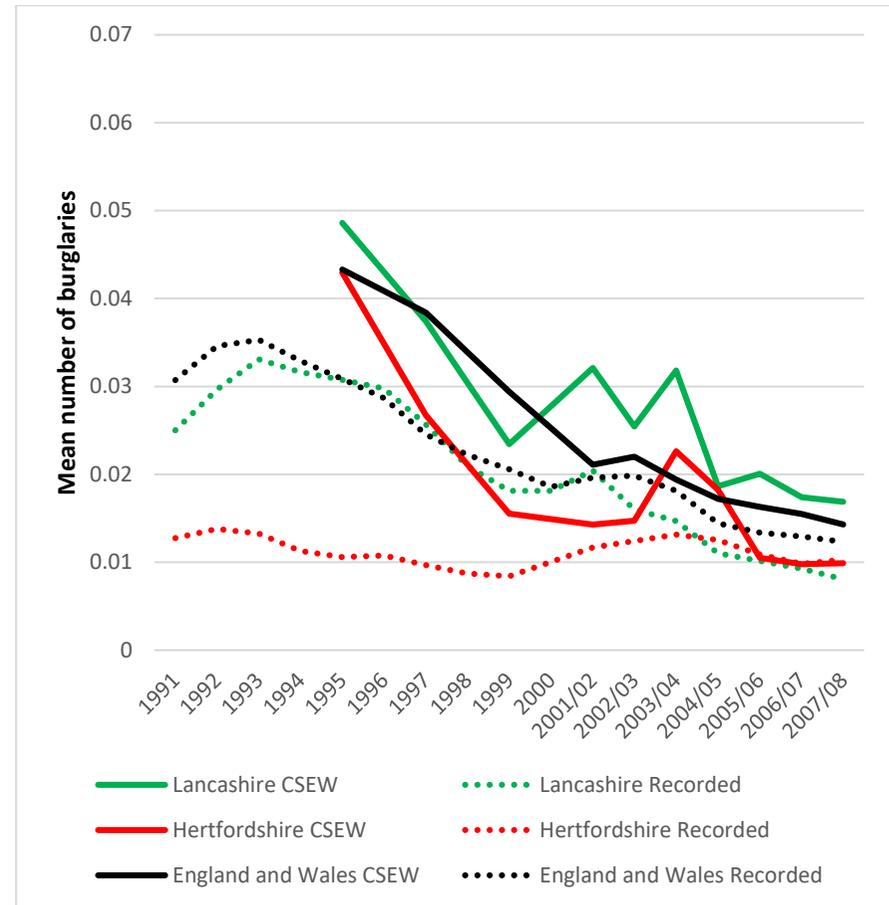
Between 2002/03 and 2007/08, while CSEW burglaries decreased sharply (-34%) in Lancashire, they increased steeply (61%) in Nottinghamshire. In addition, while the percentage change in PRCD burglaries in Lancashire was -50%, it was -43% in Nottinghamshire (see Figure 6.4). Hypothesis 1.1 was therefore accepted according to both data sources between 2002/03 and 2007/08.

Figure 6.4: Mean number of burglaries in Lancashire and Nottinghamshire, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS 1991-2007/08

Figure 6.5: Mean number of burglaries in Lancashire and Hertfordshire, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

6.3.1.4 Lancashire versus Hertfordshire Police

Hertfordshire introduced POP in 1999 (Hertfordshire Police, 2001) and Lancashire in 1998. According to the project submissions, Lancashire was more committed to POP. Therefore, there would be a greater decrease for Lancashire compared to Hertfordshire from 1999 onwards.

Between 1999 and 2001/02, while CSEW burglaries in Hertfordshire decreased by 8%, they increased by 37% in Lancashire. PRCD burglaries increased in both PFAs. However, the increase was much greater in Hertfordshire (39%) compared to Lancashire (13%) (see Figure 6.5). Therefore, Hypothesis 1.1 was tentatively accepted according to PRCD but rejected according to the CSEW between 1999 and 2001/02.

Between 2002/03 and 2007/08, the percentage change in CSEW burglaries in Lancashire (-34%) was slightly more than the percentage change in Hertfordshire (-33%). In addition, PRCD burglaries in Lancashire decreased by 50% while they decreased by 17% in Hertfordshire (see Figure 6.5). Therefore, Hypothesis 1.1 was accepted according to both data sources between 2002/03 and 2007/08.

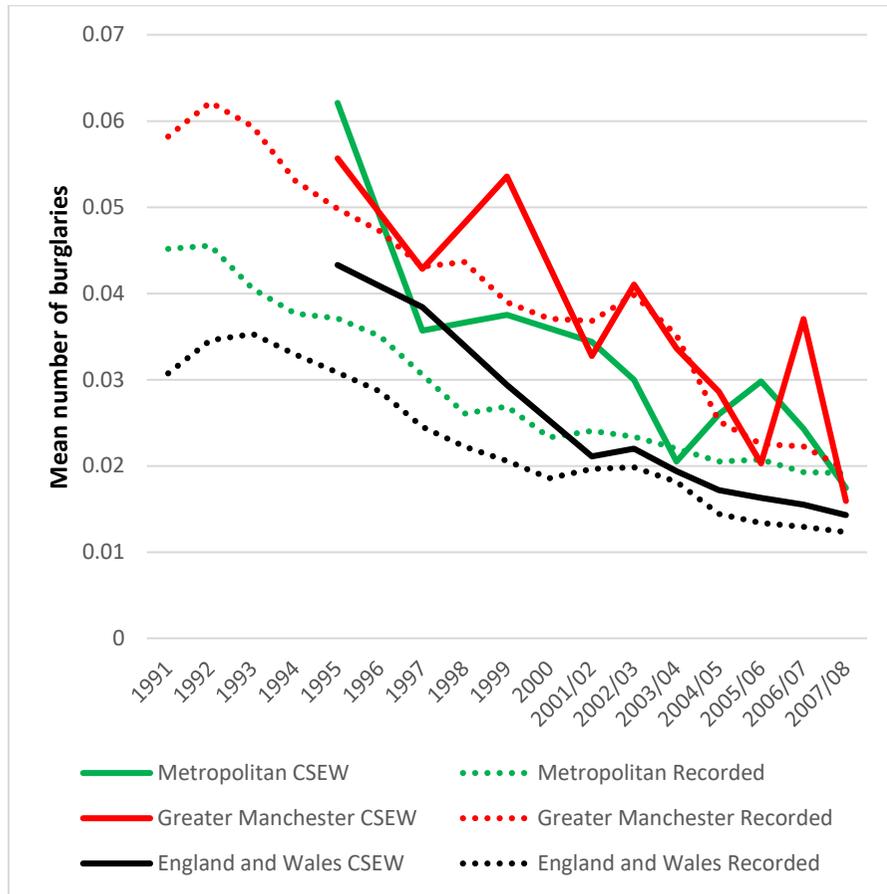
6.3.1.5 The Metropolitan versus Greater Manchester Police

The Metropolitan relaunched POP across all boroughs in 2001 (The Metropolitan Police, 2002). Greater Manchester started to implement POP with some vigour in the early 2000s (Bullock et al., 2006). Project submissions suggest that the Metropolitan was more committed to POP (see Chapter 5, Table 5.1). Therefore, there would be a sharper decrease in burglaries in the Metropolitan when compared to Greater Manchester between 2001/02 and 2007/08.

Between 2001/02 and 2003/04, while CSEW burglaries decreased markedly (40%) in the Metropolitan, they increased by 3% in Greater Manchester. The decrease in PRCD burglaries in the Metropolitan (9%) was greater than the decrease in Greater Manchester (4%) (see Figure 6.6). Thus, Hypothesis 1.2 was accepted according to both data sources between 2001/02 and 2003/04.

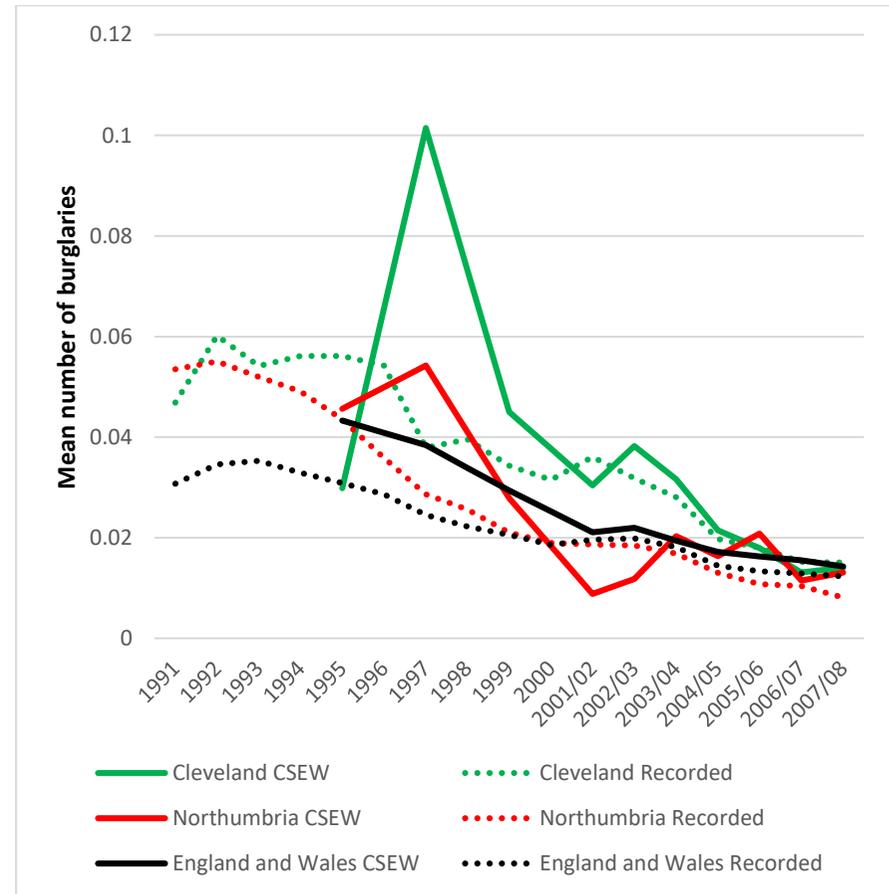
Between 2004/05 and 2007/08, Hypothesis 1.2 was rejected according to both data sources. The decreases in CSEW (44%) and PRCD burglaries (22%) in Greater Manchester were greater than the falls in the Metropolitan (33%; 7%, respectively) (see Figure 6.6).

Figure 6.6: Mean number of burglaries in the Metropolitan and Greater Manchester, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.7: Mean number of burglaries in Cleveland and Northumbria, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

6.3.1.6 Cleveland versus Northumbria Police

Northumbria had a dedicated Community Policing Unit to tackle the underlying causes of community problems between 1991 and 1994 (Leigh et al., 1996). Cleveland piloted POP between October 1996 and March 1997 and applied it across all beats from 1998 (Leigh et al., 1998). Therefore, there would be a greater decrease in burglaries in Cleveland 1998 onwards.

PRCD burglaries began to drop in both police forces in 1992. Between 1998 and 2003/04, the decrease in CSEW burglaries in Cleveland was 57%, while it was 50% in Northumbria. On the other hand, the percentage change in PRCD burglaries was greater in Northumbria (-34%) when compared to Cleveland (-29%) (see Figure 6.7). Hence, Hypothesis 1.3 was accepted according to the CSEW but rejected according to PRCD between 1998 and 2003/04.

Between 2004/05 and 2007/08, while CSEW burglaries in Cleveland decreased by 35%, they dropped by 20% in Northumbria. However, the percentage change in PRCD burglaries was greater in Northumbria (-38%) when compared to Cleveland (-24%) (see Figure 6.7). Hence, Hypothesis 1.3 was accepted according to the CSEW but rejected according to PRCD between 2004/05 and 2007/08.

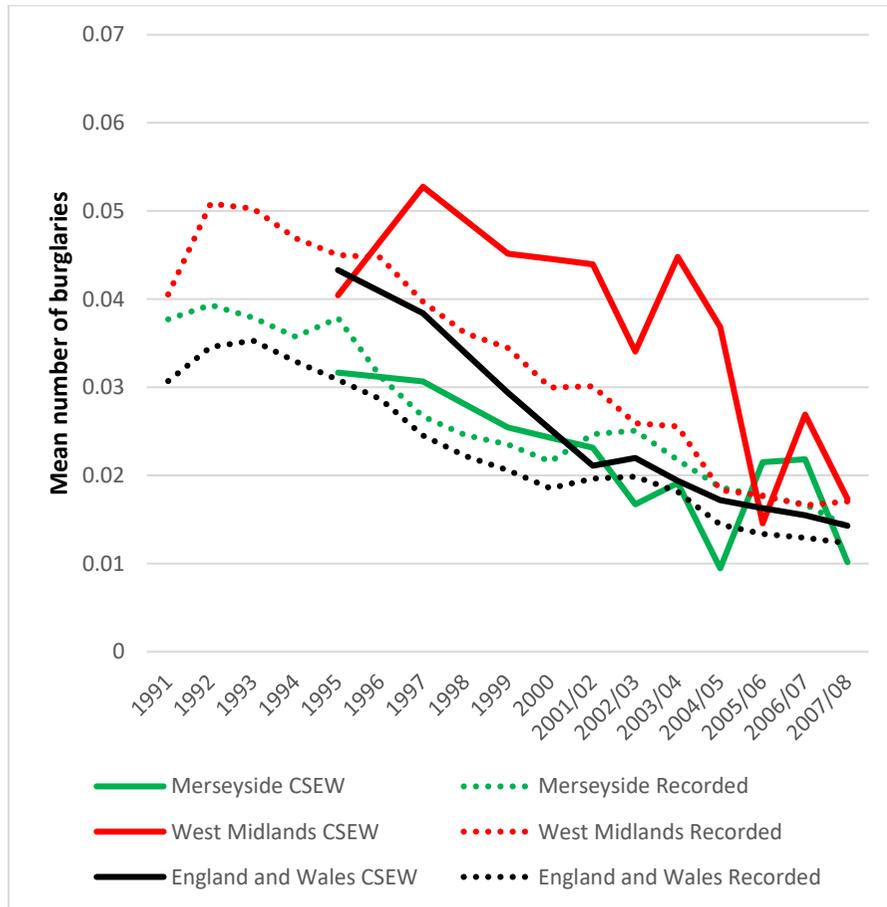
6.3.1.7 Merseyside versus the West Midlands Police

Merseyside started to implement POP in 1995 (Leigh et al., 1996). The West Midlands introduced POP in 1997 (Leigh et al., 1998). The West Midlands was one of the 'pilot' police forces in terms of implementing ILP between 2001 and 2002 (John and Maguire, 2004). Therefore, there would be a greater reduction in burglaries in Merseyside, particularly between 1995 and 2001/02.

Between 1995 and 2001/02, CSEW burglaries reduced by 27% in Merseyside, while they increased by 9% in the West Midlands. Similarly, the decrease in PRCD burglaries was greater in Merseyside (-35%) when compared to the West Midlands (-33%). Therefore, Hypothesis 1.4 was accepted according to both data sources between 1995 and 2001/02.

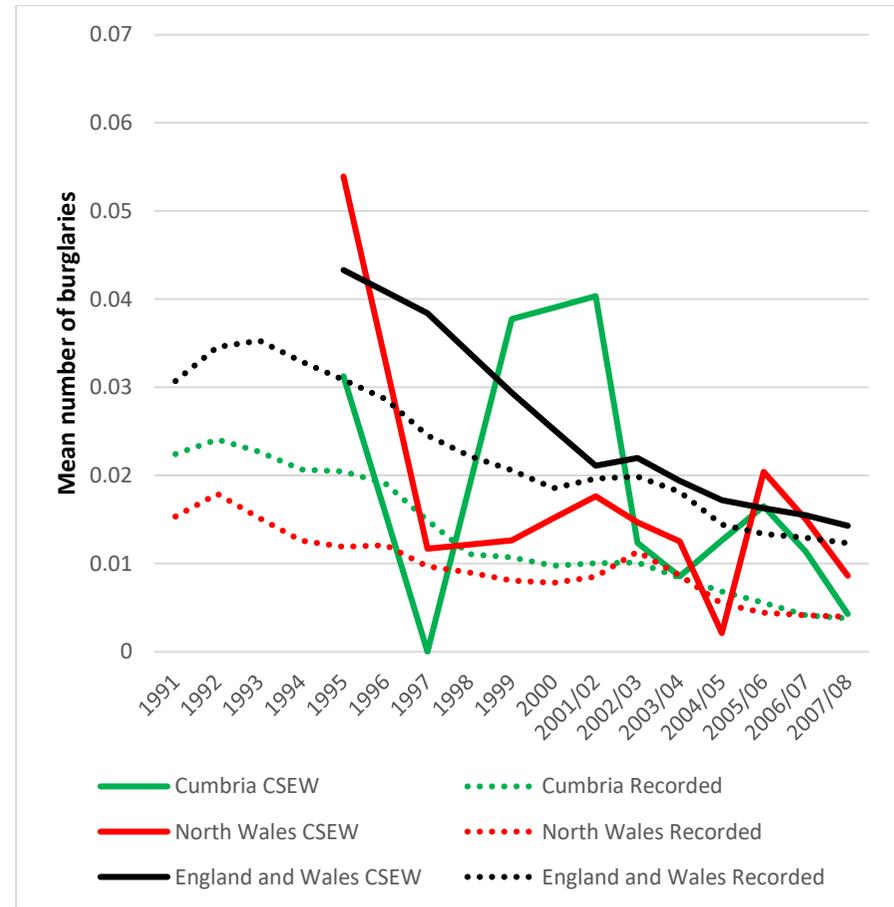
Between 2002/03 and 2007/08, the decrease in CSEW burglaries in the West Midlands (-49%) was greater than the decrease in Merseyside (-39%). On the contrary, the drop in PRCD burglaries in Merseyside (-43%) was greater than the fall in the West Midlands (-34%) (see Figure 6.8). Therefore, Hypothesis 1.4 was rejected according to the CSEW but accepted according to PRCD between 2002/03 and 2007/08.

Figure 6.8: Mean number of burglaries in Merseyside and the West Midlands, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.9: Mean number of burglaries in Cumbria and North Wales, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

6.3.1.8 Cumbria versus North Wales Police

Cumbria and North Wales introduced POP in 1999 (North Wales Police, 1999; Lancashire Police, 2001a). According to the project submissions, Cumbria was more committed to POP. Therefore, there would be a greater decrease in burglaries in Cumbria compared to North Wales after 1999.

Between 1999 and 2003/04, the drop in CSEW burglaries in Cumbria was much greater (-77%) when compared to North Wales (-1%). In addition, while PRCD burglaries decreased in Cumbria (22%), they increased in North Wales (7%) (see Figure 6.9). Hence, Hypothesis 1.5 was accepted according to both data sources between 1999 and 2003/04.

Between 2004/05 and 2007/08, while CSEW burglaries in Cumbria decreased substantially (-69%), they increased markedly in North Wales (307%). In addition, the decrease in PRCD burglaries in Cumbria (-45%) was greater than the decrease in North Wales (-27%) (see Figure 6.9). Therefore, Hypothesis 1.5 was accepted according to both data sources between 2004/05 and 2007/08.

6.3.1.9 Avon and Somerset versus Essex Police

The then Superintendent Mike Nelson promoted the ethos of POP in Avon and Somerset at the beginning of 1997 (Avon and Somerset Police, 1999). On the other hand, Essex is one of those police forces that did not apply a specific policing style to fight crime prior to 2001 (Heaton, 2009a) and has not been mentioned in the POP-related literature (e.g. Leigh et al., 1996; 1998; Gresty et al., 1997; Scott, 2000; Bullock and Tilley, 2003; Bullock et al., 2006; Tilley and Scott, 2012). Therefore, there would be a greater decrease in burglaries in Avon and Somerset after 1997.

Between 1997 and 2003/04, the percentage change in CSEW burglaries in Avon and Somerset (-39%) was greater than the percentage change in CSEW burglaries in Essex (-34%). Similarly, the decrease in PRCD burglaries in Avon and Somerset (-37%) was much greater than the decrease in Essex (-3%) (see Figure 6.10). Therefore, Hypothesis 1.6 was accepted according to both data sources between 1997 and 2003/04.

Between 2004/05 and 2007/08, the decrease in CSEW burglaries was the same (-7%) in both police forces. However, while PRCD burglaries in Avon and Somerset decreased by 11%, they increased by 3% in Essex. Therefore, Hypothesis 1.6 was accepted according to PRCD between 2004/05 and 2007/08, but it was difficult to conclude whether POP influenced the

burglary drop when the CSEW was used.

Figure 6.10: Mean number of burglaries in Avon and Somerset and Essex, the CSEW and PRCD, 1991-2007/08



Source: Researcher’s calculations, ONS, 1991-2007/08

Table 6.1 summarises the results in relation to Hypotheses 1.1 to 1.6. To conclude, although Lancashire was seemingly more committed to POP compared to the most similar PFAs to it (according to the problem-oriented project submissions), results were mixed depending on the data source. Importantly, Hypothesis 1.1 was accepted according to both data sources between 2002/03 and 2007/08 when the implementation of POP in Lancashire was more developed (Bullock et al., 2006). In addition, Hypotheses 1.2 to 1.6 were accepted in most cases. These findings indicate that POP did indeed play a role in the burglary drop. However, identifying the extent of its role is difficult at this stage.

Table 6.1: Was there a greater decrease in burglaries in POP-committed PFAs?

Hypothesis	Police forces	Period	Data Source	
			CSEW	PRCD
1.1	Lancashire versus Leicestershire	1998-2001/02	Rejected	Rejected
1.1	Lancashire versus Leicestershire	2002/03-2007/08	Accepted	Accepted
1.1	Lancashire versus Kent	1998-2001/02	Rejected	Rejected
1.1	Lancashire versus Kent	2002/03-2007/08	Accepted	Accepted
1.1	Lancashire versus Nottingham	1998-2001/02	Rejected	Accepted
1.1	Lancashire versus Nottingham	2002/03-2007/08	Accepted	Accepted
1.1	Lancashire versus Hertfordshire	1999-2001/02	Rejected	Accepted
1.1	Lancashire versus Hertfordshire	2002/03-2007/08	Accepted	Accepted
1.2	Metropolitan versus Greater Manchester	2001/02-2003/04	Accepted	Accepted
1.2	Metropolitan versus Greater Manchester	2004/05-2007/08	Rejected	Rejected
1.3	Cleveland versus Northumbria	1998-2003/04	Accepted	Rejected
1.3	Cleveland versus Northumbria	2004/05-2007/08	Accepted	Rejected
1.4	Merseyside versus West Midlands	1995-2001/02	Accepted	Accepted
1.4	Merseyside versus West Midlands	2002/03-2007/08	Rejected	Accepted
1.5	Cumbria versus North Wales	1999-2003/04	Accepted	Accepted
1.5	Cumbria versus North Wales	2004/05-2007/08	Accepted	Accepted
1.6	Avon and Somerset versus Essex	1997-2003/04	Accepted	Accepted
1.6	Avon and Somerset versus Essex	2004/05-2007/08	N/A	Accepted

6.3.2 Testing hypotheses: problem-oriented project submissions (2)

This section examines whether individual anti-burglary award submissions affected CSEW and PRCD burglaries (see Appendix 5.1, Hypotheses 2 and 3) considering starting and submission years of the projects (see Table 6.2). The researcher argues that these projects might have affected burglaries due to being exemplar projects recognised by a committee. The following sub-sections examine the effects of the projects in the respective PFAs in turn.

Table 6.2: Anti-burglary winner and finalist award submissions by starting and submission year and PFA

Police force	Winner Projects	Finalist Projects
	Starting/Submission Year	Starting/Submission Year
Avon and Somerset	<ul style="list-style-type: none"> • 2000/2002 	<ul style="list-style-type: none"> • 1997/1999 • 2004/2006
Lancashire	<ul style="list-style-type: none"> • 1998/2002 • 2004/2007 	<ul style="list-style-type: none"> • 1999/2000 • 2001/2003 • 2002/2004 • 2004/2006 • 2006/2008 • 2006/2009
Devon and Cornwall	<ul style="list-style-type: none"> • 1999/2000 	-
Hampshire	-	<ul style="list-style-type: none"> • 2003/2006
Northamptonshire	-	<ul style="list-style-type: none"> • 1999/2001
Staffordshire	-	<ul style="list-style-type: none"> • 2002/2005

6.3.2.1 Avon and Somerset Police

According to Table 6.2, there would be a gradual decrease in burglaries in Avon and Somerset between 1997 and 1999; 2000 and 2002; and 2004 and 2006.

CSEW burglaries in Avon and Somerset increased between 1995 and 1997; decreased between 1997 and 1999; went up between 1999 and 2001/02; and fell between 2001/02 and 2007/08. PRCD burglaries in Avon and Somerset decreased markedly from 1996 to 2000; increased steeply between 2000 and 2001/02; then fell substantially between 2001/02 and 2006/07 (see Figure 6.11). Overall, CSEW and PRCD burglaries fluctuated in Avon and Somerset during the periods noted above. Therefore, Hypotheses 2 and 3 were rejected according to both data sources.

6.3.2.2 Lancashire Police

According to Table 6.2, there would be a gradual decrease in burglaries in Lancashire between 1998 and 2002; 1999 and 2000; 2001 and 2003; 2002 and 2004; 2004 and 2006; 2004 and 2007; 2006 and 2008; and 2006 and 2009 (namely between 1998 and 2009). However, both CSEW and PRCD burglaries fluctuated between 1998 and 2007/08 (see Figure 6.12). Therefore, Hypotheses 2 and 3 were rejected according to both data sources between 1998 and 2007/08.

6.3.2.3 Devon and Cornwall Police

According to Table 6.2, there would be a gradual decrease in burglaries in Devon and Cornwall between 1999 and 2000. Hypothesis 2 was rejected according to the CSEW as CSEW burglaries increased between 1999 and 2000. However, it was accepted according to PRCD, as PRCD burglaries decreased in Devon and Cornwall between 1999 and 2000 (see Figure 6.13).

6.3.2.4 Hampshire Police

According to Table 6.2, there would be a gradual decrease in burglaries in Hampshire between 2003/04 and 2007/08. CSEW and PRCD burglaries in Hampshire fluctuated between 2003/04 and 2007/08 (see Figure 6.14). Therefore, Hypothesis 3 was rejected according to both data sources.

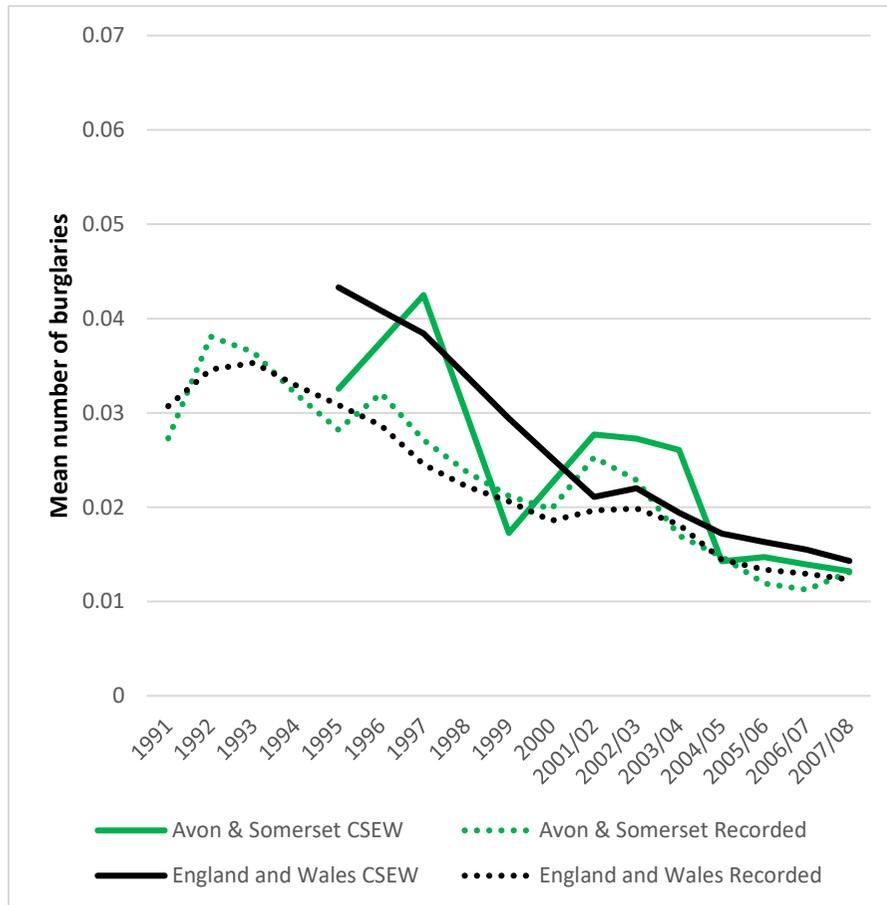
6.3.2.5 Northamptonshire Police

According to Table 6.2, there would be a gradual decrease in burglaries in Northamptonshire between 1999 and 2001/02. However, Hypotheses 3 was rejected according to the CSEW, as CSEW burglaries increased between 1999 and 2001/02. It was also rejected according to PRCD, as PRCD burglaries fluctuated between 1999 and 2001/02 (see Figure 6.15).

6.3.2.6 Staffordshire Police

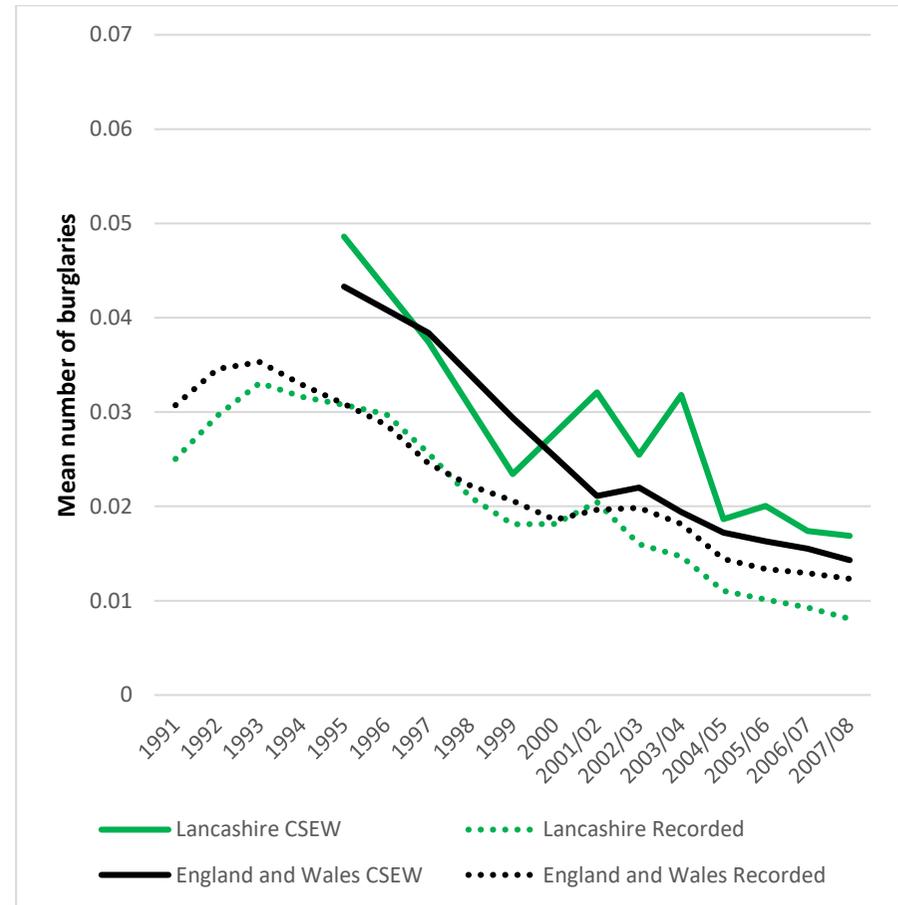
According to Table 6.2, there would be a gradual decrease in burglaries in Staffordshire between 2002/03 and 2005/06. However, Hypothesis 3 was rejected according to the CSEW, as CSEW burglaries fluctuated between 2002/03 and 2005/06. On the contrary, it was accepted according to PRCD, as the decrease in PRCD burglaries between 2002/03 and 2005/06 was gradual (see Figure 6.16).

Figure 6.11: Mean number of burglaries in Avon and Somerset, the CSEW and PRCD, 1991-2007/08



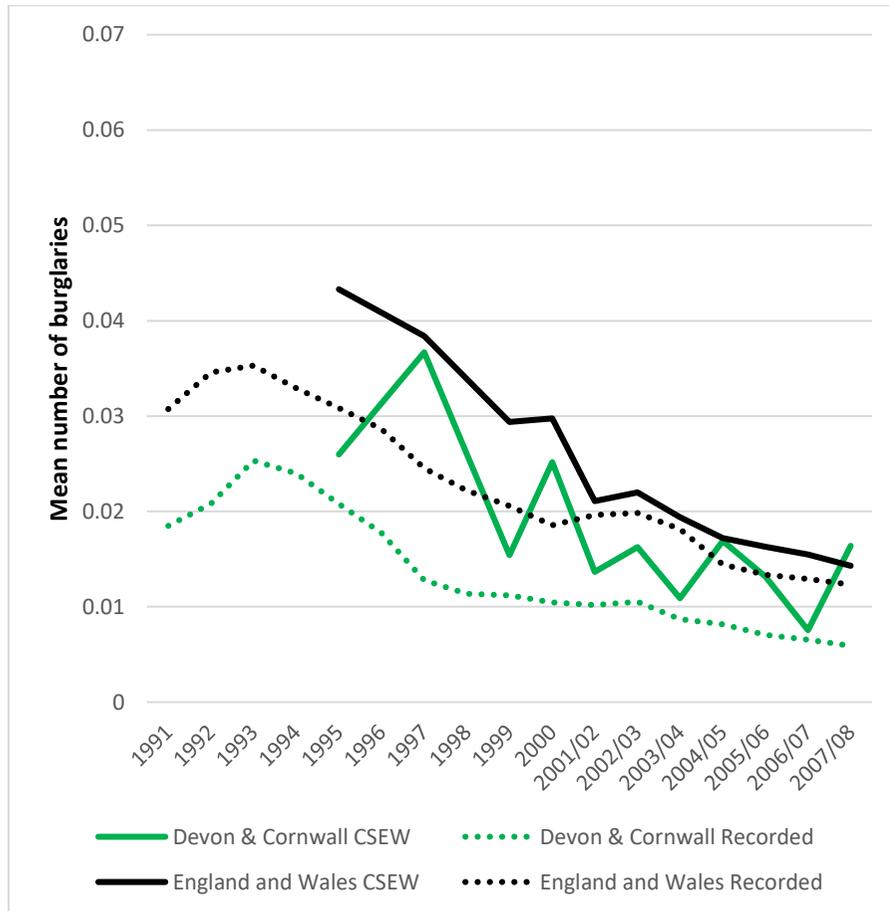
Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.12: Mean number of burglaries in Lancashire, the CSEW and PRCD, 1991-2007/08



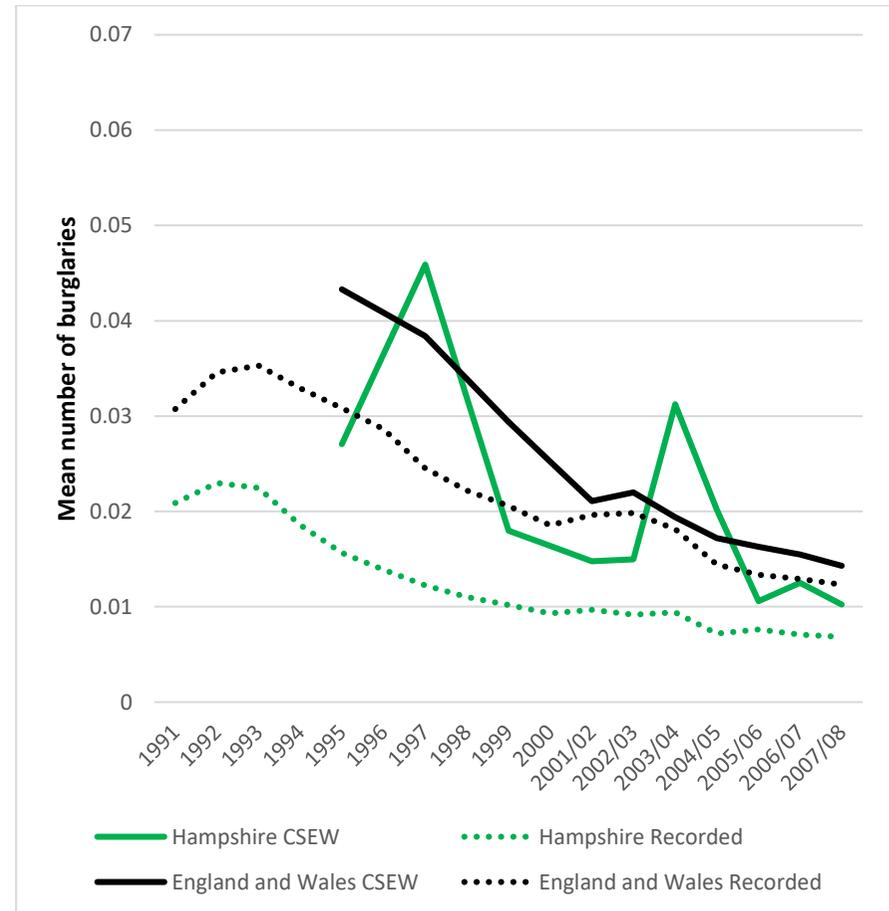
Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.13: Mean number of burglaries in Devon and Cornwall, the CSEW and PRCD, 1991-2007/08



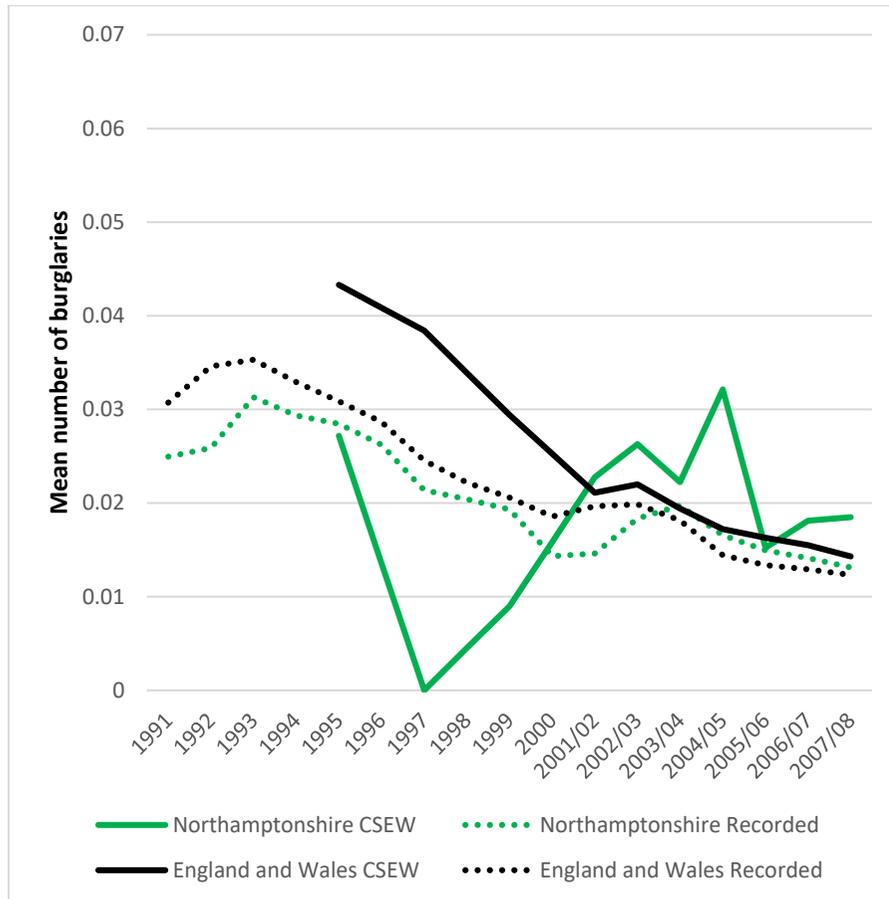
Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.14: Mean number of burglaries in Hampshire, the CSEW and PRCD, 1991-2007/08



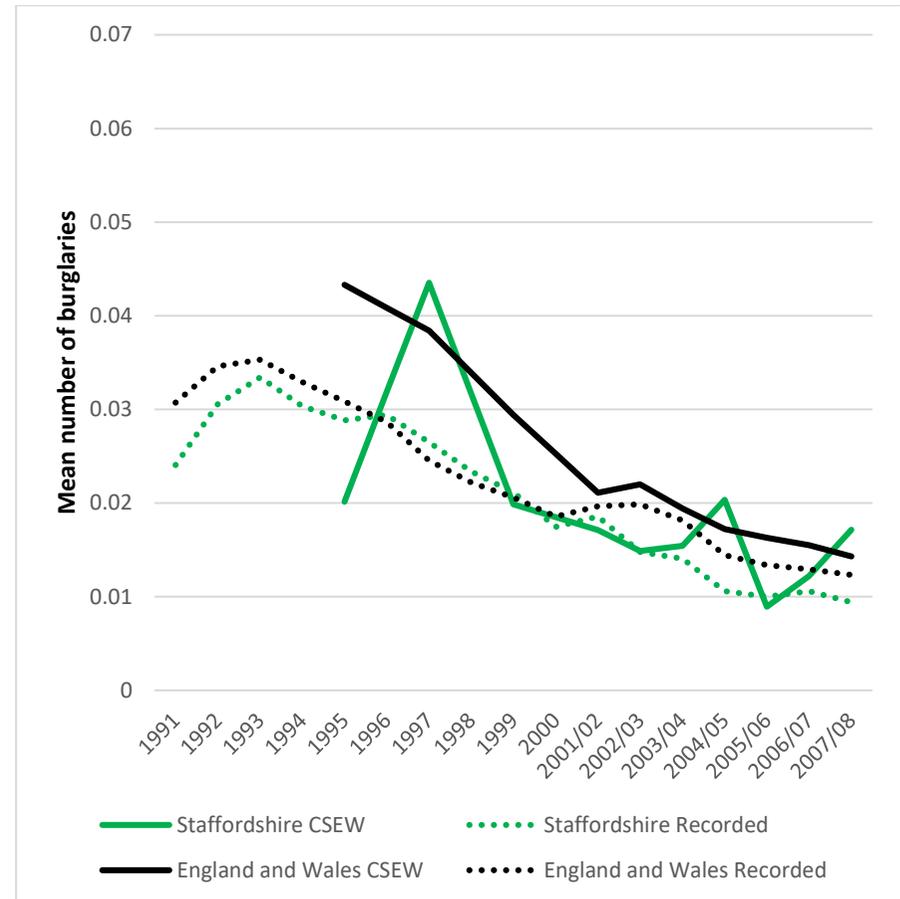
Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.15: Mean number of burglaries in Northamptonshire, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.16: Mean number of burglaries in Staffordshire, the CSEW and PRCD, 1991-2007/08

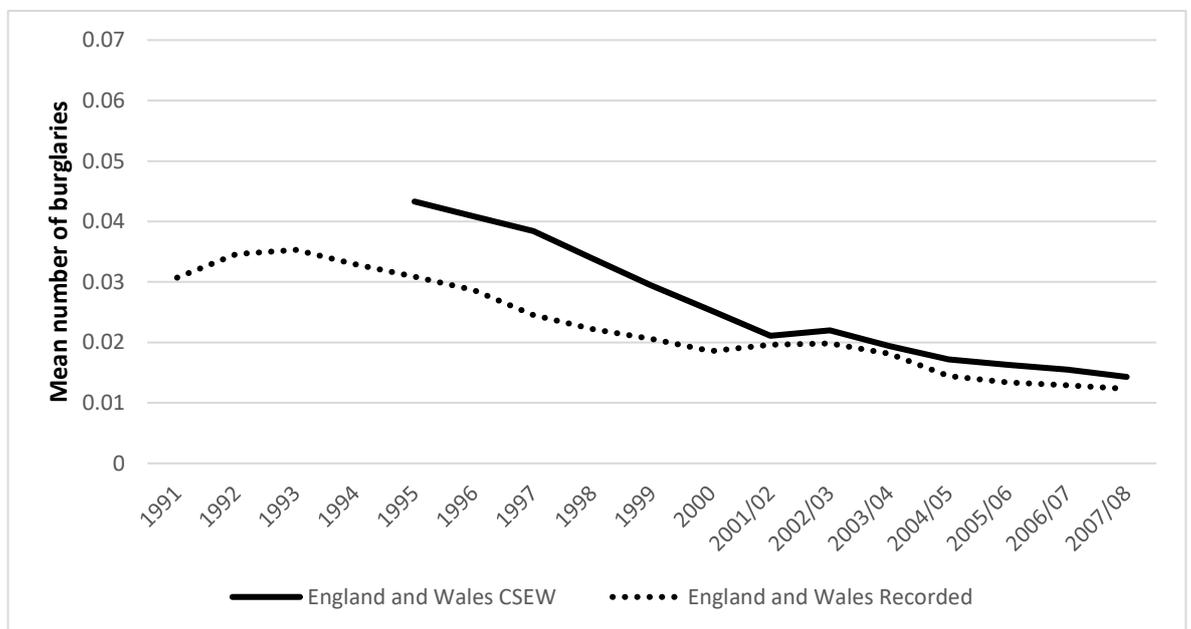


Source: Researcher's calculations, ONS, 1991-2007/08

6.3.2.7 England and Wales

In Chapter 5, it was found that most of the anti-burglary projects were implemented in 1999, 2004 and 2008 (see figures 5.1-5.3). Hence, it was hypothesised that the decreases in burglaries in England and Wales in 1999, 2004 and 2008 would be greater when compared to other years (Hypothesis 4). Figure 6.17 shows that the decreases in burglaries in those years were always greater than the previous year. This might have been a general trend, or POP might have affected burglaries as the decrease in burglaries in 2004/05 and 2007/08 came after a slight increase in burglaries in the early 2000s. Nevertheless, it was difficult to accept or reject Hypothesis 4.

Figure 6.17: Mean number of burglaries in England and Wales, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

Table 6.3 summarises the results in relation to Hypotheses 2-4. It suggests that Hypotheses 2 and 3 were rejected in all cases according to the CSEW. However, they were accepted in two cases, according to PRCD. Overall, they were rejected in most cases. This is because, although both CSEW and PRCD burglaries fell substantially over time, the decrease was not gradual. Accepting or rejecting Hypothesis 4 was difficult without further information.

Table 6.3: Was there a gradual decrease in burglaries in PFAs that became a winner or finalist?

Police Force	Hypothesis	Data Source	
		CSEW	PRCD
Avon and Somerset	2 (Winner) and 3 (Finalist)	Rejected	Rejected
Lancashire	2 (Winner) and 3 (Finalist)	Rejected	Rejected
Devon and Cornwall	3 (Finalist)	Rejected	Accepted
Hampshire	2 (Winner)	Rejected	Rejected
Northamptonshire	3 (Finalist)	Rejected	Rejected
Staffordshire	3 (Finalist)	Rejected	Accepted
England and Wales	4	N/A	N/A

6.3.3 Testing hypotheses: problem-oriented crime reduction programmes

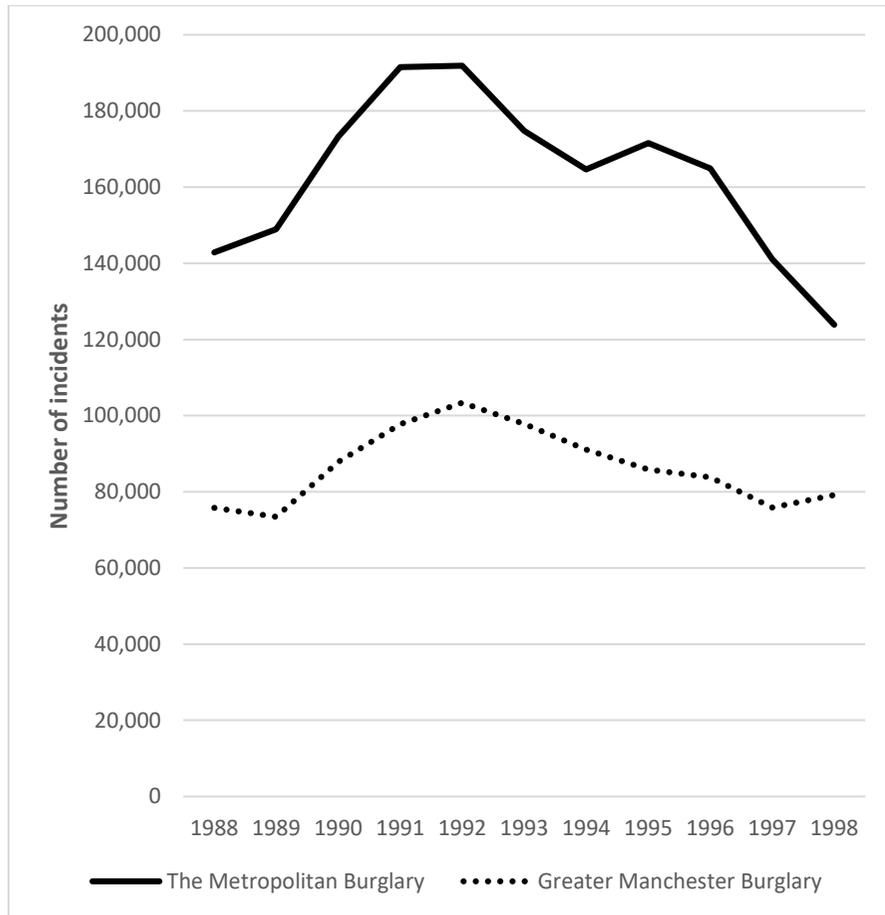
This section tests Hypotheses 5 to 9 (see Appendix 5.1). It starts by comparing trends in PRCD burglaries⁵² in PFAs (which received a greater amount of funding for Safer Cities projects when compared to their most similar PFAs) with the trends in the most similar PFAs to them between 1988 and 1998 (see Figures 6.18 and 6.19). Thereafter, it compares trends in CSEW and PRCD burglaries in PFAs (which received a greater amount of funding for the TPI and the RBI projects when compared to their most similar PFAs) with the trends in the most similar PFAs to them over time (particularly from 1999 to 2002/03, see figures 6.20-6.26).

6.3.3.1 The Safer Cities Programme

The PFAs included in this section are the Metropolitan, the West Midlands and Greater Manchester (see Chapter 5, Section 5.3.1). Figures 6.18 and 6.19 show that although the Metropolitan, the West Midlands and Greater Manchester received a considerable amount of funding for the Safer Cities projects (see Chapter 5, Table 5.5), PRCD burglaries increased in the Metropolitan (between 1988 and 1991), Greater Manchester and the West Midlands (between 1989 and 1992). Therefore, Hypothesis 5 was rejected between 1988 and 1993.

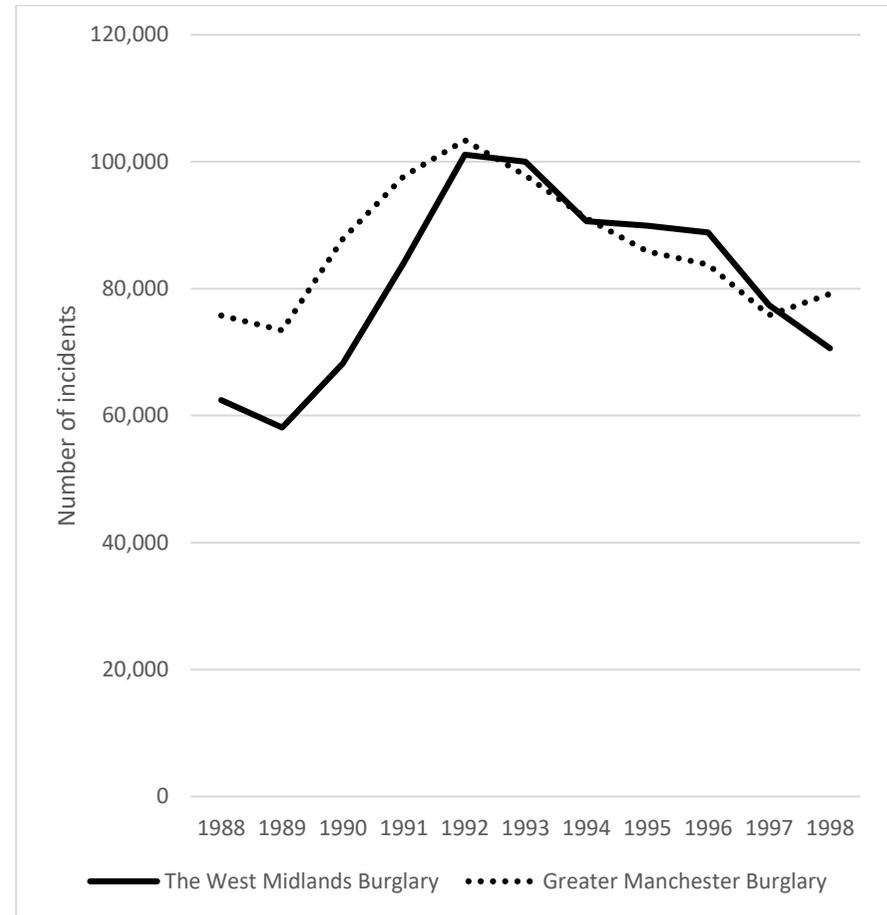
⁵² Since the CSEW does not provide data at the PFA level before 1995, PRCD is used.

Figure 6.18: Police recorded burglaries in the Metropolitan and Greater Manchester, 1988-1998



Source: ONS, 1988-1998

Figure 6.19: Police recorded burglaries in the West Midlands and Greater Manchester, 1988-1998



Source: ONS, 1988-1998

6.3.3.2 The Targeted Policing Initiative

This section tests Hypothesis 6 (there would be a steeper decrease in burglaries in Greater Manchester and Kent after 1999 and Avon and Somerset, Derbyshire and West Yorkshire after 2000 when compared to the most similar PFAs to them owing to the implementation of anti-burglary TPI projects).

Between 1999 and 2000, the decrease in CSEW burglaries in West Yorkshire (-34%) was greater than the decrease in Greater Manchester (-19%). On the other hand, while PRCD burglaries decreased in Greater Manchester by 5%, West Yorkshire saw an increase in burglaries by 1% (see Figure 6.20). Therefore, Hypothesis 6 was rejected according to the CSEW but accepted according to PRCD for Greater Manchester between 1999 and 2000.

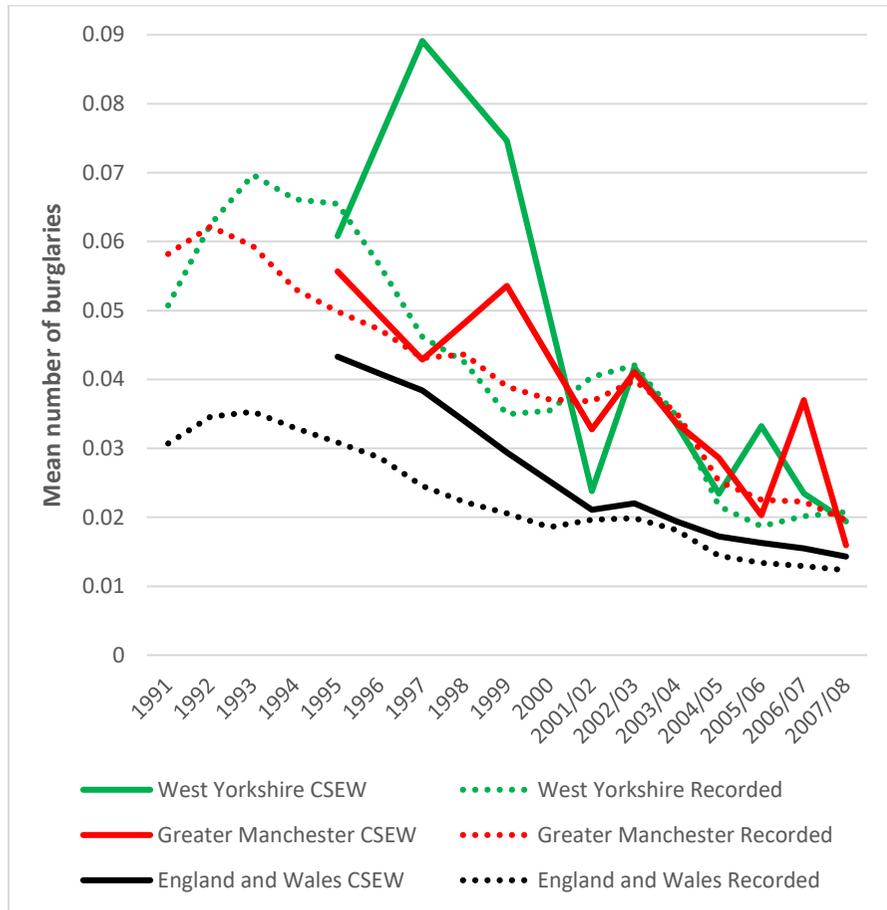
Between 1999 and 2000, the decrease in CSEW burglaries in Kent (-36%) was greater than the decrease in Leicestershire (-28%). On the other hand, the decrease in PRCD burglaries in Leicestershire (-18%) was greater than the decrease in Kent (-3%) (see Figure 6.21). Therefore, Hypothesis 6 was accepted according to the CSEW but rejected according to PRCD for Kent between 1999 and 2000.

Between 2000 and 2001/02, while CSEW burglaries in Avon and Somerset substantially increased (60%), CSEW burglaries in Essex decreased markedly (-27%). On the other hand, the increase in PRCD burglaries in Avon and Somerset (28%) was much greater than the increase in Essex (2%) (see Figure 6.22). Therefore, Hypothesis 6 was rejected according to both data sources for Avon and Somerset between 2000 and 2001/02.

Between 2000 and 2001/02, while CSEW burglaries decreased by 19% in Derbyshire, they increased in Cumbria by 3%. However, PRCD burglaries increased in both police forces, where the increase was greater in Derbyshire (9% versus 3%) (see Figure 6.23). Therefore, Hypothesis 6 was accepted according to the CSEW but rejected according to PRCD for Derbyshire between 2000 and 2001/02.

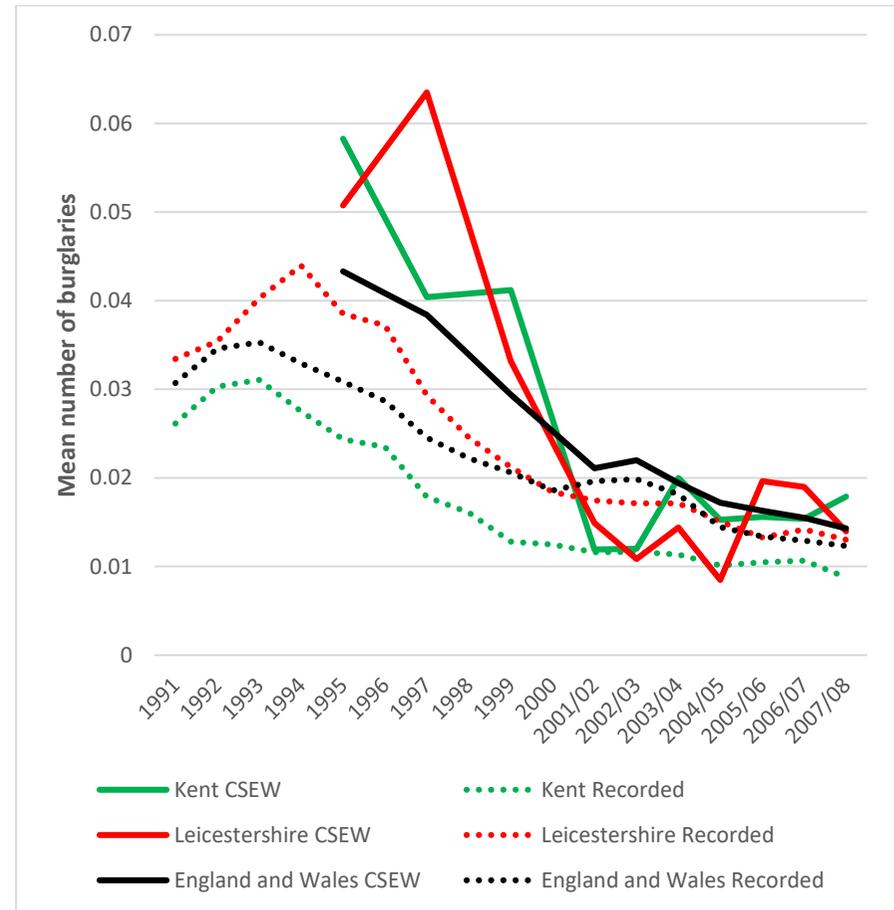
Between 2000 and 2001/02, the decrease in CSEW burglaries in West Yorkshire (-68%) was much greater than the decrease in CSEW burglaries in Greater Manchester (-39%) (see Figure 6.20). However, while PRCD burglaries in West Yorkshire increased (15%), they decreased in Greater Manchester (-6%) (see Figure 6.20). Therefore, Hypothesis 6 was accepted according to the CSEW but rejected according to PRCD for West Yorkshire between 2000 and 2001/02.

Figure 6.20: Mean number of burglaries in Greater Manchester and West Yorkshire, the CSEW and PRCD, 1991-2007/08



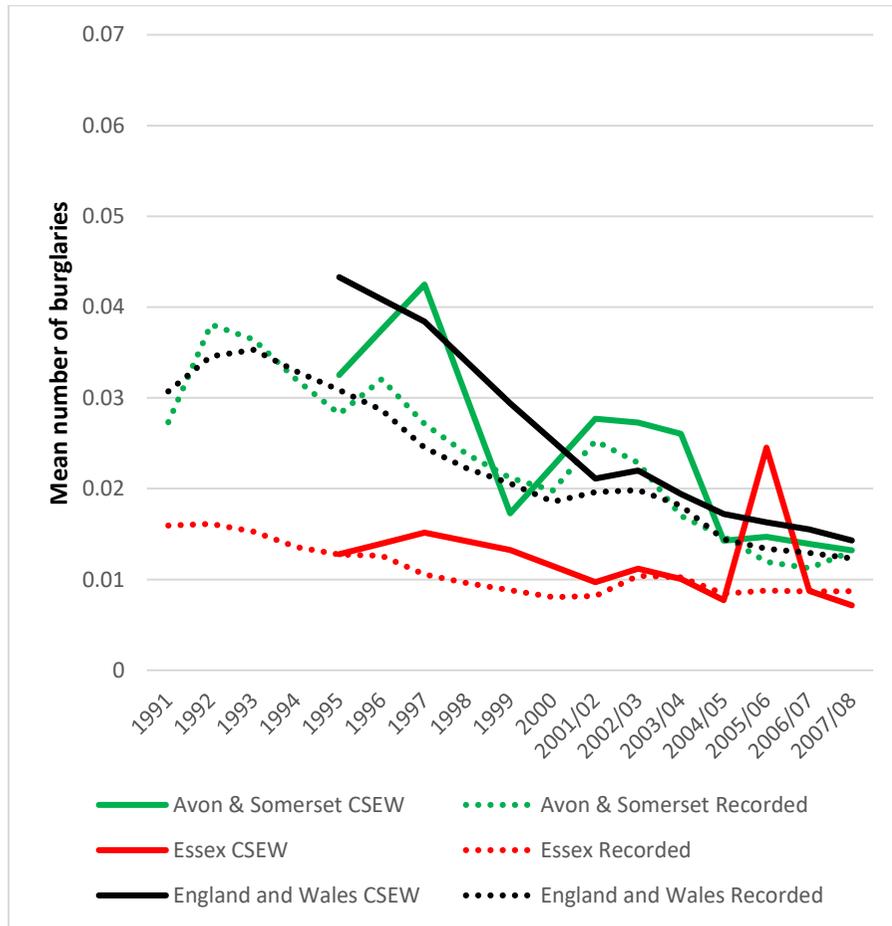
Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.21: Mean number of burglaries in Kent and Leicestershire, the CSEW and PRCD, 1991-2007/08



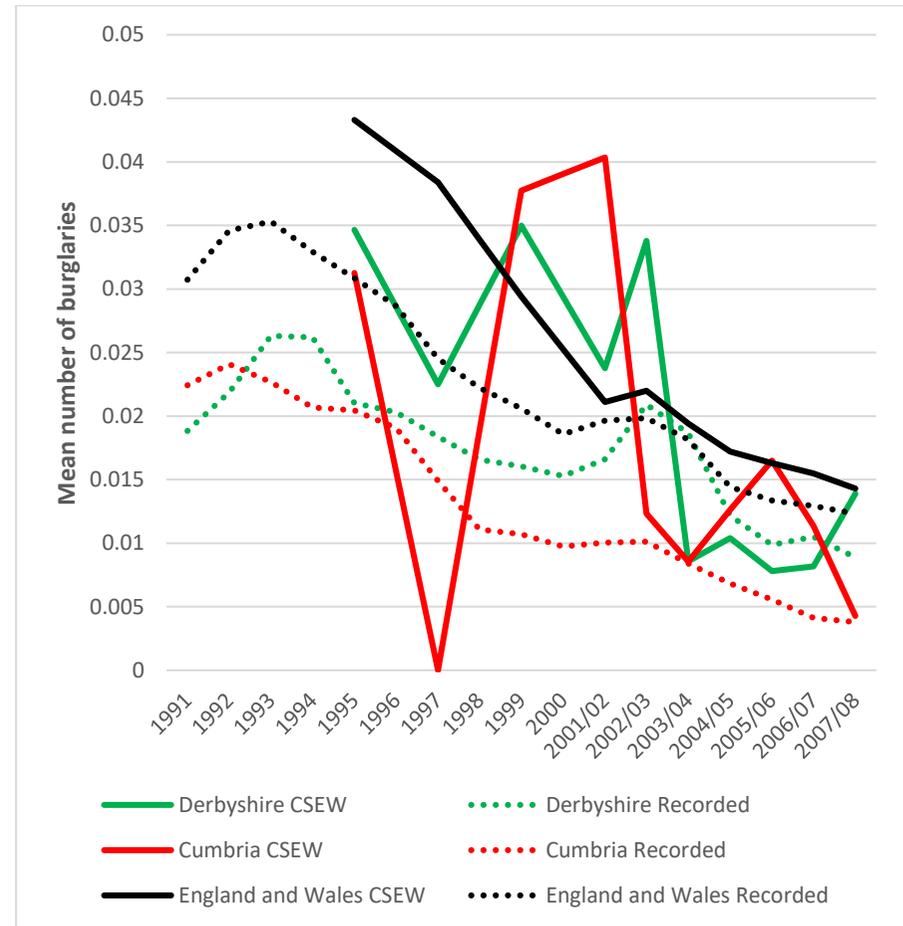
Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.22: Mean number of burglaries in Avon and Somerset and Essex, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.23: Mean number of burglaries in Derbyshire and Cumbria, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

6.3.3.3 The Reducing Burglary Initiative

Chapter 5 identified that the West Midlands received funding for 40 RBI projects with a value of £3,103,787; West Yorkshire for 27 with a value of £4,830,295; and South Yorkshire for 18 with a value of £2,272,851. Figures 6.24 to 6.26 compare trends in both CSEW and PRCD burglaries in these PFAs with the trends in the most similar PFAs to them between 1999 and 2002/03 (see Appendix 5.1, Hypotheses 7-9).

6.3.3.3.1 The West Midlands versus Greater Manchester Police

Whilst the West Midlands received £3,103,787 for 40 RBI projects Greater Manchester received £1,756,933 for 17 RBI projects between 1999 and 2002. Therefore, the percentage change in burglaries would be greater in the West Midlands between 1999 and 2002/03 (Hypothesis 7).

Between 1999 and 2002/03, the decrease in CSEW burglaries in the West Midlands (-25%) was greater than the fall in CSEW burglaries in Greater Manchester (-23%). On the other hand, while PRCD burglaries decreased in the West Midlands (-25%), they increased in Greater Manchester (2%) (see Figure 6.24). Therefore, Hypothesis 7 was accepted according to both data sources.

6.3.3.3.2 West Yorkshire versus Greater Manchester Police

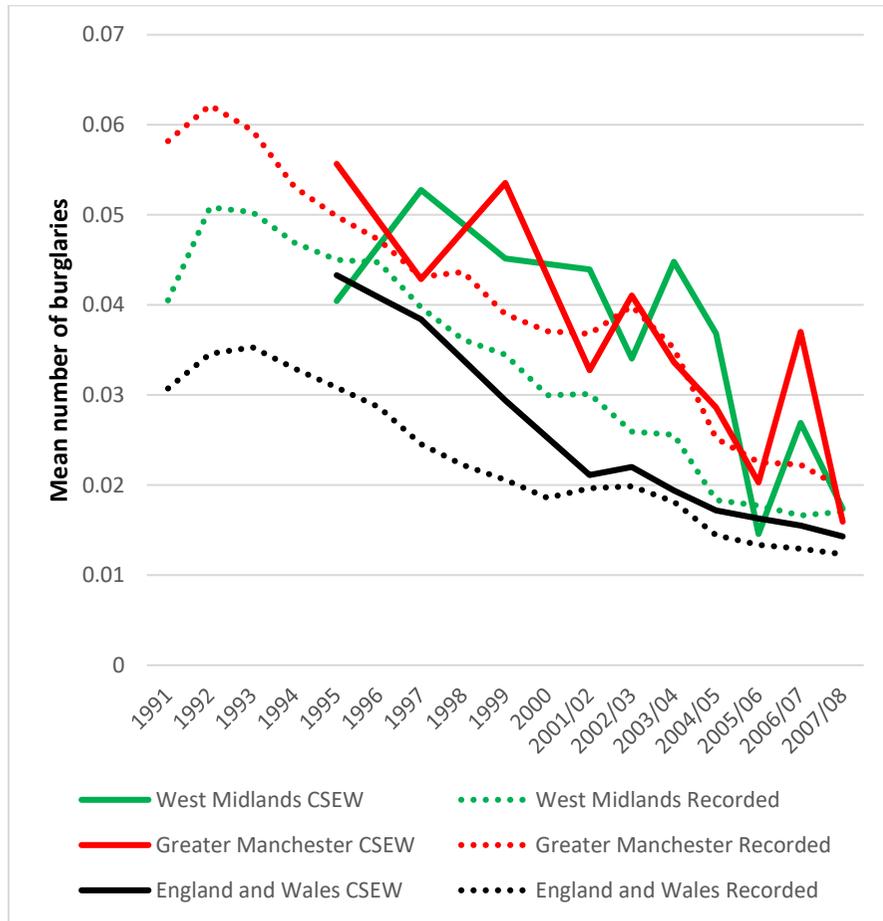
Whilst West Yorkshire received £4,830,295 for 27 RBI projects Greater Manchester received £1,756,933 for 17 RBI projects. Hence, there would be a greater decrease in burglaries in West Yorkshire compared to Greater Manchester between 1999 and 2002/03 (Hypothesis 8).

Between 1999 and 2002/03, the percentage change in CSEW burglaries in West Yorkshire (-44%) was greater than the percentage change in Greater Manchester (-23%). On the other hand, PRCD burglaries increased in both PFAs, but the increase in West Yorkshire (20%) was greater than the increase in Greater Manchester (2%) (see Figure 6.25). Therefore, Hypothesis 8 was accepted according to the CSEW but rejected according to PRCD.

6.3.3.3.3 South Yorkshire versus South Wales Police

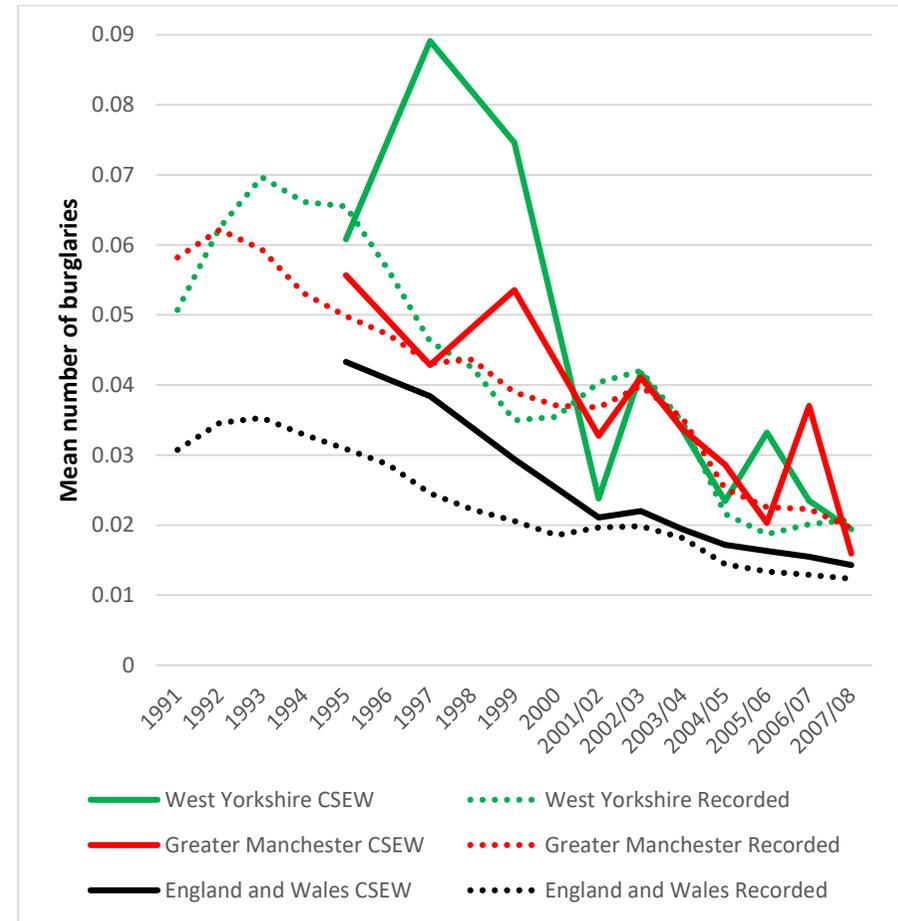
Whilst South Yorkshire received £2,272,851 for 18 RBI projects South Wales received funding for 2 RBI projects valued at £74,400. Therefore, there would be a greater decrease in burglaries in South Yorkshire when compared to South Wales between 1999 and 2002/03 (Hypothesis 9).

Figure 6.24: Mean number of burglaries in the West Midlands and Greater Manchester, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

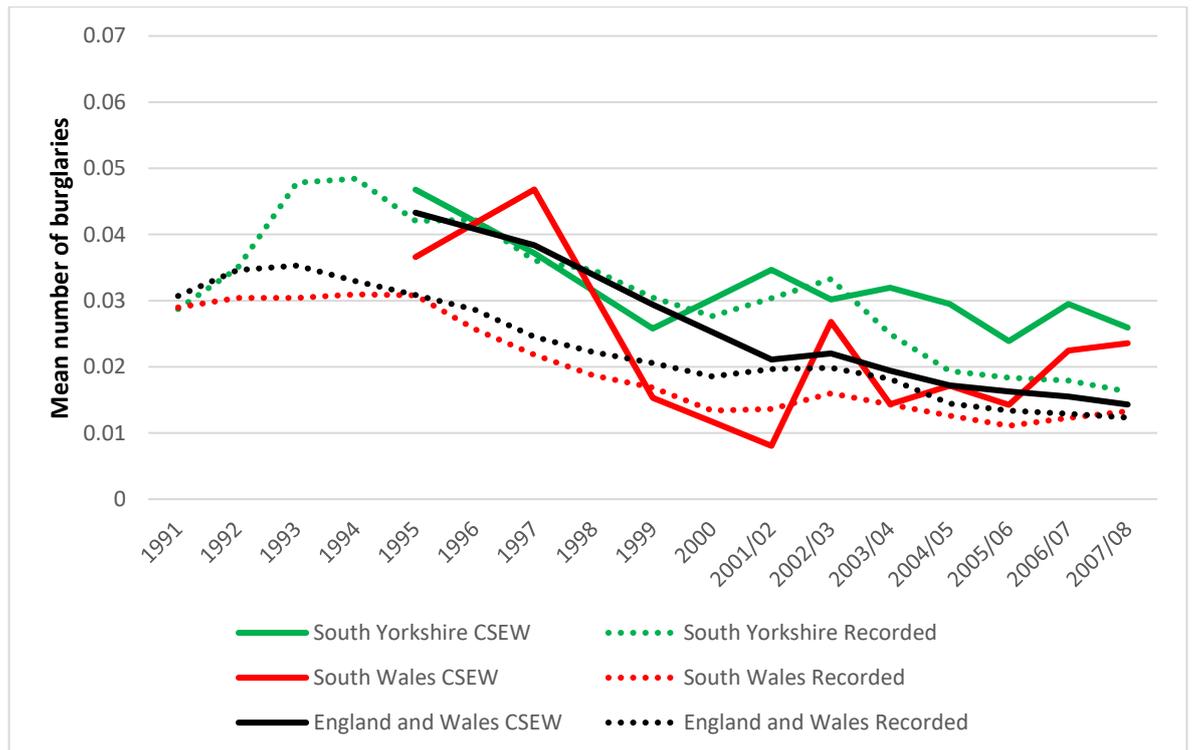
Figure 6.25: Mean number of burglaries in West Yorkshire and Greater Manchester, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

Between 1999 and 2002/03, CSEW burglaries increased in both PFAs. However, the increase in CSEW burglaries in South Yorkshire (17%) was less than that in South Wales (75%). On the other hand, while PRCD burglaries in South Yorkshire increased by 9%, they decreased by 5% in South Wales (see Figure 6.26). Therefore, Hypothesis 9 was accepted according to the CSEW but rejected according to PRCD.

Figure 6.26: Mean number of burglaries in South Yorkshire and South Wales, the CSEW and PRCD, 1991-2007/08



Source: Researcher’s calculations, ONS, 1991-2007/08

Table 6.4 summarises the results in relation to Hypotheses 6 to 9. Hypothesis 6 was accepted in three cases (out of five), according to the CSEW. However, it was rejected in four cases (out of five) according to PRCD. Hypothesis 7 was accepted according to both data sources. Hypotheses 8 and 9 were accepted according to the CSEW but rejected according to PRCD. These results imply that POP might have played a role in the burglary drop (especially according to the CSEW) between 1999 and 2002/03.

Table 6.4: Was there a greater decrease in PFAs that received funding for anti-burglary TPI and RBI projects between 1999 and 2002/03?

Police forces	Hypothesis	Period	Data Source	
			CSEW	PRCD
Greater Manchester versus West Yorkshire	6	1999-2000	Rejected	Accepted
Kent versus Leicestershire	6	1999-2000	Accepted	Rejected
Avon and Somerset versus Essex	6	2000-2001/02	Rejected	Rejected
Derbyshire versus Cumbria	6	2000-2001/02	Accepted	Rejected
West Yorkshire versus Greater Manchester	6	2000-2001/02	Accepted	Rejected
The West Midlands versus Greater Manchester	7	1999-2002/03	Accepted	Accepted
West Yorkshire versus Greater Manchester	8	1999-2002/03	Accepted	Rejected
South Yorkshire versus South Wales	9	1999-2002/03	Accepted	Rejected

6.3.4 Testing hypotheses: the related literature

This section tests Hypothesis 10 (see Appendix 5.1). In other words, Figures 6.27 to 6.29 compare the trends in CSEW and PRCD burglaries in PFAs (which were early implementers of POP and prominently associated with POP), with the trends in the most similar PFAs to them. According to Leigh et al. (1998) and Scott (2000), these PFAs are:

- Cleveland
- Lancashire
- Leicestershire
- Merseyside
- Metropolitan
- Surrey
- Thames Valley.

Hampshire is also one of the police forces prominently associated with POP (Bullock et al., 2006). Trends in burglaries in these PFAs, except for Surrey and Thames Valley, have already been analysed in this chapter. Therefore, this section focuses on Surrey, Thames Valley and Hampshire and the most similar PFAs to them.

6.3.4.1 Surrey versus Dorset Police

“Surrey has a longer history of interest in the tenets of POP than any other force in England and Wales” (Leigh et al., 1996: 5). Dorset introduced POP in 1998 (Dorset Police, 1999). Therefore, there would be a greater decrease in CSEW and PRCD burglaries in Surrey compared to Dorset between 1991 and 1998.

Between 1991 and 1998, the percentage change in PRCD burglaries in Surrey was -43%, while it was -26% in Dorset. Between 1995 and 1998, while CSEW burglaries in Surrey decreased substantially (68%), they increased in Dorset (17%) (see Figure 6.27). Therefore, Hypothesis 10 was accepted according to PRCD between 1991 and 1998 and, according to the CSEW, between 1995 and 1998. However, Hypothesis 10 was rejected according to PRCD between 1995 and 1998 as the decrease in PRCD burglaries was greater in Dorset compared to Surrey (-44% versus -24%, respectively).

6.3.4.2 Thames Valley versus Hampshire Police

Thames Valley started to implement POP in 1992 and was planning to apply it force-wide in 1997 (Leigh et al., 1996). On the other hand, Hampshire introduced POP in 2002 (Bullock et al., 2006). Therefore, the percentage change in burglaries would be greater in Thames Valley between 1992 and 2002/03.

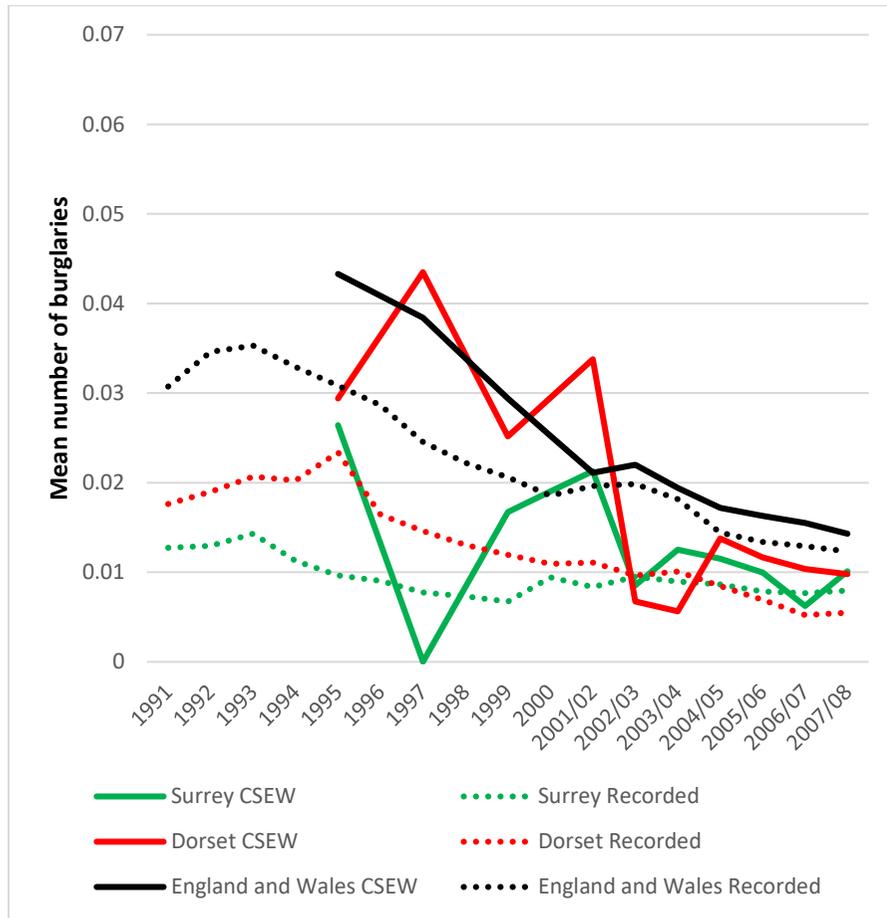
Between 1992 and 2002/03, the percentage change in PRCD burglaries in Hampshire was -60%, while it was -36% in Thames Valley. Between 1995 and 2002/03, the decrease in both CSEW and PRCD burglaries was greater in Hampshire. Therefore, Hypothesis 10 was rejected according to both data sources.

6.3.4.3 Hampshire versus Sussex Police

Hampshire started to implement POP in 2002 and then became one of the most committed police forces to POP in England and Wales (Bullock et al., 2006). Therefore, the percentage change in burglaries would be greater in Hampshire compared to Sussex between 2003/04 and 2007/08.

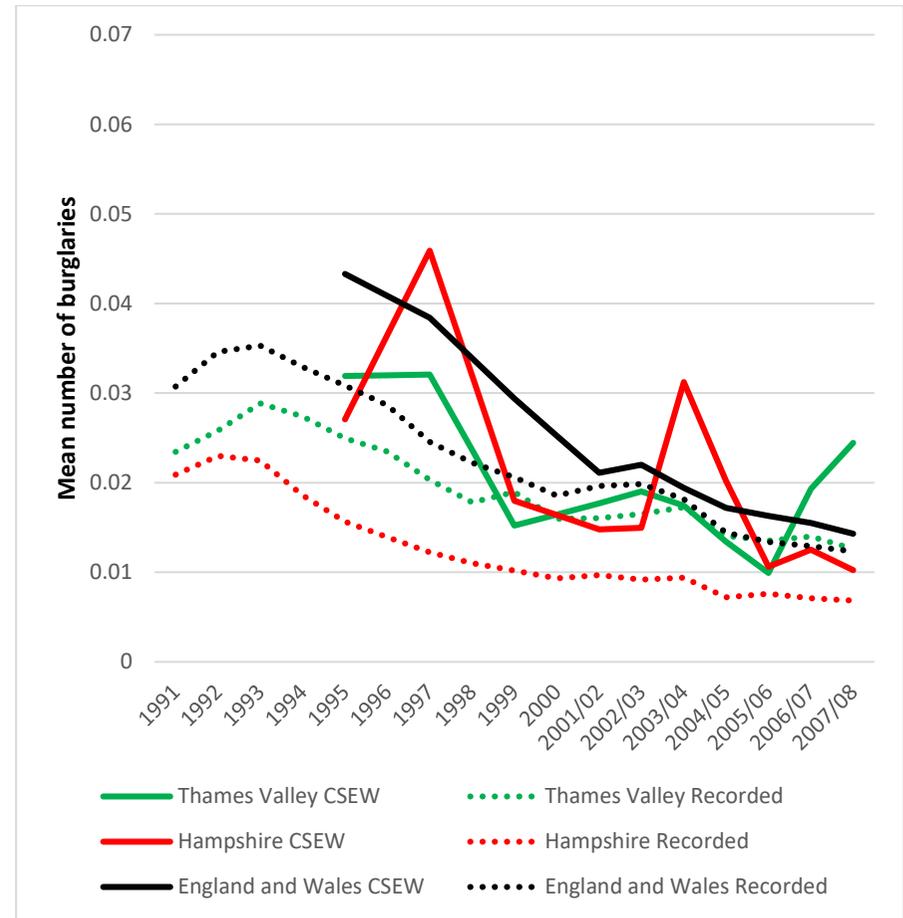
Between 2003/04 and 2007/08, while the percentage change in CSEW burglaries in Hampshire was -67%, it was -42% in Sussex. On the contrary, the percentage change in PRCD burglaries in Sussex (-48%) was much greater than the percentage change in Hampshire (-27%). Therefore, Hypothesis 10 was accepted according to the CSEW but rejected according to PRCD between 2003/04 and 2007/08.

Figure 6.27: Mean number of burglaries in Surrey and Dorset, the CSEW and PRCD, 1991-2007/08



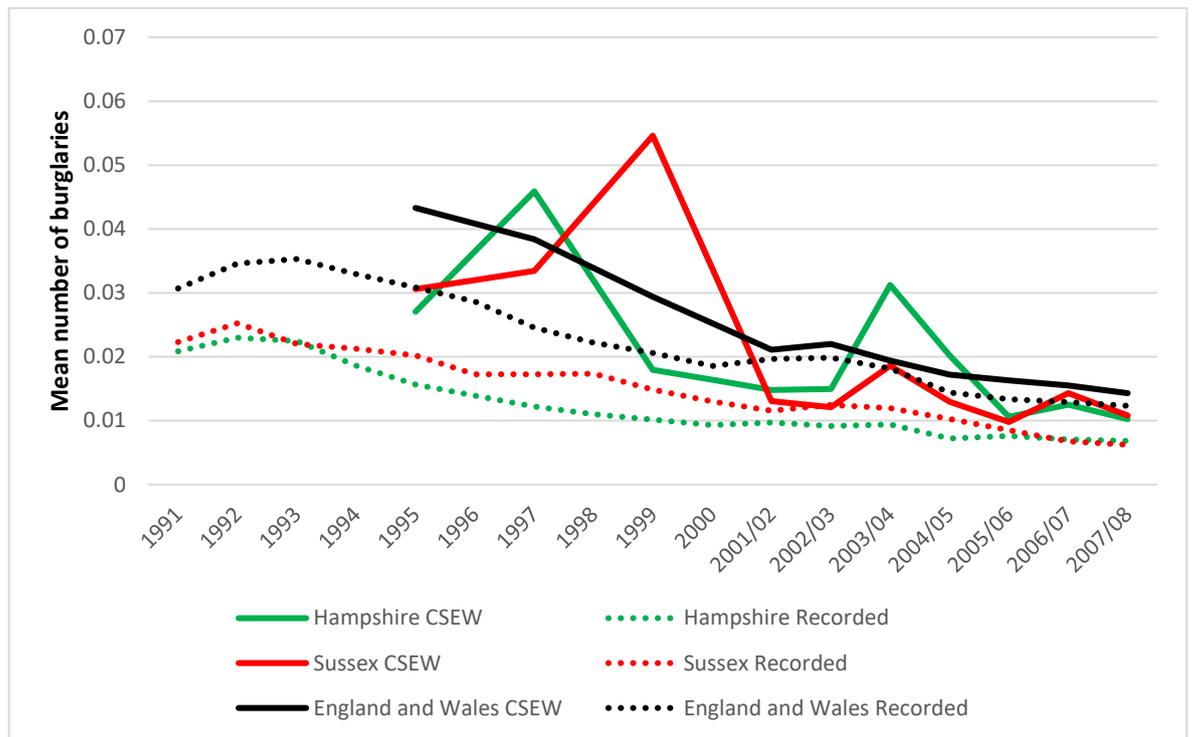
Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.28: Mean number of burglaries in Thames Valley and Hampshire, the CSEW and PRCD, 1991-2007/08



Source: Researcher's calculations, ONS, 1991-2007/08

Figure 6.29: Mean number of burglaries in Hampshire and Sussex, the CSEW and PRCD, 1991-2007/08



Source: Researcher’s calculations, ONS, 1991-2007/08

Table 6.5 summarises the results in relation to Hypothesis 10. It suggests that Hypothesis 10 was accepted in two cases according to the CSEW but rejected in most cases according to PRCD.

Table 6.5: Did being an early implementer of POP matter?

Police forces	Period	Data Source	
		CSEW	PRCD
Surrey versus Dorset	1991-1998	N/A	Accepted
Surrey versus Dorset	1995-1998	Accepted	Rejected
Thames Valley versus Hampshire	1992-2002/03	N/A	Rejected
Thames Valley versus Hampshire	1995-2002/03	Rejected	Rejected
Hampshire versus Sussex	2003/04-2007/08	Accepted	Rejected

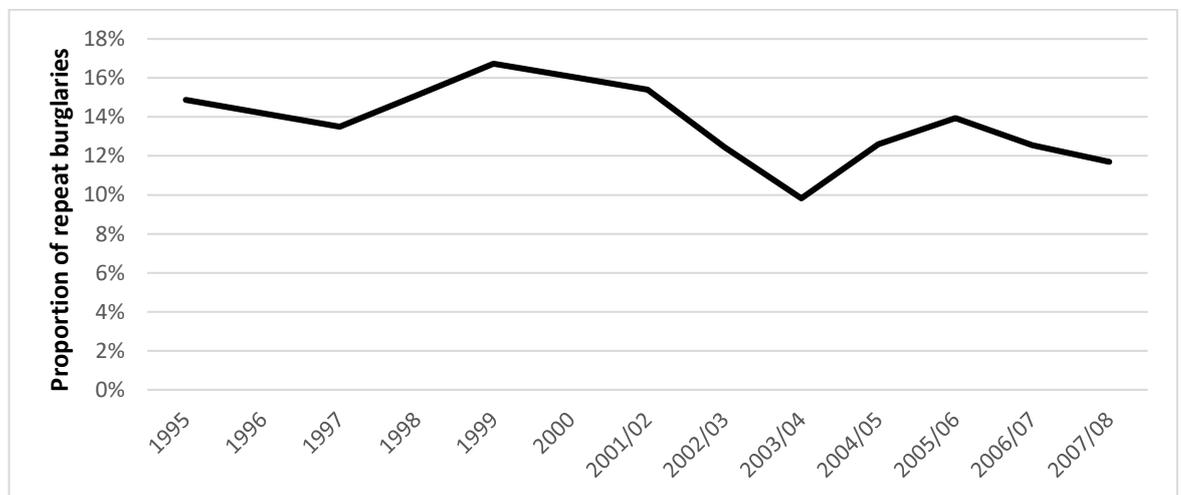
6.3.5 Testing hypotheses: repeat victimisation

POP suggests that targeting repeat victimisation should be one of the core aims of policing to reduce crime rates (Goldstein, 1990) since “it provides useful information about where and when to go, and what to do, to prevent crimes” (Grove et al., 2012: 11; see also Sampson,

2003). Importantly, repeat victimisation was one of the police performance indicators in the UK in the mid-1990s (Farrell et al., 2000; Laycock, 2000). “By 1998, all forces claimed to be able to identify some repeat victims, and all forces claimed an ability to identify repeat victims of domestic burglary (except for the City of London Police where commercial burglary was a higher priority)” (Laycock, 2000: 20). This section tests Hypotheses 11 and 12 (see Appendix 5.1).

Figure 6.30 presents the trend in the proportion of repeat burglary victimisations (henceforth repeat burglaries) at the national level (England and Wales) from 1995 to 2007/08 (see Chapter 4, Section 4.9.2 for the calculation). It suggests that repeat burglaries at the national level fluctuated but decreased by 4% between 1995 and 2007/08. Therefore, Hypothesis 11 was accepted at the national level. The sharpest drop in repeat burglaries (-8%) was experienced between 1999 and 2003/04, which might suggest a tenuous link with POP as targeting repeat victims was a police performance indicator across the country during that period (Tilley, 2002). However, the reason for the increase between 2003/04 and 2005/06 is unknown.

Figure 6.30: Proportion of repeat burglaries in England and Wales, the CSEW, 1995-2007/08



Source: Researcher’s calculations, ONS, 1996-2007/08

The remainder of this section compares trends in repeat burglaries⁵³ in Leicestershire, Surrey, Thames Valley and West Yorkshire (early implementers of POP in the UK) with trends in the most similar PFAs to them to test Hypotheses 11 and 12.

⁵³ See Appendix 6.1 for the CSEW sample size (adults, unweighted) and the proportion of all burglary victims who suffered more than one burglary in the reference period in PFAs (weighted) from 1995 to 2007/08.

6.3.5.1 Leicestershire versus Kent Police

Leicestershire introduced POP in 1995 (Leigh et al., 1996) and became one of the POP-committed police forces in the UK (Scott, 2000). Kent had been applying ILP since the mid-1990s (Maguire, 2004).

Repeat burglaries in Leicestershire decreased by 13% between 1995 and 2003/04 and by 4% between 1995 and 2007/08. Therefore, Hypothesis 11 was accepted for Leicestershire. In relation to Hypothesis 12, while repeat burglaries in Kent decreased by 24%, they fell by 13% in Leicestershire between 1995 and 2003/04. Therefore, Hypothesis 12 was rejected between 1995 and 2003/04.

6.3.5.2 Surrey versus Dorset Police

Surrey's interest in POP started in 1982, and indeed Surrey was the only police force implementing POP on a large scale in 1996 (Leigh et al., 1996). Dorset introduced POP in 1998 (Dorset Police, 1999). Therefore, the percentage change in repeat burglaries would be greater in Surrey than Dorset.

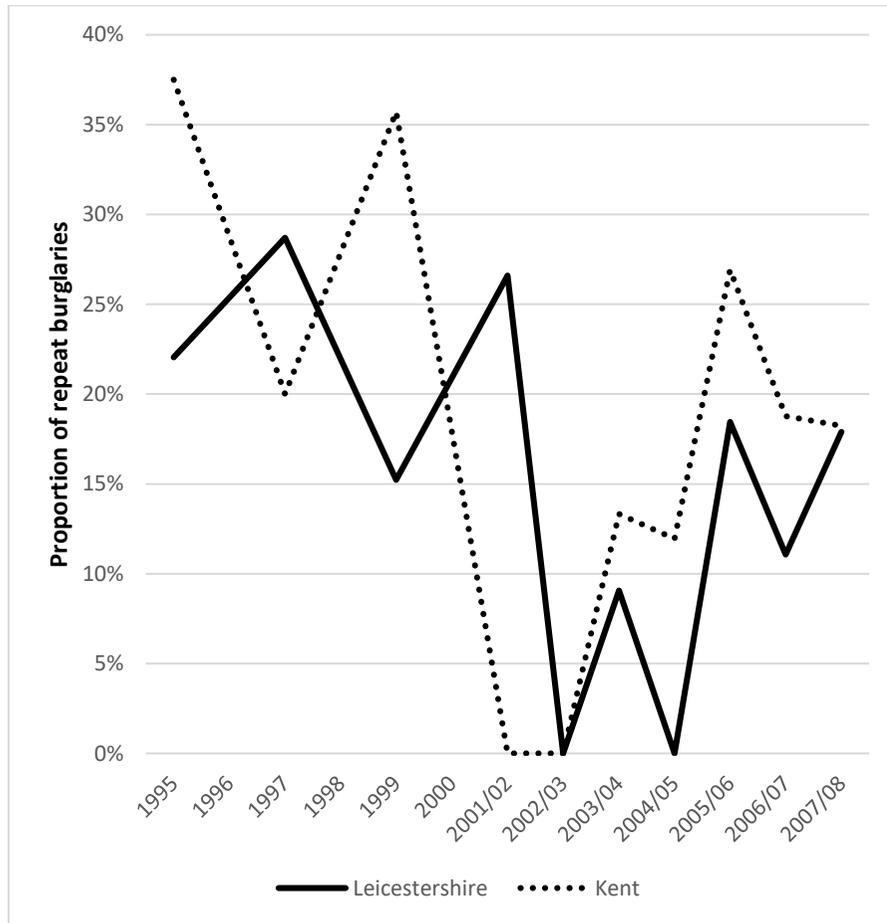
Hypothesis 11 was accepted for Surrey as the proportion of repeat burglaries was zero in both 1995 and 2007/08. Concerning Hypothesis 12, Surrey saw an increase in repeat burglaries between 1997 and 1999. Following that, repeat burglaries continuously decreased until 2007/08 (except for a slight increase between 2001/02 and 2002/03). In Dorset, repeat burglaries substantially increased between 1997 and 2002/03 and subsequently fluctuated between 2002/03 and 2007/08. In 2007/08, while the proportion of repeat burglaries in Dorset was 15%, it was zero in Surrey. Therefore, Hypothesis 12 was accepted.

6.3.5.3 Thames Valley versus Hampshire Police

Thames Valley started to implement POP in 1992 and was planning to apply it force-wide in 1997 (Leigh et al., 1996). Hampshire introduced POP in 2002 (Bullock et al., 2006). Therefore, the percentage change in repeat burglaries would be greater in Thames Valley compared to Hampshire, especially between 1995 and 2002/03.

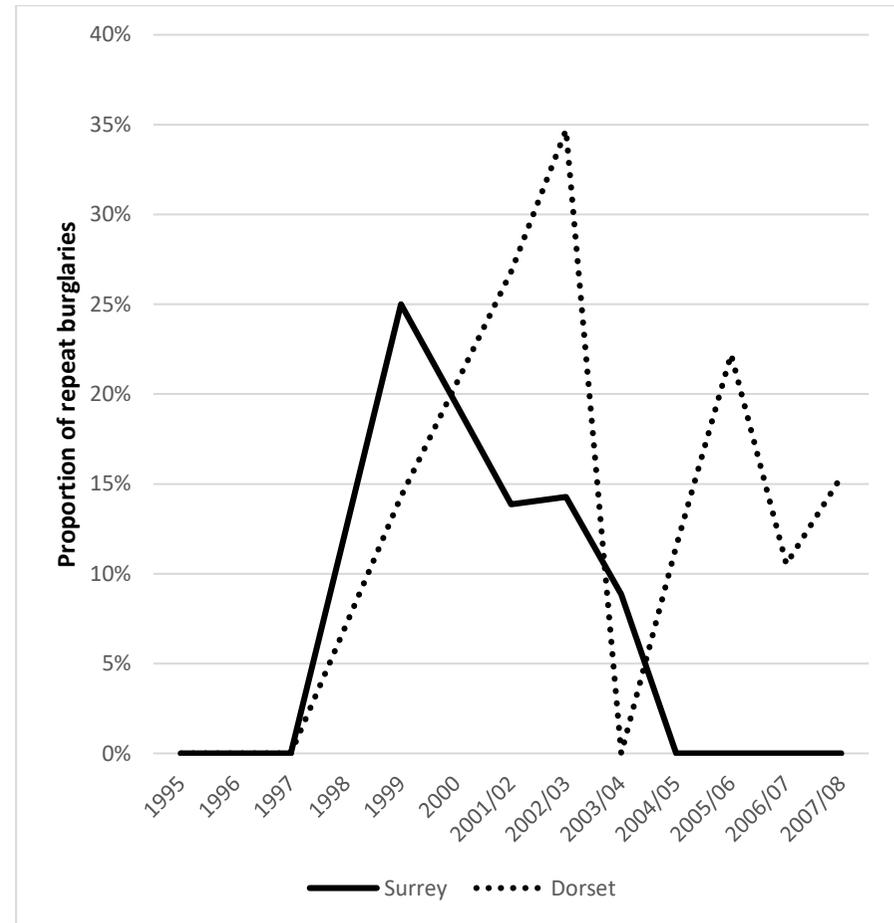
Hypothesis 11 was accepted for Thames Valley as the proportion of repeat burglaries went down from 13% to 4% between 1995 and 2007/08. Hypothesis 11 was also accepted for Hampshire as repeat burglaries dropped substantially just one year after Hampshire introduced POP.

Figure 6.31: Proportion of repeat burglaries in Leicestershire and Kent, the CSEW, 1995-2007/08



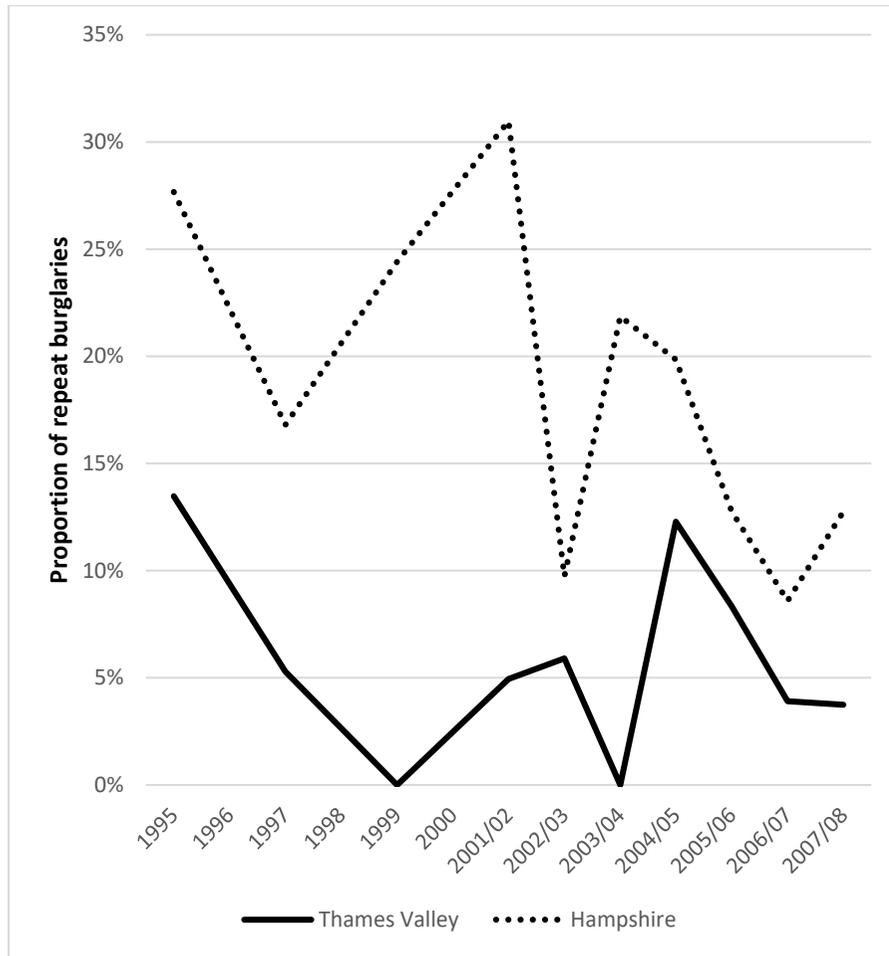
Source: Researcher's calculations, ONS, 1996-2007/08

Figure 6.32: Proportion of repeat burglaries in Surrey and Dorset, the CSEW, 1995-2007/08



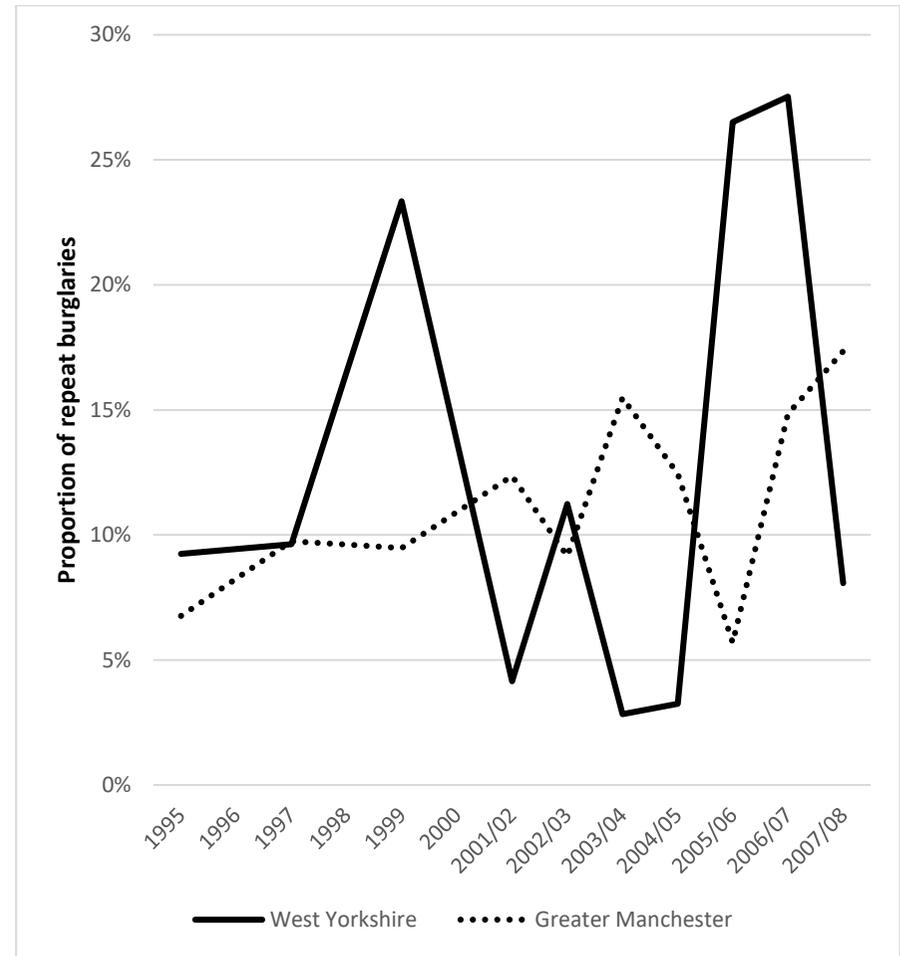
Source: Researcher's calculations, ONS, 1996-2007/08

Figure 6.33: Proportion of repeat burglaries in Thames Valley and Hampshire, the CSEW, 1995-2007/08



Source: Researcher's calculations, ONS, 1996-2007/08

Figure 6.34: Proportion of repeat burglaries in West Yorkshire and Greater Manchester, the CSEW, 1995-2007/08



Source: Researcher's calculations, ONS, 1996-2007/08

In relation to Hypothesis 12, the decrease in repeat burglaries in Hampshire (-18%) was greater than the decrease in Thames Valley (-8%) between 1995 and 2002/03. However, the number of repeat burglaries in Thames Valley was always lower over the same period. Therefore, Hypothesis 12 was accepted between 1995 and 2002/03. In addition, after Hampshire introduced POP in 2002, repeat burglaries decreased substantially between 2003/04 and 2006/07.

6.3.5.4 West Yorkshire versus Greater Manchester Police

West Yorkshire introduced POP in 1994 (Leigh et al., 1996). In addition, an important burglary reduction programme, which specifically targeted repeat burglaries, ran from October 1994 to March 1996 in West Yorkshire (Chenery et al., 1997). Greater Manchester started to apply POP in the early 2000s (Bullock et al., 2006).

Hypothesis 11 was accepted for West Yorkshire as repeat burglaries dropped from 9% to 8% between 1995 and 2007/08. However, it was rejected for Greater Manchester as repeat burglaries fluctuated after 2000 and the proportion of repeat burglaries was 17% in 2007/08.

A tenuous relationship between POP and the decrease in repeat burglaries in West Yorkshire was likely. While repeat burglaries decreased in West Yorkshire (-6%) they increased by 9% in Greater Manchester between 1995 and 2003/04. Therefore, Hypothesis 12 was accepted between 1995 and 2003/04.

Tables 6.6 and 6.7 summarise the results in relation to Hypotheses 11 and 12. Hypothesis 11 was accepted in all cases. Hypothesis 12 was accepted in three cases (out of four). Overall, it seemed there was a tenuous relationship between POP and the decrease in repeat burglaries in PFAs where POP started to be implemented earlier than others.

Table 6.6: Was there a gradual decrease in repeat burglaries at the national and PFA levels between 1995 and 2007/08?

Police Force	The CSEW
England and Wales	Accepted
Leicestershire	Accepted
Surrey	Accepted
Thames Valley	Accepted
Hampshire	Accepted
West Yorkshire	Accepted

Table 6.7: Was there a greater decrease in repeat burglaries in PFAs that were early implementers of POP?

Police Force	Period	The CSEW
Leicestershire versus Kent	1998-2003/04	Rejected
Surrey versus Dorset	1997-2007/08	Accepted
Thames Valley versus Hampshire	1995-2002/03	Accepted
West Yorkshire versus Greater Manchester	1995-2003/04	Accepted

6.4 Chapter summary

This chapter firstly reviewed the trends in burglaries at the national level and briefly discussed whether there was a relationship between POP and the burglary drop at the national level. Following that, it explored the same relationship at the PFA level testing the hypotheses proposed in Chapter 5 along with two additional hypotheses regarding repeat victimisation. The results were mixed depending on the data sources used and period analysed. However, the researcher suggested that there seemed to be a tenuous relationship between the implementation of POP and the fall in both CSEW and PRCD burglaries as the hypotheses were accepted in most of the cases considered. For example, Hypothesis 1.1 (Lancashire versus its most similar PFAs) was accepted according to both the CSEW and PRCD between 2002/03 and 2007/08 when the implementation of POP in Lancashire was more developed (Bullock et al., 2006). Similarly, Hypotheses 1.2-1.6 were accepted in most cases (see Table 6.1).

The chapter also compared trends in repeat burglaries in PFAs, which were acknowledged to be early implementers of POP in the UK (Leigh et al., 1996; Scott, 2000) with trends in the most similar PFAs to them. The results suggested that there appeared to be a relationship between POP and the drop in repeat burglaries in POP-committed PFAs between 1995 and 2007/08.

The empirical analysis presented in this chapter represents an initial exploration of the relationship between the level of POP commitment and burglary levels at the PFA level in England and Wales. However, there is a whole set of factors that may explain burglary trends. In this respect, Chapter 7 will analyse whether POP had a statistically significant effect on burglaries (also controlling for characteristics of households and PFAs and the number of police force officers per 1000 residents in a PFA) in England and Wales between 1995 and 2003/04.

CHAPTER 7

DID POP HAVE A STATISTICALLY SIGNIFICANT EFFECT ON BURGLARIES?

7.1 Introduction

Chapter 6 was an initial attempt to examine the extent to which POP played a role in the burglary drop at the PFA level in England and Wales or otherwise. For fair and meaningful comparisons between police forces, it used the most similar PFA groups (HMICFRS, 2017), comparing their respective CSEW and PRCD burglaries to test a number of hypotheses proposed in Chapter 5. However, it did not check whether POP had a statistically significant effect on burglaries over time. This chapter, therefore, goes one step further and thoroughly examines whether POP had a statistically significant effect on burglary rates between 1995 and 2003/04.

The structure of the chapter is as follows. Descriptive statistics regarding the characteristics of households and PFAs for 1997 and 2003/04, separately, are first presented and interpreted. Secondly, it conducts a principal component analysis (PCA) to reduce a set of continuous structural control variables at the PFA level into a few components to eliminate the multicollinearity problem amongst them for 1997 and 2003/04, separately. Thirdly, it applies multilevel negative binomial regression to identify the effects of POP on the mean number of burglary victimisations whilst controlling for the characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA in 1997 and 2003/04, separately. It also tests bivariate correlations between POP and the mean number of burglaries from 1995 to 2003/04. Finally, results from multilevel negative binomial modelling and Pearson correlation analysis are presented.

7.2 Descriptive statistics

Table 7.1 presents the descriptive statistics of the characteristics of households and PFAs that entered the statistical models in this chapter. In other words, these are the burglary risk and protective factors that were identified drawing upon routine activity and social disorganisation theories (see Chapter 4, Section 4.8). Except for age (continuous) and lone-parent (dichotomous) variables, all household-level variables had dummy variables with one category selected as the base category (base categories are in brackets). ‘Do not know’ and ‘refused’ responses were excluded from the analysis except for income.

Table 7.1: Descriptive statistics of characteristics of households and PFAs, 1997 and 2003/04

<i>Household characteristics</i>	1998	2003/04
	Mean (SD)	Mean (SD)
<i>Age of head of household</i>	50.9 (17.4)	52.09 (17.0)
	%	%
<i>Ethnicity (White)</i>	93.5	94.2
Black	2.5	2.5
Asian	2.3	1.8
Other ethnicities	1.7	1.5
<i>Number of adults (2 Adults)</i>	51.7	52.8
One adult	33.0	32.2
Three or more adults	15.3	15.0
<i>Number of children (No Children)</i>	69.6	71.9
One or more children	30.4	28.1
<i>Lone parent</i>	6.1	5.5
<i>Tenure (Owner)</i>	64.7	72.0
Social renting	24.5	18.7
Private renting	10.8	9.3
<i>Income (£10,000-£29,999)</i>	41.7	32.7
Under £5,000	16.1	7.5
Between £5,000 and £9,999	18.2	13.1
Over £30,000	16.8	25.4
No response	7.3	21.2
<i>Social class of head of household (Professional)</i>	32.1	35.8
Intermediate Occupations	43.0	18.1
Routine Occupations	20.9	39.3
Never Worked/Not Classified	3.9	6.8
<i>Number of cars (2 Cars)</i>	22.5	26.9
No car	27.7	23.0
One car	45.3	43.0
Three or more cars	4.5	7.0
<i>Type of accommodation (Detached)</i>	19.4	24.5
Semi-detached house	32	32.8
Terraced house	30.7	26.8
Flat or maisonette or other	17.9	11.8
Not coded	N/A	4.1
<i>House Empty During Day (More Than 7 Hours)</i>	42.4	42.7
Less than 3 hours	30.5	30.8
Between 3 and 7 hours	27.1	26.6
<i>Length of Residence (More than 10 years)</i>	47.5	48.4
Less than 2 years	18.8	16.5
2-5 years	17.1	18.4
5-10 years	16.6	16.7

Table 7.1: Descriptive statistics of characteristics of households and PFAs, 1997 and 2003/04 (continued)

Household Characteristics	1998	2003/04
	%	%
<i>Type of Area (Rural)</i>	21.2	25.2
Inner city	23.7	8.9
Urban	55.1	65.8
<i>Police Force Area Characteristics (Census)</i>	%	%
% Renting privately	7.5	8.3
% Renting from a housing association	3.3	5.7
% Renting from a local authority	20.4	12.9
% Single adult non-pensioner households	11.8	15.1
% Ethnic diversity	6.4	7.1
% People aged between 16 and 24	12.8	10.7
% Movers	9.7	12.0
% Lone parent households	3.8	6.3
% Households without a car	33.3	25.8
% Owner households	66.9	69.8
% Professional head of households	23.1	26.5
Population density	12.7	9.7
Mean number of people per room	0.5	0.4
Number of police officers per 1000 residents	2.2	2.3
	%	%
<i>Level of commitment to POP (no-commitment)</i>	34.9	2.3
Low commitment	36.0	24.4
Mid commitment	18.7	34.4
High commitment	10.5	38.9
<i>Region (South East)</i>	18.7	18.5
North	7.2	8.4
Yorkshire and Humberside	10.2	9.0
North West	11.6	10.7
East Midlands	7.8	9.7
West Midlands	10.4	9.9
East Anglia	4.3	6.1
South West	8.6	10.6
Wales	5.3	8.0
Greater London	15.9	9.0
Final Sample Size (Raw Number)	14,678	37,550

This is because the households that did not respond to the income question constituted a substantial number of the total responses. Particularly, it was high in 2003/04 (21.2%), which may have affected the results of the analysis. The total number of cases (after dropping missing cases) was presented in the last row of the table. An important point to note is that there was a six-year gap between the data sources used for 1997. That is, while variables at the household level came from the 1998 CSEW sweep, characteristics of PFAs came from the 1991 UK Census for 1997. The reader should bear in mind that this would reduce the magnitude of the relationship between victimisation and area (not household) characteristics (Tseloni and Pease, 2015). However, the gap between the data sources used for 2003/04 was reasonable (the 2003/04 CSEW sweep and the 2001 UK Census) compared to the gap between the 1998 CSEW and the 1991 UK Census.

Descriptive statistics regarding the demographic and socio-economic characteristics of the households that entered the statistical models changed from 1997 to 2003/04. The mean age of the Head of Household (HOH) increased slightly from around 51 in 1997 to 52 in 2003/04. Regarding ethnicity, the proportion of Black HOH in an area was the same (2.5%) in both 1997 and 2003/04. The percentage of Asian HOH decreased from 2.3% to 1.8%. Likewise, the proportion of HOH from other ethnic backgrounds slightly declined from 1.7% to 1.5%. The percentage of households with one adult and three or more adults dropped (from 33.0% to 32.2%, and from 15.3% to 15.0%, respectively). By contrast, the proportion of households with two adults increased from 51.7% to 52.8%. The percentage of households with children also decreased from 30.4% to 28.1%. The proportion of households with lone parents fell slightly from 6.1% to 5.5%. Both the proportion of social and private rented households declined (from 24.5% to 18.7%; from 10.8% to 9.3%, respectively). While the number of households with an income less than £5,000, between £5,000 and £ 9,999, and between £10,000 and £29,999 each decreased substantially, the percentage of respondents with a household income of over £30,000 increased from 16.8% to 25.4%. These figures indicated that household income increased between 1997 and 2003/04. However, the steep rise in the proportion of respondents who did not answer the income question should be borne in mind. The increase in household income was in line with the increase in the percentage of households (a) with a professional head (from 32.1% to 35.8%), and (b) with two or more cars (from 22.5% to 26.9%). However, the proportion of HOH with an intermediate occupation decreased dramatically from 43% to 18.1%, which seemed to be due to the increase in the proportion of HOH with a routine or manual occupation from 20.9% to 39.3%.

The proportion of detached and semi-detached households increased (from 19.4% to 24.5%, and from 32.0% to 32.8%, respectively). However, the percentage of terraced households and flats decreased (from 30.7% to 26.8%, and from 17.9% to 11.8%, respectively).

These changes in the demographic and socio-economic characteristics of households might have affected the burglary drop that occurred in England and Wales between 1997 and 2003/04. This is because, some of these characteristics *attract* motivated offenders in the absence of *guardians*, and some indicate *accessibility*, where perpetrators are able to easily commit crimes against those properties. In addition, some turn properties into *desirable/attractive* targets in the eyes of potential offenders. Finally, proximity to potential offenders is also an important risk factor in becoming a victim of burglary (see Chapter 4, Section 4.8).

An ageing population may proxy guardianship and may reduce burglaries since older people tend to stay in their homes more compared to young people (Tseloni et al., 2002); hence, burglars are deterred. In addition, households with three or more adults can protect them more effectively when compared to households with only one adult. Furthermore, households with children are at lower risk of burglary victimisation (Osborn et al., 1992). However, the increase in the mean sample age from 1997 to 2003/04 was slight, and the proportion of households with three or more adults decreased marginally. The percentage of households with children also fell from 30.4% to 28.1%. Therefore, it is unlikely that these attributes played a significant role in the burglary drop between 1997 and 2003/04.

In addition to the characteristics discussed above, house occupancy and length of residence in an area proxy social guardianship (Tseloni, 2006). That is, properties are at reduced risk of burglary victimisation when they are occupied more. In addition, the longer individuals live in the same area the more they are safe, which is due to community stability. The descriptive statistics of the 'house empty during daytime' variable showed that there was no significant change from 1997 to 2003/04. The proportion of the dummy variables in relation to the 'length of residence in an area' variable did not change dramatically either. Therefore, it is also unlikely that these variables affected the burglary drop between 1997 and 2003/04.

Type of accommodation is a proxy of *accessibility*, which is associated with household crimes (Bennet and Wright, 1984). To give an example, a burglar might access a property in an inner city much more easily than a property in a rural area. Descriptive statistics regarding the changes in the proportion of accommodation types may explain part of the burglary drop

because while the proportion of detached and semi-detached households increased, the percentage of terraced households and flats decreased, which are at more risk than a detached or semi-detached building (Tseloni, 2006).

One of the risk factors associated with burglary victimisation is *desirability*. Annual household income, which is also related to social class, tenure, and number of cars, indicate desirability. As noted above, the proportion of owner households, households with an income of over £30,000, households with a professional head, and households with two or more cars all increased considerably. By contrast, the proportion of social and private rented households decreased. It can be therefore argued that properties became more desirable and attractive in the eyes of motivated offenders. Therefore, the changes in these factors may have affected the burglary rates from 1997 to 2003/04.

Type of area also determines individuals' exposure to crime as it refers to *proximity* to potential offenders (Meier and Miethe, 1993). Individuals living in inner city areas are most at risk compared to those living in rural areas since offenders tend to commit their crimes in places close to where they live (Townsend and Sidebottom, 2010). Table 7.1 demonstrates that the percentage of households living in rural areas increased from 21.2% to 25.2%. By contrast, the proportion of households living in inner city areas decreased dramatically, while the percentage of households living in urban areas increased substantially. These results show that although the proportion of households living in inner city areas fell dramatically, individuals were at high risk of burglary victimisation in 2003/04 due to living in urban areas that potential offenders could also reach easily (Wiles and Costello, 2000). Consequently, the change in this variable is not likely to be a key driver of the burglary drop. The descriptive statistics of characteristics of areas showed the same pattern with the characteristics of households by and large. All of the inferences made here were tested in detail through multilevel negative binomial regression modelling later in the chapter.

7.3 Principal component analysis

Before conducting a multilevel negative binomial regression analysis, the correlation between continuous structural control variables at the PFA level was checked. It was observed that there was multicollinearity between them (see Appendices 7.1 and 7.2). Therefore, a PCA was conducted to eliminate the multicollinearity problem by reducing those variables down to a few components (Tabachnick and Fidell, 2013).

Table 7.2: KMO and Bartlett's test (1), 1997

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.738
Bartlett's Test of Sphericity	Approx. Chi-Square	384490.060
	df	78
	Sig.	.000

Table 7.3: Component matrix (1), 1997

	Component	
	1	2
Population density	.940	
Owner households	-.926	
Mean number of people per room	.899	
Lone parent households	.891	
Single adult non-pensioner households	.870	
Renting from a housing association	.864	
Households without a car	.850	
Ethnic diversity	.819	
Renting from a local authority	.723	-.559
People aged between 16 and 24	.675	
Professional head of households		.891
Movers		.885
Renting privately		.750

Table 7.4: KMO and Bartlett's test (2), 1997

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.744
Bartlett's Test of Sphericity	Approx. Chi-Square	309728.372
	df	66
	Sig.	.000

Table 7.5: Component matrix (2), 1997

	Component	
	1	2
Population density	.942	
Owner households	-.907	
Lone parent households	.902	
Mean number of people per room	.896	
Renting from a housing association	.875	
Single adult non-pensioner households	.869	
Households without a car	.853	
Ethnic diversity	.821	
People aged between 16 and 24	.669	
Movers		.906
Professional head of households		.904
Renting privately		.734

7.3.1 Principal component analysis, 1997

To select and measure a set of variables as the first step, outliers on continuous structural control variables at the PFA level were checked. It was observed that there were two variables which had outliers: (1) the percentage of black people, and (2) the percentage of people from other ethnic backgrounds (Chinese, Mixed, and Others). Therefore, they were excluded from the analysis, along with the percentage of Asian people variable. However, ethnicity is an important factor to be tested in an analysis. Therefore, a new variable (ethnic diversity) was added to the analysis. This variable consisted of all ethnic backgrounds (Black, Asian, and Others) in an area, and had no outliers.

Having decided which variables would enter the PCA, the factorability of the dataset was assessed. The first important criterion for this was the sample size. According to Tabachnick and Fidell (2013), 300 or more cases provide a good sample size for a PCA. Data for the 1997 analysis were available from 14,678 respondents. Therefore, the first criterion was met satisfactorily. Secondly, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity (BTS) were employed (see Table 7.2). Although the value of the KMO was greater than 0.6, which was an indicator of good analysis, and Bartlett's Test of Sphericity was significant, the researcher did not use these results. This was because the percentage of households renting from a local authority variable loaded on both components at the 0.5-level (see Table 7.3). Therefore, it was excluded from the PCA (Laveist et al., 2009) but was kept for multilevel negative binomial regression (as a separate variable at the PFA level). After that, the analysis was carried out again. Table 7.4 demonstrates that the dataset was factorable (KMO = 0.744; BTS < 0.005) and no variables loaded on both components at the 0.5-level (see Table 7.5).

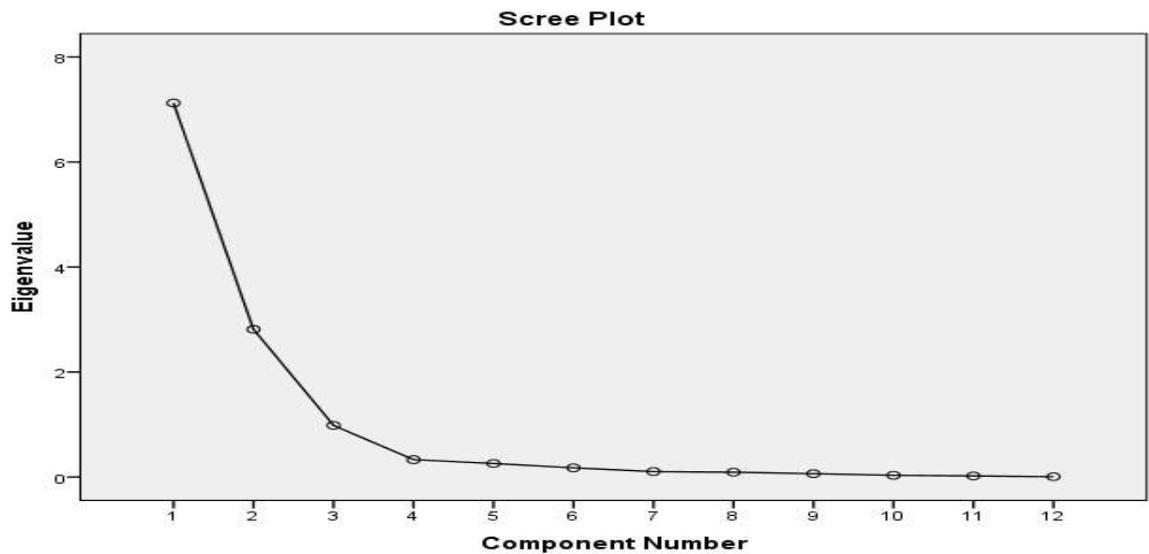
7.3.1.1 Extracting components

After selecting and measuring a set of variables and preparing the correlation matrix, the next step was to extract components. There are three main criteria to extract components: (1) the Eigenvalue rule, (2) Catell's scree test (scree plot), and (3) cumulative variance. According to the Eigenvalue rule, all components with an Eigenvalue under 1 are dropped. According to Catell's scree test, components above the point where the curve makes an elbow are retained. Cumulative variance proposes that total cumulative variance should be at least 70%. Using these three criteria, two components were extracted for 1997. Hence, the selection of two components in 1997 was supported (see Table 7.6 and Figure 7.1).

Table 7.6: Eigenvalues and total variance explained, 1997

Component	Total Variance Explained								
	Initial Eigenvalues			Loadings			Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.124	59.366	59.366	7.124	59.366	59.366	6.937	57.809	57.809
2	2.813	23.440	82.806	2.813	23.440	82.806	3.000	24.997	82.806
3	0.983	8.191	90.997						
4	0.331	2.755	93.753						
5	0.258	2.147	95.899						
6	0.175	1.461	97.360						
7	0.103	0.862	98.222						
8	0.091	0.762	98.984						
9	0.063	0.528	99.512						
10	0.033	0.272	99.784						
11	0.020	0.167	99.951						
12	0.006	0.049	100.000						

Figure 7.1: Scree plot showing the number of components extracted, 1997



7.3.1.2 Rotating components

The next step was to rotate the components to increase their interpretability. There are two types of rotation: (a) orthogonal, and (b) oblique. While orthogonal rotation assumes that components are not correlated, oblique rotation assumes such a correlation. The orthogonal rotation was utilised to obtain dimensions that were independent of each other. Three different orthogonal rotation techniques are available in SPSS. These techniques slightly differ as Tabachnick and Fidell (2001: 595-614) explains:

The goal of the varimax rotation is to maximise the variance of factor loadings by making high loadings higher and low ones lower for each factor... Quartimax does for variables what varimax does for factors... Equamax is a hybrid between varimax and quartimax that tries simultaneously to simplify the factors and the variables.

All three orthogonal rotation techniques were used, and almost the same component structure resulted in each time. Accordingly, the varimax rotation technique, which is the most commonly used one, was utilised. Table 7.5 reports the variables and their factor loadings for 1997.

7.3.1.3 Interpretation of the components

Table 7.5 and 7.6 and Figure 7.1 demonstrated that two components were extracted for 1997. The first two components accounted for 83% of the total variance (see Table 7.6) where the first component consisted of nine variables:

1. population density per hectare
2. percentage of owner-occupied households (negative loading)
3. percentage of lone parent households
4. mean number of people per room
5. percentage of households renting from a housing association
6. percentage of households with a single non-pensioner adult
7. percentage of households without a car
8. ethnic diversity in an area
9. percentage of population aged between 16 and 24.

It was felt that a new variable, *urban diversity and deprivation*, should be created as a combination of these nine variables. The second component consisted of three variables that loaded positively:

1. percentage of people who moved in the previous year (movers)
2. percentage of households with a professional head
3. percentage of households renting privately.

It was felt that these three variables indicated *a lack of informal social control in community and neighbourhood stability*. Therefore, it was labelled as *lack of community stability*. After extracting the components, component scores were calculated via SPSS.

Table 7.7: Multicollinearity test among extracted components and variables excluded from PCA, 1997

Collinearity Statistics		
	Tolerance	VIF
Renting from a local authority	.252	3.968
Lack of community stability	.492	2.031
Urban diversity and deprivation	.340	2.937

a. Dependent Variable: Burglary

Table 7.8: Correlation matrix, 1997

		1	2	3
1	Renting from a local authority	1		
2	Lack of community stability	-.510	1	
3	Urban diversity and deprivation	.699	.000	1

The final step was to test the multicollinearity between the two extracted components and the renting from a local authority variable that had been excluded from the PCA previously. If there was no multicollinearity among them, these variables would be used as separate control variables in multilevel negative binomial regression modelling. Table 7.7 showed that there was no multicollinearity among them as the Variance Inflation Factor (VIF) for each was less than 4 (O'Brien, 2007, see also Table 7.8 for a correlation matrix). Hence, they were retained for further analysis.

7.3.2 Principal component analysis, 2003/04

The process that was followed for 1997 was repeated for 2003/04. Firstly, outliers were tested, with three variables found to contain them: (1) percentage of single adult non-pensioner households, (2) ethnic diversity in an area, and (3) population density. They also loaded on more than one component at the 0.5-level (see Table 7.10). Therefore, they were excluded from the PCA (LaVeist et al., 2009), but kept for further analysis.

Having identified the variables to be included in the PCA, the factorability of the dataset was checked. The sample size of the 2003/04 CSEW sweep was 37,550. Therefore, the first criterion was successfully supported. Then, the KMO and BTS were conducted (see Table 7.11 for the results). Although the value of KMO was not at the desired level (but acceptable), the PCA was carried out for 2003/04 as the result of BTS was found to be significant ($p < 0.005$).

7.3.2.1 Extracting components

According to the Eigenvalue rule, Catell's scree test, and cumulative variance, two components were extracted (see Table 7.13 and Figure 7.2).

7.3.2.2 Rotating the components

Using the varimax rotation technique, Table 7.12 shows that six variables loaded on the first component, whilst the second component consisted of four variables. There were no variables loaded on both components at the 0.5-level. Therefore, the next step was to interpret this table to create two new components.

Table 7.9: KMO and Bartlett's test (1), 2003/04

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.688
Bartlett's Test of Sphericity	Approx. Chi-Square	806350.207
	df	78
	Sig.	.000

Table 7.10: Component matrix (1), 2003/04

	Component	
	1	2
Households without a car	.970	
Lone parent households	.906	
Owner households	-.893	
Renting from a local authority	.876	
Population density	.772	.579
People aged between 16 and 24	.730	
Single adult non-pensioner households	.712	.659
Mean number of people per room	.525	
Renting privately		.869
Professional head of households		.818
Movers		.810
Renting from a housing association		.709
Ethnic diversity	.616	.668

Table 7.11: KMO and Bartlett's test (2), 2003/04

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.518
Bartlett's Test of Sphericity	Approx. Chi-Square	498865.105
	df	45
	Sig.	.000

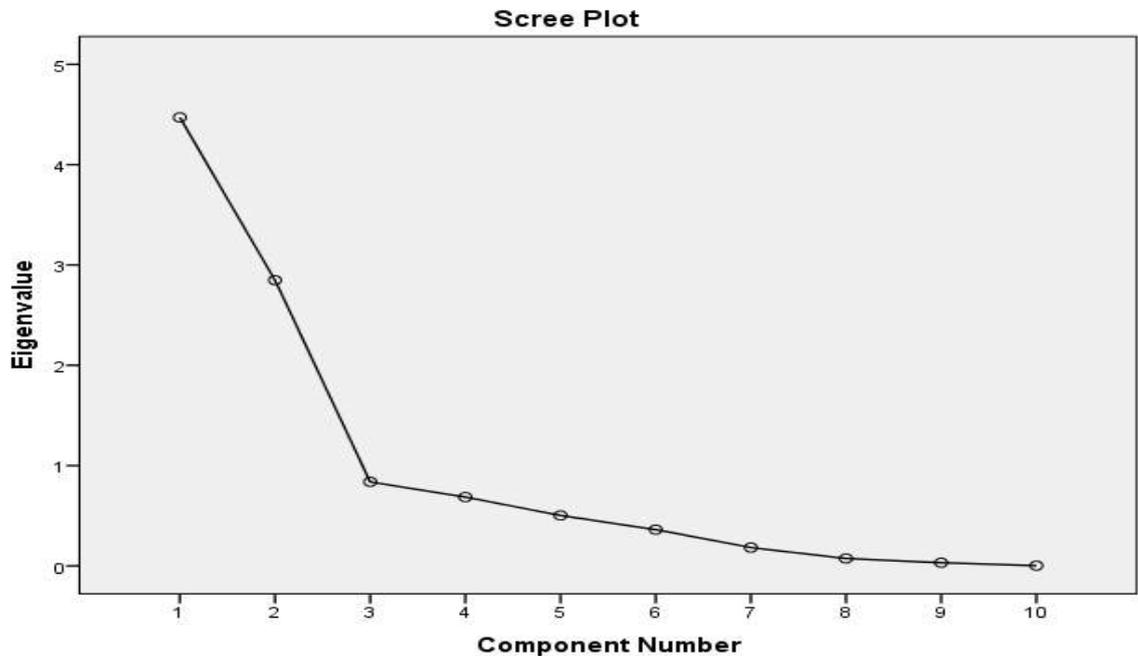
Table 7.12: Component matrix (2), 2003/04

	Component	
	1	2
Households without a car	.975	
Lone parent households	.907	
Owner households	-.896	
Renting from a local authority	.869	
People aged between 16 and 24	.746	
Mean number of people per room	.528	
Renting privately		.874
Movers		.851
Professional head of households		.789
Renting from a housing association		.717

Table 7.13: Eigenvalues and total variance explained, 2003/04

Component	Total Variance Explained								
	Initial Eigenvalues			Loadings			Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.471	44.709	44.709	4.471	44.709	44.709	4.343	43.430	43.430
2	2.848	28.483	73.192	2.848	28.483	73.192	2.976	29.762	73.192
3	0.838	8.378	81.570						
4	0.686	6.860	88.430						
5	0.503	5.032	93.461						
6	0.362	3.618	97.079						
7	0.183	1.830	98.909						
8	0.074	0.740	99.650						
9	0.032	0.321	99.971						
10	0.003	0.029	100.000						

Figure 7.2: Scree plot showing the number of components extracted, 2003/04



7.3.2.3 Interpretation of the components

In 2003/04, the first two components accounted for 73% of the total variance (see Table 7.13). The variables that constituted the first component were:

1. percentage of households without a car
2. percentage of lone parent households
3. percentage of owner-occupied households (negative loading)
4. percentage of households renting from a local authority
5. percentage of population aged between 16 and 24
6. mean number of people per room.

It was felt that these six variables could be conceptualised as *poverty* (see also Tseloni, 2006).

The variables that constituted the second component were:

1. percentage of households renting privately
2. percentage of people who moved in the previous year (movers)
3. percentage of households with a professional head
4. percentage of households residing in a housing association accommodation.

Although renting from a housing association is an indicator of poverty, living in those kinds of households can be interpreted as *a lack of informal social control in a community and*

neighbourhood stability. Therefore, this component was labelled *lack of community stability*. However, the lack of community stability variable in 1997 slightly differed from the one in 2003/04 because the former did not include ‘percentage of households renting from a housing association’ variable. After extracting the components, component scores were calculated via SPSS.

Finally, multicollinearity among the extracted two components and the variables that had been excluded from the PCA previously was checked for further analysis. If there was no multicollinearity among those variables (population density, proportion of single-adult non-pensioner households, and ethnic diversity), they would enter the models.

Table 7.14: Multicollinearity test among extracted components and variables excluded from PCA, 2003/04

Collinearity Statistics						
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
Poverty	.156	6.409	.196	5.097	.460	2.172
Lack of community stability	.222	4.515	.229	4.358	.441	2.269
Ethnic diversity	.150	6.674	.211	4.733	.291	3.442
Single-adult non-pensioner households	.075	13.268	.086	11.568	-	-
Population density	.069	14.592	-	-	-	-

a. Dependent Variable: Burglary

Table 7.15: Correlation matrix, 2003/04

		1	2	3	4	5
1	Poverty	1	-	-	-	-
2	Lack of community stability	.000	1	-	-	-
3	Ethnic diversity	.584	.607	1	-	-
4	Single-adult non-pensioner households	.698	.628	.886	1	-
5	Population density	.751	.539	.905	.939	1

However, Table 7.14 showed that there was multicollinearity between the extracted components and the variables that had been excluded previously as the VIF for the percentage of single-adult non-pensioner households and population density exceeded ten (see also Table 7.15). When population density was removed, the VIF for single-adult non-pensioner households still exceeded 10. Therefore, both were removed from the analysis. When they were removed, the VIF for poverty, lack of community stability and single-adult

non-pensioner households was found to be less than 4, which indicated an absence of multicollinearity (O'Brien, 2007).

7.3.3 Summary of principal component analysis

The PCA was carried out for 1997 and 2003/04 separately to eliminate the multicollinearity problem among continuous structural control variables at the PFA level before they entered the statistical models. The PCA extracted two components for each year. They were 'urban diversity and deprivation' and 'lack of community stability' for 1997; and 'poverty' and 'lack of community stability' for 2003/04. Although the same variables at the PFA level (13 variables for each year) were selected to ensure comparability between 1997 and 2003/04, the PCA ended up with two components for each year. However, the 'lack of community stability' component extracted in 1997 was slightly different from the one extracted in 2003/04. The PCA results were feed into the model as PFA-level variables (see tables 7.17-7.18).

7.4 Modelling strategy

The analysis was conducted stepwise, at each step, a model was estimated (see tables 7.17 - 7.19). Step 1 started with the base model (Model 1), which included only the constant. In Step 2, the characteristics of households were added to Model 1 to estimate Model 2. In Step 3, the characteristics of PFAs and the independent variable (the level of commitment of police forces to POP) were added to Model 2 to estimate Model 3, which was the saturated model. In Step 4, to estimate Model 4 (Reduced Model) if at least one dummy variable of the categorical variables of Model 3 were statistically significant ($p\text{-value} < 0.1$), all dummy variables for those categorical variables were retained, otherwise excluded from the analysis. Similarly, continuous variables with a $p\text{-value}$ greater than 0.10 were excluded from the analysis. Step 5 analysed whether there were interactions between the independent variable and the variables of Model 4, which had a statistically significant effect on the mean number of burglaries at the time of inclusion ($p\text{-value} < 0.1$, chi-squared distributed with 1 degree of freedom). The chapter also calculated the expected mean number of burglary victimisations for the reference household (see Chapter 4, Section 4.9.3.4.4) and intra-class correlations (see Chapter 4, Section 4.9.3.4.5).

7.4.1 The effect of POP on burglary rates in 1997

7.4.1.1 Base model (Model 1), 1997

The analysis started with Model 1 (Base Model), which did not include any explanatory variables. The mean number of burglaries that the reference households experienced was 0.033 (only the intercept was used). The level-2 variance was 0.17 (Standard Error (SE) = 0.06). A Wald test, as a chi-square test with one degree of freedom, gave a value of 7.645, with a two-tailed p-value of 0.006. This two-tailed value was halved since the random parameters can only take positive values (Tseloni and Pease, 2015). Therefore, when it was halved, we had a one-tailed p-value of 0.003 (see Snijders and Bosker, 1999: 90-91; Tarling, 2009: 31-32). The ICC was 0.83. That meant there were significant differences between PFAs, and therefore multilevel modelling was needed (Tarling, 2009).

7.4.1.2 Adding household characteristics (Model 2), 1997

All household characteristics (structural control variables at the household level, $n = 31$) were added to Model 1. Model 2 better fitted the data compared to Model 1 (p-value < 0.001). The expected mean number of burglaries that the reference household experienced was 0.034. The level-2 variance was 0.08 (SE = 0.05; Wald test = 2.771 with a one-tailed p-value of 0.005). The ICC was 0.62. These results indicated that level-2 explanatory variables could enter Model 2 (Tarling, 2009).

7.4.1.3 Adding PFA characteristics (Model 3), 1997

All characteristics of PFAs (structural control variables at the PFA level, $n = 3$), ‘the number of police officers per 1000 residents in a PFA’ and ‘the level of commitment to POP’ variables were added to Model 2. Model 3 better fitted the data than Model 2 (p-value < 0.01). The mean number of burglaries that the reference household experienced was 0.030. The level-2 variance was 0.00 (SE = 0.00; Wald test = 0.000 with a one-tailed p-value of 0.5). The ICC was 0.00. Since the variance at level-2 was not statistically significant, the researcher did not add any further variables to Model 3.

In this step, bivariate correlations between the level of commitment of police forces to POP and the *mean* number of burglaries were also assessed (see Table 7.18, POP Only Model). Police forces with a commitment to POP at any level experienced a higher number of burglaries when compared to police forces that were not committed to POP at all in 1997. However, this relationship was only statistically significant for police forces with a commitment to POP at the medium level. They experienced higher burglaries (by 75%)

when compared to police forces that were not committed to POP at all (see Table 7.18, POP Only Model).

7.4.1.4 Dropping insignificant variables (Model 4), 1997

Model 4 was the Reduced Model. The household-level variables that were excluded from Model 3 due to having a p-value greater than 0.10 were:

1. lone parent households
2. number of children
3. household annual income
4. type of accommodation
5. house empty during the day
6. area type.

The PFA-level variables that were excluded from Model 3 due to having a p-value greater than 0.10 were:

1. urban diversity
2. number of police officers per 1000 residents.

Model 4 did not better fit the data than Model 3 (p-value > 0.1). The mean number of burglaries that the reference household experienced was 0.025. The ICC was 0.11 but the level-2 variance (0.004; SE = 0.002; Wald test = 0.031 with a one-tailed p-value of 0.4) was not statistically significant. Therefore, the researcher did not add any further variables to Model 4.

7.4.1.5 Adding cross-level interactions, 1997

This step (using Model 4) tested whether there were significant interactions between the independent variable (the level of commitment of police forces to POP) and the remaining variables that had statistically significant effects on the mean number of burglaries. None of the interactions was significant.

7.4.2 The effect of POP on burglary rates in 2003/04

7.4.2.1 Base model (Model 1), 2003/04

The mean number of burglaries that the reference household experienced was 0.018. The level-2 variance was 0.16 (SE = 0.05; Wald test = 10.587 with a one-tailed p-value of 0.000).

The ICC was 0.90. This means there were significant differences between PFAs, and therefore multilevel modelling was needed (Tarling, 2009).

7.4.2.2 Adding household characteristics (Model 2), 2003/04

All household characteristics (structural control variables at level-1, $n = 32$) entered Model 1. Model 2 better fitted the data than Model 1 (p -value < 0.001). The mean number of burglaries the reference household experienced was 0.006. The level-2 variance was 0.11 (SE = 0.04; Wald test = 5.750 with a one-tailed p -value of 0.008). The ICC was 0.94. This result indicated that level-2 explanatory variables could enter Model 2 (Tarling, 2009: 121).

7.4.2.3 Adding PFA characteristics (Model 3), 2003/04

All characteristics of PFAs (structural control variables at level-2, $n = 3$), ‘the number of police officers per 1000 residents in a PFA’ and ‘the level of commitment to POP’ variables were added to Model 2. Model 3 better fitted the data than Model 2 (p -value < 0.001). The mean number of burglaries that the reference household experienced was 0.008. The ICC was 0.72 but the level-2 variance (0.02; SE = 0.02; Wald test = 1.0797 with a one-tailed p -value of 0.15) was not statistically significant. Therefore, the researcher did not add any more variables.

In this step, bivariate correlations between the level of commitment of police forces to POP and the *mean* number of burglaries were also assessed. The results suggested that there were no statistically significant differences between the levels of commitment to POP in terms of affecting the mean number of burglaries in 2003/04.

7.4.2.4 Dropping insignificant variables (Model 4), 2003/04

Model 4 was the Reduced Model. The household-level variables that were excluded from Model 3 due to having a p -value greater than 0.10 were:

1. ethnicity
2. lone parent households
3. type of accommodation
4. house empty during the day
5. length of residence at an address
6. type of area.

The PFA-level variables that were excluded from Model 3 due to having a p-value greater than 0.10 were:

1. ethnic diversity
2. lack of community stability
3. level of the commitment of police forces to POP.

Model 4 better fitted the data than Model 3 (p-value of 0.001). The mean number of burglaries that the reference household experienced was 0.005. The ICC was 0.93. The level-2 variance was 0.08 (SE = 0.04; Wald test = 4.171 with a one-tailed p-value of 0.02). Therefore, the researcher added interactions to the Reduced Model.

7.4.2.5 Adding cross-level interactions, 2003/04

This step (using Model 4) tested whether there were significant interactions between the ‘number of police officers per 1000 residents’ variable and the remaining variables that had statistically significant effects on the mean number of burglaries. None of the interactions was significant.

7.4.3 Summary of multilevel negative binomial regression

Four models in total were estimated to assess the effect of POP on the mean number of burglary victimisations in 1997 and 2003/04, separately. In each step, the mean number of burglaries that the reference household experienced and the ICC were calculated (see Table 7.16). Furthermore, the model fits were assessed. In both years, subsequent models always better fitted the data than previous models, except for Model 4 in 1997 (see Table 7.17).

Table 7.16: Mean number of burglaries that the reference household experienced and ICC values, 1997 and 2003/04

Years	Models	1	2	3	4
1997	Mean number of burglaries	0.033	0.034	0.030	0.025
	ICC	0.83	0.62	0.00	0.11
2003/04	Mean number of burglaries	0.018	0.006	0.008	0.005
	ICC	0.90	0.94	0.72	0.93

Table 7.17: Model fit tests, 1997 and 2003/04

1997		
Model/Differences	Joint Chi-Square Values/Differences	Degrees of freedom (df)/Differences
1	1697.066 ***	1
2	127.875 ***	31
1-2	1569.191***	30
3	150.841 ***	38
2-3	22.966 ***	7
4	136.574 ***	23
3-4	14.267 (Not significant)	15

Table 7.17: Model fit tests, 1997 and 2003/04 (continued)

2003/04		
Model/Differences	Joint Chi-Square Values/Differences	Degrees of freedom (df)/Differences
1	2990.745 ***	1
2	207.155 ***	32
1-2	2783.590***	31
3	253.889 ***	39
2-3	46.734***	7
4	289.8762 ***	19
3-4	45.8053***	20

7.4.4 Results

7.4.4.1 Did POP have a statistically significant effect on the mean number of burglary victimisations between 1995 and 2003/04?

This chapter thoroughly examined whether the implementation of POP had a statistically significant effect on the mean number of burglary victimisations whilst controlling for characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA in 1997 and 2003/04, separately. Tables 7.18 and 7.19 presented the findings for 1997 and 2003/04, respectively. To ease the interpretation of the results, the *exponentials* of the estimated coefficients ($\exp(b)$) were provided in the tables together with an indication of their respective statistical significance, which was calculated via Wald tests (Tseloni and Pease, 2015).

Table 7.18: Estimated fixed effects of household and area characteristics for the prediction of the number of burglaries, 1997

<i>Model</i>	POP only	2	3	4
	Exp(b)	Exp(b)	Exp(b)	Exp(b)
<i>Constant</i>	0.03***	0.18***	0.19***	0.15***
Household Characteristics				
HOH Age	-	0.95**	0.94**	0.95**
HOH Age^2	-	1.00**	1.00**	1.00**
Ethnicity (White)				
Black	-	0.81	0.78	0.87
Asian	-	1.88**	1.84*	1.98**
Other	-	1.46	1.53	1.68
Number of Adults (2 Adults)				
One Adult	-	1.42**	1.46**	1.51**
Three or more Adults	-	0.74	0.74	0.77
Number of Children (No Children)				
One or more Children	-	0.96	0.97	-
Lone-parent Households	-	1.02	1.00	-
Tenure (Owner)				
Social Rented	-	1.50**	1.52**	1.59***
Private Rented	-	2.08***	2.09***	2.17***
Household Income (£10,000-£29,000)				
Under £5,000	-	1.11	1.07	-
£5,000-£9,999	-	0.89	0.87	-
Over £30,000	-	0.83	0.83	-
No Response	-	0.94	0.93	-
HRP Social Class (Professional)				
Intermediate Occupations	-	0.76*	0.78*	0.80
Routine Occupations	-	1.02	1.04	1.06
Never Worked/Not Classified	-	0.99	0.96	1.00

Table 7.18: Estimated fixed effects of household and area characteristics for the prediction of the number of burglaries, 1997 (continued)

<i>Model</i>	POP only	2	3	4
	Exp(b)	Exp(b)	Exp(b)	Exp(b)
Household Characteristics				
Number of Cars (2 Cars)				
No Car	-	0.69*	0.68*	0.74
One Car	-	0.64**	0.63**	0.67**
Three or more Cars	-	0.83	0.85	0.82
Type of Accommodation (Detached)				
Semi-detached	-	0.80	0.79	-
Terraced	-	0.94	0.91	-
Flat/Maisonette/Other	-	0.93	0.90	-
House Empty during Day (More than 7 Hours)				
Less than 3 Hours	-	0.97	0.95	-
3-7 Hours	-	0.94	0.94	-
Length of Residence (More than 10 Years)				
Less than 2 Years	-	1.08	1.07	1.06
2-5 Years	-	0.43***	0.42***	0.41***
5-10 Years	-	0.98	0.97	0.96
Type of Area (Rural)				
Inner City	-	1.49*	1.37	-
Urban	-	1.23	1.20	-

Table 7.18: Estimated fixed effects of household and area characteristics for the prediction of the number of burglaries, 1997 (continued)

<i>Model</i>	POP only	2	3	4
	Exp(b)	Exp(b)	Exp(b)	Exp(b)
PFA Characteristics				
Renting from a Local Authority	-	-	0.73**	0.89
Lack of Community Stability (from PCA)	-	-	0.81**	0.87
Urban Diversity and Deprivation (from PCA)	-	-	1.28	-
Number of Police Officers per 1000 Residents	-	-	0.97	-
Level of Commitment to POP (No-commitment)				
High commitment to POP	1.34	-	1.06	1.20
Mid commitment to POP	1.75***	-	1.59**	1.74
Low commitment to POP	1.21	-	0.99	1.20
Random Parameters				
<i>v (standard error)</i>	18.56 (0.55)	12.61 (0.48)	12.02 (0.47)	12.71 (0.49)
σ_{u0}^2 (<i>standard error</i>)	0.03 (0.03)	0.08 (0.05)	0.00 (0.00)	0.004 (0.002)
Additional estimates for representative sample household				
Mean burglary victimisations	-	0.034	0.030	0.025
Intra-class correlation, ICC	-	0.62	0.00	0.11

Table 7.19: Estimated fixed effects of household and area characteristics for the prediction of the number of burglaries, 2003/04

<i>Model</i>	POP only	2	3	4
	Exp(b)	Exp(b)	Exp(b)	Exp(b)
<i>Constant</i>	0.02***	0.03***	0.04***	0.03***
Household Characteristics				
HOH Age	-	0.95**	0.96**	0.95***
HOH Age^2	-	1.00*	1.00*	1.00*
Ethnicity (White)				
Black	-	0.64	0.62	-
Asian	-	0.82	0.74	-
Other	-	1.07	0.97	-
Number of Adults (2 Adults)				
One Adult	-	1.63***	1.61***	1.62***
Three or more Adults	-	1.35*	1.35**	1.30*
Number of Children (No Children)				
One or more Children	-	1.40**	1.40**	1.34**
Lone-parent Households	-	1.02	1.01	-
Tenure (Owner)				
Social Rented	-	1.36**	1.36**	1.39**
Private Rented	-	1.61***	1.62***	1.70***
Household Income (£10,000-£29,000)				
Under £5,000	-	1.60**	1.64**	1.56**
£5,000-£9,999	-	1.38*	1.42**	1.35*
Over £30,000	-	1.58***	1.59***	1.66***
No Response	-	1.17	1.18	1.17
HRP Social Class (Professional)				
Intermediate Occupations	-	1.27*	1.28*	1.26*
Routine Occupations	-	1.13	1.12	1.08
Never Worked/Not Classified	-	1.32	1.34	1.29

Table 7.19: Estimated fixed effects of household and area characteristics for the prediction of the number of burglaries, 2003/04 (continued)

<i>Model</i>	POP only	2	3	4
	Exp(b)	Exp(b)	Exp(b)	Exp(b)
Household Characteristics				
Number of Cars (2 Cars)				
No Car	-	1.66**	1.67***	1.59**
One Car	-	1.28*	1.30*	1.25
Three or more Cars	-	1.10	1.09	1.10
Type of Accommodation (Detached)				
Semi-detached	-	0.88	0.88	-
Terraced	-	0.81	0.81	-
Flat/Maisonette/Other	-	0.84	0.83	-
Not Coded	-	1.03	1.08	-
House Empty during Day (More than 7 Hours)				
Less than 3 Hours	-	0.81	0.82	-
3-7 Hours	-	0.87	0.89	-
Length of Residence (More than 10 Years)				
Less than 2 Years	-	1.20	1.22	-
2-5 Years	-	1.15	1.18	-
5-10 Years	-	0.87	0.87	-
Type of Area (Rural)				
Inner City	-	1.42*	1.29	-
Urban	-	1.00	0.97	-

Table 7.19: Estimated fixed effects of household and area characteristics for the prediction of the number of burglaries, 2003/04 (continued)

<i>Model</i>	POP only	2	3	4
	Exp(b)	Exp(b)	Exp(b)	Exp(b)
PFA Characteristics				
Ethnic Diversity	-	-	1.18	-
Lack of Community Stability (from PCA)	-	-	0.93	-
Poverty (from PCA)	-	-	1.33*	1.26
Number of Police Officers per 1000 Residents	-	-	0.69**	0.92
Level of Commitment to POP (No-commitment)				
High commitment to POP	1.22	-	0.95	-
Mid commitment to POP	0.75	-	0.60	-
Low commitment to POP	0.71	-	0.61	-
Random Parameters				
<i>v (standard error)</i>	27.13 (0.58)	20.10 (0.54)	16.66 (0.49)	18.67 (0.51)
σ_{u0}^2 (<i>standard error</i>)	0.06 (0.03)	0.11 (0.04)	0.02 (0.02)	0.08 (0.04)
Additional estimates for representative sample household				
Mean burglary victimisations	-	0.006	0.008	0.005
Intra-class correlation, ICC	-	0.94	0.72	0.93

Examination of the bivariate correlation between the independent variable (the level of commitment of police forces to POP) and the mean number of burglary victimisations in 1997 suggested that police forces with a commitment to POP at any level experienced a greater number of burglaries when compared to police forces that were not committed to POP at all. However, this relationship was statistically significant for only police forces with a medium commitment to POP. They experienced more burglaries (by 75%) when compared to police forces that were not committed to POP at all (see Table 7.18, POP Only Model). This relationship remained when characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA were controlled (see Table 7.18, Model 3).

In 2003/04, the results suggested that police forces with a high commitment to POP experienced higher burglaries when compared to police forces that were not committed to POP at all. However, this relationship was not statistically significant (see Table 7.19, POP Only Model). Contrary to 1997, police forces with a commitment to POP at the medium and low-level had fewer burglaries when compared to police forces that were not committed to POP at all in 2003/04. However, these relationships did not reach significance (see Table 7.19, POP Only Model). When the characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA were controlled, police forces with a commitment to POP at any-level experienced fewer burglaries when compared to police forces that were not committed to POP at all. However, these relationships were not statistically significant (see Table 7.19, Model 3).

The chapter also examined bivariate correlations between POP (as a dichotomous variable: No-POP and POP forces) and the mean number of burglary victimisations (as a continuous variable) using Pearson (point-biserial) correlation from 1995 to 2003/04. The results suggested that there was a statistically significant correlation between POP and the mean number of burglary victimisations in 1997 only. In particular, police forces that applied POP experienced more burglaries in 1997. In the remainder of the years, there was no statistically significant correlation between POP and the mean number of burglaries. However, it should be noted that although there was no statistically significant relationship between POP and mean number of burglaries, police forces that applied POP had fewer burglaries in 2003/04 (see Table 7.20).

Table 7.20: Pearson (point-biserial) correlations between POP and the mean number of burglaries

Year	Correlation Coefficient	Sig.
1995	0.029	0.857
1997	0.353	0.032
1999	0.206	0.191
2001/02	0.013	0.934
2002/03	0.095	0.551
2003/04	-0.079	0.617

The chapter also controlled the number of police officers per 1000 residents in a PFA whilst examining the effect of POP on burglaries. In both years, police forces with a greater number of police officers per 1000 residents experienced fewer burglaries. However, this relationship was statistically significant in 2003/04 only (see Tables 7.18 and 7.19, Model 3). This finding is in line with previous research (Marvell and Moody, 1996; Sherman et al., 1998; Levitt, 2004).

7.5 Chapter summary

This chapter reported the findings of an original analysis that tested whether POP had a statistically significant effect on the *mean* number of burglary victimisations between 1995 and 2003/04. Firstly, the chapter conducted a PCA. Following that, the chapter applied multilevel negative binomial regression modelling to analyse the effect of POP on burglary victimisations whilst controlling for the characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA in 1997 and 2003/04, separately. The chapter then tested bivariate correlations between POP (as a dichotomous variable) and the mean number of burglaries from 1995 to 2003/04.

In 1997, the POP Only Model suggested police forces that were committed to POP at any level experienced a greater number of burglaries when compared to police forces that were not committed to POP at all in 1997. However, this relationship was only statistically significant for police forces that were committed to POP at the medium level. This relationship remained when the characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA were controlled.

In 2003/04, according to POP Only Model police forces with a high commitment to POP also experienced a greater number of burglaries when compared to police forces with no commitment to POP. Contrary to 1997, police forces with a medium- or low commitment to POP had fewer burglaries compared to the base category. However, these relationships were not statistically significant. When the characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA were controlled, police forces that were committed to POP at any level had fewer burglaries compared to police forces with no commitment to POP. However, these relationships did not reach significance.

Results of the analysis examining the bivariate correlations between POP and the mean number of burglaries from 1995 to 2003/04 suggested that police forces that implemented POP experienced a greater number of burglaries between 1995 and 2002/03. However, this relationship was statistically significant in 1997 only. In 2003/04, police forces that applied POP had fewer burglaries. However, this relationship was not statistically significant.

Finally, it was found that police forces with a greater number of police officers per 1000 residents experienced fewer burglaries in both 1997 and 2003/04. However, this relationship was statistically significant in 2003/04 only. These findings, along with the findings presented in chapters 5 and 6, are discussed in the final chapter.

CHAPTER 8

DISCUSSION AND CONCLUSIONS

8.1 Introduction

This chapter first returns to the overarching aim of the study. Secondly, it summarises the main findings of Chapters 5-7. Thirdly, it acknowledges the limitations of the study and discusses their possible effects on the results. Fourthly, the chapter presents a number of implications (theory, policy and methodology) that might be used by the police and other crime reduction agencies. Fifthly, the chapter highlights the original contributions to knowledge that this thesis has made. Sixthly, suggestions are made for future research in order to advance our understanding regarding the role of problem-oriented policing (POP) in the crime drop in England and Wales. The chapter finishes with a number of concluding remarks.

8.2 Overarching aim

Police forces in England and Wales have been implementing POP since the 1980s (Leigh et al., 1996; 1998; Tilley and Scott, 2012; South Yorkshire Police, 2018). Significantly, its application has been encouraged by the UK government either implicitly or explicitly through funding large-scale crime reduction programmes that applied a problem-oriented approach (e.g. the Safer Cities Programme and the Crime Reduction Programme; see Chapter 5, Section 5.3 for details). Moreover, police forces submitted 771 problem-oriented projects to the Goldstein and Tilley Award schemes between 1997 and 2008 (see Chapter 5, Table 5.1).

On a different note, burglary rates have dropped substantially in England and Wales since 1993. The estimated number of Crime Survey for England and Wales (CSEW) burglaries peaked in 1993 (2,445,000) and fell sharply over time until 2005 (1,057,000). The trend in burglaries remained relatively flat between 2005 and 2011. However, they fell to a record low (650,000) between 2011 and 2017 (ONS, 2017).

Scholars have proposed various hypotheses to explain the crime drop and these were critically reviewed under six headings in Chapter 3: (1) economic, (2) offender-based, (3) substance abuse, (4) security and opportunity-related, (5) criminal justice system, and (6) policing-related. However, the majority of such are far from providing reasonable answers to the question of why crime has fallen so substantially in England and Wales since the 1990s

(Farrell et al., 2014). More importantly, none of the previous studies has tested whether POP has played a role in the crime drop in England and Wales, and indeed across the world (Weisburd and Majmundar, 2018). The overarching aim of this present study was, therefore, to explore the role of POP in the burglary drop at the PFA level in England and Wales between 1988 and 2007/08⁵⁴ thoroughly in a time of renewed interest in POP (Laycock and Tilley, 2018; South Yorkshire Police, 2018).

The researcher selected ‘triangulation’ (Denzin, 1989) as the overarching strategy to achieve the overarching aim of the thesis. That is, various theories (theory triangulation), data sources (data triangulation), and data-analysis strategies (data-analysis triangulation) were used to fulfil the aforementioned overarching aim. The theoretical framework of the thesis consisted opportunity-related theories (routine activity theory, rational choice theory and situational crime prevention), social disorganisation theory and the “New Public Management” (NPM) concept. The reasons for selecting these theories are briefly explained in the paragraph after next.

The core argument that the researcher made throughout was that merely analysing the role of POP in the burglary drop within police forces that claim to be using it is poor analysis. This is because police culture is resistant to change (Goldstein, 1990), and when they practice an innovative strategy they tend to do it superficially (Weisburd et al., 2003). Therefore, the researcher identified the level of commitment of police forces to POP in 1997 and 2003/04 (separately) and other policing strategies used prior to 2001 to accurately determine whether POP affected burglaries using two indicators of commitment to POP (problem-oriented projects that were submitted to the Goldstein and Tilley awards and large-scale crime reduction programmes that applied a problem-oriented approach) and the related literature (data triangulation).

The reason for selecting opportunity-related theories was twofold. Firstly, opportunity-related theories are used to design effective POP interventions (Braga, 2008). In other words, these theories and POP have affinities. Secondly, there are a number of factors affecting victimisation: (1) demographic and socio-economic characteristics of individuals and their households; (2) individuals’ routine activities; (3) characteristics of areas; and (4) possible interactions of these factors. In other words, both individual and area characteristics are

⁵⁴ The reasons for choosing burglary and certain time periods (1988-2007/08 in Chapter 6; 1995-2003/04 in Chapter 7) to be analysed and the units of analysis can be found in Chapter 4, sections 4.8.1, 4.9.2 and 4.9.3, respectively.

important predictors of crime (Tseloni et al., 2002). Therefore, this thesis conducted multilevel negative binomial regression modelling to model burglaries (using the 1998 and 2003/04 CSEW sweeps) over household (using the 1998 and 2003/04 CSEW sweeps) and police force area characteristics (using the 1991 and 2001 UK Censuses), which affect burglary rates according to routine activity and social disorganisation theories, respectively, the number of police officers per 1000 residents, and the level of commitment of police forces to POP in 1997 and 2003/04, separately (theory and data triangulation).

Finally, the NPM concept is used to understand the factors that affected the advent of POP on the policing agenda in the UK as the NPM promotes an innovative problem-solving management model like POP to effect organisational change in policing (Ashby et al., 2007). A number of reforms in policing, which reflect the NPM concept, have influenced the police service in the UK since the 1990s (e.g. Sheehy Inquiry). The relationship between POP and the NPM, and the relationship between the NPM and routine activity theory and social disorganisation theory were discussed in detail in Chapter 2 (see Section 2.2.5). In brief, it can be argued that these reforms have changed the way in which the police respond to crime and collaborate with other government agencies and the community in England and Wales.

Overall, drawing upon a rich array of data sources, theories, and data-analysis strategies, this study thoroughly examined whether POP had a role in the burglary drop in England and Wales between 1988 and 2007/08 and the results were summarised in the following section.

8.3 Summary of findings

With the above argument in mind, the overarching empirical research question of the study was:

Was there a relationship between the implementation of POP and the fall in both Crime Survey for England and Wales (CSEW) and police recorded burglaries in England and Wales between 1988 and 2007/08?

The empirical component of the study was divided into three phases to address the overarching empirical research question (see Chapter 4, Section 4.9 for details). For the first time, the first phase (Chapter 5) identified highly POP-committed police forces in England and Wales using two indicators of commitment to POP selected by the researcher:

1. problem-oriented projects that were submitted to the Tilley and Goldstein Award schemes by police forces in England and Wales between 1997 and 2008

2. problem-oriented projects that were applied by police forces in England and Wales as part of large-scale government-supported crime reduction programmes which applied a problem-oriented approach (e.g. the Safer Cities Programme, the Reducing Burglary Initiative (RBI) and the Targeted Policing Initiative (TPI)).

Chapter 5 also reviewed the related literature to supplement and triangulate the findings from the analysis of the two indicators. Following that, Chapter 5 revised the results of previous research on policing strategies of police forces in England and Wales. Finally, drawing upon the findings from the analysis of the two indicators of commitment and the related literature, Chapter 5 categorised all 42 police forces into four groups in terms of level of commitment POP (see Chapter 5, Section 5.6 and Appendix 5.4).

Following that, the second phase (Chapter 6) compared trends in both CSEW and PRCD burglaries in highly POP-committed PFAs with the trends in their most similar PFAs, which were not committed to POP to the same extent. This phase was an initial exploration of the extent to which POP did or did not play a role in the burglary drop in England and Wales before conducting a comprehensive statistical analysis in Chapter 7.

The third phase (Chapter 7) investigated whether POP (as a nominal variable with four categories) had a statistically significant independent effect on burglary victimisations whilst controlling for the characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA in 1997 and 2003/04, separately. Chapter 7 also tested bivariate correlations between POP (as a dichotomous variable) and the mean number of burglaries from 1995 to 2003/04. Theories that underpinned both POP and the study included opportunity-related theories (rational choice and routine activity theories, situational crime prevention), social disorganisation theory and the new public management concept (see Chapter 2, Section 2.2 for details).

Overall, each phase answered different sub-questions using various methods to address the overarching empirical research question. Sections 8.3.1-8.3.3 summarise the main findings from each phase, respectively.

8.3.1 Phase one

Which police forces in England and Wales were highly committed to POP?

According to the analysis of the first indicator, the highly POP-committed police forces were Lancashire, the Metropolitan, Cleveland, Merseyside, Cumbria, and Avon and Somerset.

Notably, Lancashire has been the most committed police force to POP in England and Wales over the last two decades. This finding is in line with previous research (Scott, 2000; Bullock et al., 2006). Specifically, Bullock et al. (2006) examined the development of POP in Lancashire and noted that Lancashire “can be considered to be amongst the UK’s very best in terms of vigour and resources that have gone into it [POP]” (Bullock et al., 2006: 12).

The results of the analysis of the second indicator were as follows. Review of the Safer Cities Programme revealed that the Metropolitan, the West Midlands, Greater Manchester, West Yorkshire, Avon and Somerset, Merseyside, Cleveland, Northumbria, Nottinghamshire, Humberside, Derbyshire, Leicestershire, Devon and Cornwall, South Wales and Lancashire received funding for anti-burglary Safer Cities projects. The review of the TPI projects showed that although the main aim of this initiative was not specifically to target burglaries, Greater Manchester, Kent, Avon and Somerset, Derbyshire and West Yorkshire received funding for anti-burglary TPI projects in different years ranging from 1999 to 2002. Finally, the review of the RBI projects identified that the West Midlands, the Metropolitan, West Yorkshire, South Yorkshire, Greater Manchester had been granted the majority of projects between 1999 and 2002. That is, these police forces were more committed to POP when compared to the most similar police forces to them, which did not receive funding for projects that were applied as part of large-scale government-supported crime reduction programmes.

The analysis of the two indicators of commitment to POP was also complemented and triangulated through reviewing the related literature. The findings of the review supported the above results; that is, the majority of the police forces in England and Wales have, in fact, applied some form of POP since the 1980s (see Leigh et al., 1996; Gresty et al., 1997; Leigh et al., 1998; Scott, 2000; Lancashire Police, 2001a; Bullock et al., 2006; Tilley and Scott, 2012, see Chapter 5, Table 5.10). Overall, it was concluded that the above police forces have been consistently committed to POP in general and anti-burglary problem-oriented projects in particular since the 1980s.

What were the policing strategies of police forces in England and Wales?

Phase one also revised the findings from limited previous studies on policing strategies of police forces (Hale et al., 2004; 2005; Heaton, 2009a; 2009b), which reviewed and interpreted 366 HMIC inspection reports published between 1990 and August 2000. Phase one argued that although previous research categorised policing styles into four groups

(intelligence-led policing, POP, partnership policing and geographic policing), geographic and partnership policing strategies do not actually represent a different policing style to POP. Previous research also misidentified the policing styles of some of the police forces, did not mention when police forces introduced policing methods, and exaggerated the application of intelligence-led policing whilst trivialising the implementation of POP by police forces in England and Wales. Most importantly, previous research did not identify the level of commitment of police forces to policing styles. The researcher argued that the majority of police forces had actually applied POP to some extent while some implemented intelligence-led policing (see Chapter 5, Table 5.12). This argument is in line with previous research (Read and Tilley, 2000) which concluded that nearly all police forces had ultimately purported to endorse POP by 2000.

What was the level of commitment of police forces in England and Wales to POP in 1997 and 2003/04?

To date, there has been no research examining the level of commitment of all 42 police forces in England and Wales to POP individually. Phase one filled this substantial gap in knowledge and categorised police forces into four groups in terms of level of commitment to POP in 1997 and 2003/04, separately (see Chapter 5, Section 5.6 and Appendix 5.4). Overall, the analysis suggested that police forces in England and Wales were more committed to POP in 2003/04 than in 1997 (see Appendix 5.4). This result is a reflection of the number of projects submitted to the Tilley and Goldstein award schemes and problem-oriented projects that were applied by police forces as part of large-scale government-supported crime reduction programmes over time (see Chapter 5, sections 5.2 and 5.3), and indeed previous research concerning the process evaluation of POP within some police forces in England and Wales (see Chapter 5, Section 5.4). However, it should be noted that although the level of commitment to POP (as measured in this study) increased from 1997 to 2003/04, this does not necessarily mean that police forces applied POP as Goldstein (1979, 1990) originally envisaged.

8.3.2 Phase two

Was the drop in both CSEW and police recorded burglaries between 1988 and 2007/08 much greater in highly POP-committed PFAs compared to their most similar PFAs, which were not committed to POP to the same extent?

Having identified highly POP-committed police forces according to the two indicators of commitment to POP and the related literature in Phase one, the initial analysis to explore the role of POP in the burglary drop in England and Wales in Phase two was conducted in eight steps:

1. comparing trends in CSEW and PRCD burglaries in highly POP-committed PFAs (according to the first indicator of commitment), with trends in their most similar PFAs, which were not committed to POP to the same extent (particularly Lancashire versus the most similar police forces to it)
2. analysing the effects of some of the individual problem-oriented projects, which were submitted to the award schemes by police forces in England and Wales, on CSEW and PRCD burglaries
3. exploring whether the decreases in burglaries in England and Wales in 1999, 2004 and 2008 were greater when compared to other years
4. comparing trends in CSEW and PRCD burglaries in PFAs, which received a greater amount of funding for Safer Cities projects when compared to their most similar PFAs, with trends in their most similar PFAs
5. comparing trends in CSEW and PRCD burglaries in PFAs that received a greater amount of funding for the TPI projects when compared to their most similar PFAs, with trends in their most similar PFAs
6. comparing trends in CSEW and PRCD burglaries in PFAs, which received a greater amount of funding for the RBI projects when compared to their most similar PFAs, with trends in their most similar PFAs
7. comparing trends in CSEW and PRCD burglaries in PFAs that were prominently associated with POP in the related literature with trends in their most similar PFAs
8. comparing trends in the percentage of repeat burglary victimisations in PFAs that were early implementers of POP with trends in their most similar PFAs.

Phase two used both the CSEW and PRCD. The results were mixed depending on the data source used and the period examined. It should be stressed that most similar police force

groups were used to make more meaningful comparisons between police forces (see Chapter 4, Section 4.9.2). In addition, the introduction year of POP within a PFA was taken into account whilst undertaking the analysis. Here, the main results are summarised.

Step 1 mainly focused on Lancashire since it was the most committed police force to POP in England and Wales according to Phase one and previous research (Bullock et al., 2006). It was hypothesised that there would be a sharper decrease in burglaries in Lancashire when compared to the most similar PFAs to it which were not committed to POP to the same extent (Hypothesis 1.1). According to the results, there was a much greater decrease in burglaries in Lancashire when compared to its most similar PFAs, particularly after 2001/02, potentially due to the implementation of POP. When the CSEW was used, the hypothesis was accepted in four cases (out of eight) and in six cases when PRCD was used. Overall, in four cases, the hypothesis was accepted according to both data sources (see Chapter 6, Table 6.1).

Step 1 also compared trends in burglaries in the Metropolitan, Cleveland, Merseyside, Avon and Somerset, Cumbria with the trends in their most similar police forces. Hypothesis 1.2 (there will be a sharper decrease in burglaries in the Metropolitan when compared to Greater Manchester) was accepted between 2001/02 and 2003/04, according to both data sources; however, it was rejected between 2004/05 and 2007/08 according to both data sources (see Chapter 6, Table 6.1). Hypothesis 1.3 (there will be a sharper decrease in burglaries in Cleveland when compared to Northumbria) was accepted according to the CSEW but rejected according to PRCD between 1998 and 2007/08 (see Chapter 6, Table 6.1). Hypothesis 1.4 (there will be a sharper decrease in burglaries in Merseyside when compared to the West Midlands) was accepted between 1995 and 2001/02 according to both data sources. However, it was rejected, according to the CSEW, and accepted, according to PRCD, between 2002/03 and 2007/08 (see Chapter 6, Table 6.1). Hypothesis 1.5 (there will be a sharper decrease in burglaries in Cumbria when compared to North Wales) was accepted between 1999 and 2007/08 according to both data sources (see Chapter 6, Table 6.1). Finally, Hypothesis 1.6 (there will be a sharper decrease in burglaries in Avon and Somerset when compared to Essex) was accepted between 1997 and 2007/08 according to both data sources (see Chapter 6, Table 6.1).

In sum, the hypotheses tested in Step 1 were accepted in 11 cases (out of 18) according to the CSEW and 13 cases (out of 18) according to PRCD. In nine cases, they were accepted

according to both data sources; conversely, they were rejected in three cases according to both data sources. These results indicate that POP-committed police forces had greater reductions in burglaries compared to their most similar PFAs, which were not committed to POP to the same extent (see Chapter 6, Table 6.1).

Step 2 tested Hypothesis 2 (there will be a gradual decrease in CSEW and PRCD burglaries in PFAs (winners) between the project starting year and submission year) and Hypothesis 3 (there will be a gradual decrease in CSEW and PRCD burglaries in PFAs (finalists) between the project starting year and submission year). According to the CSEW, Hypotheses 2 and 3 were rejected in all 6 cases. On the other hand, they were rejected in four cases and accepted in two cases according to PRCD (see Chapter 6, Table 6.3). This result might be due to the fact that small-scale projects did not affect the overarching burglary rates in those PFAs.

Step 3 tested whether there were greater decreases in burglaries in England and Wales in 1999, 2004 and 2008 when compared to other years (Hypothesis 4) as the number of anti-burglary projects was higher in those years. According to the findings, the decrease in burglaries in those years was always greater than the previous year. This might have been a general trend, or POP might have affected burglaries as the decrease in burglaries in 2004/05 and 2007/08 came after a slight increase in burglaries in the early 2000s. In sum, it was suggested that it was difficult to accept or reject Hypothesis 4 (see Chapter 6, Table 6.3).

Step 4 tested Hypothesis 5 (there will be a greater decrease in burglaries in PFAs that received funding for the Safer Cities projects compared to the most similar PFAs to them between 1988 and 1998). Hypothesis 5 was rejected in all cases (see Chapter 6, Section 6.3.3.1). Although Ekblom et al. (1996) concluded that the schemes reduced burglary, it was not likely that those projects influenced the overarching burglary trends in those PFAs. This is probably because although some projects were city-wide, most schemes were local (Ekblom et al., 1996).

Step 5 tested Hypothesis 6 (there will be a steeper decrease in burglaries in Greater Manchester and Kent after 1999 and Avon and Somerset, Derbyshire and West Yorkshire after 2000 compared to their most similar PFAs due to the implementation of anti-burglary TPI projects). Hypothesis 6 was rejected according to the CSEW but accepted according to PRCD for Greater Manchester between 1999 and 2000. It was accepted according to the CSEW but rejected according to PRCD for Kent between 1999 and 2000. It was accepted according to the CSEW but rejected according to PRCD for West Yorkshire between 2000

and 2001/02. It was rejected according to both data sources for Avon and Somerset between 2000 and 2001/02. It was accepted according to the CSEW but rejected according to PRCD for Derbyshire between 2000 and 2001/02 (see Chapter 6, Table 6.4). In sum, the results were mixed depending on the data source used. According to the CSEW, anti-burglary TPI projects might have affected the overarching burglary drop in those PFAs. Harris et al. (2003) found a significant reduction in average monthly recorded burglaries after the Market Reduction Approach⁵⁵ tactics were applied in a town; however, they questioned this result as there were similar reductions across the police force, too. Indeed, the PRCD results in Step 5 supported Harris et al. (2003).

Step 6 tested Hypotheses 7-9:

- There will be a greater decrease in burglaries in the West Midlands when compared to the most similar PFAs to it between 1999 and 2002 due to the implementation of the RBI projects.
- There will be a greater decrease in burglaries in West Yorkshire when compared to the most similar PFAs to it between 1999 and 2002 due to the implementation of the RBI projects.
- There will be a greater decrease in burglaries in South Yorkshire when compared to the most similar PFAs to it between 1999 and 2002 due to the implementation of the RBI projects.

Hypothesis 7 was accepted according to both data sources. Hypotheses 8 and 9 were accepted according to the CSEW but rejected according to PRCD (see Chapter 6, Table 6.4). In sum, according to the CSEW, the RBI projects might have had an effect on the burglary drop in those PFAs. This finding is in line with previous research (Hirschfield, 2007) which analysed 21 RBI projects and found a significant effect on burglary rates.

In Step 7, Hypothesis 10 (there will be a steeper decrease in burglaries in Cleveland, Lancashire, Leicestershire, the Metropolitan, Surrey and Thames Valley when compared to the most similar PFAs to them due to be an early implementer of POP) was split into three since the trends in burglaries in Cleveland, Lancashire and the Metropolitan had already been compared with the trends in their most similar PFAs in the previous steps. That is, it was hypothesised there would be a greater decrease in burglaries (1) in Surrey compared to

⁵⁵ “A strategic, systematic and routine problem-solving framework for action against the roots of theft” (Sutton et al., 2001: iii).

Dorset between 1991 and 1998; (2) in Thames Valley compared to Hampshire between 1992 and 2002/03; and (3) in Hampshire compared to Sussex between 2003/04 and 2007/08. According to PRCD, the first hypothesis was accepted between 1991 and 1998. Between 1995 and 1998, the first hypothesis was accepted according to the CSEW but rejected according to PRCD. The second hypothesis was rejected between 1992 and 2002/03, according to PRCD. It was also rejected between 1995 and 2002/03 according to both data sources. Finally, the third hypothesis was accepted between 2003/04 and 2007/08 according to the CSEW but rejected according to PRCD (see Chapter 6, Table 6.5). In sum, according to the CSEW, prominent supporters of POP saw greater reductions in burglaries compared to their most similar PFAs in two cases (out of three). According to PRCD, it seems that it did not matter to be an early implementer of POP. It should also be noted that Hampshire saw greater reductions in burglaries compared to its most similar PFA (Thames Valley) before starting to implement POP in 2002. Due to a lack of research on this topic, the findings of the current study cannot be linked with previous research.

Finally, Step 8 tested Hypotheses 11 and 12:

- There will be a gradual decrease in repeat burglaries at the national and PFA levels between 1995 and 2007/08.
- There will be a greater decrease in repeat burglary victimisations in PFAs, which were early implementers of POP, compared to their most similar PFAs.

Hypothesis 11 was accepted in all six cases (see Chapter 6, Table 6.6). Hypothesis 12 was accepted in three cases (out of four) (see Chapter 6, Table 6.7). This finding is in line with previous research (Forrester et al., 1988), which found a substantial drop in the level of repeat residential burglaries after implementing POP tactics (see Section 8.5.2 below).

8.3.3 Phase three

Did POP have a statistically significant effect on the mean number of burglary victimisations between 1995 and 2003/04?

After an initial exploration of the relationship between POP and the fall in burglary rates in England and Wales in Phase two, a comprehensive statistical analysis was conducted in Phase three. The results of the multilevel negative binomial regression modelling suggested police forces with a commitment to POP at any level had more burglaries compared to police forces that were not committed to POP at all in 1997. However, this relationship was only

statistically significant for police forces with a medium-level commitment to POP (see Chapter 7, Table 7.18, POP Only Model). This relationship remained when characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA were controlled (see Chapter 7, Table 7.18, Model 3). In 2003/04, although police forces that applied POP experienced fewer burglaries compared to police forces that did not apply POP at all (when characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA were controlled), the relationship did not reach significance (see Chapter 7, Table 7.19, Model 3). The results from 2003/04 seem to be supporting the findings of the analysis in Chapter 6 which suggested that there were greater reductions in burglaries in POP-committed PFAs when compared to their most similar PFAs, which were not committed to POP to the same extent. Finally, the analysis of bivariate correlations between POP and the mean number of burglaries from 1995 to 2003/04 gave similar results (see Chapter 7, Table 7.20).

8.4 Limitations of the study

This research thoroughly examined the role of POP in the burglary drop in England and Wales between 1988 and 2007/8 using a variety of data sources, methods and theories. Indeed, to the researcher's knowledge, this study is the first of its kind. However, there are inevitable limitations to this research that should be acknowledged.

Firstly, although the researcher had planned to analyse the role of POP in the falls in both burglaries and vehicle-related crimes, due to time limitations the researcher examined the relationship between POP and burglaries only and the statistical analysis in Chapter 7 did not report a statistically significant negative relationship between POP and burglaries in 1997 and 2003/04. However, there might have been statistically significant differences in reductions in other types of crime (particularly crime types that are suitable for being targeted with situational crime prevention tactics) between POP-committed PFAs and the most similar PFAs to them.

Secondly, the study used secondary data to measure burglary. Particularly, the PRCD used in Chapter 6 has some notable limitations, such as unreported crime (see Chapter 4, Section 4.6.1 for other limitations). The researcher argued that burglary is one of the crime types that is not affected by these limitations and sought to minimise the impact of these shortcomings on the results by using the CSEW, which is "viewed as a gold-standard survey" (Flatley, 2014: 199).

Thirdly, the level of commitment of police forces to POP was identified using two indicators of commitment, which were chosen by the researcher, and by reviewing the related literature. The researcher acknowledges that there is a possibility that the measurement of the force-level commitment was just too crude to test the nuances of the relationship between POP-related activities and burglary reduction. There were various mismatches in terms of temporal and spatial scales of the mechanisms at play which could have well undermined the ability of the methods to represent a fair test of the hypotheses.

Further, there are particular limitations of the first indicator (problem-oriented projects submitted to the Goldstein and Tilley Award schemes). Firstly, the projects submitted to the award schemes are biased towards success as they are self-nominated. Secondly, although they are good examples of POP application, they are not necessarily representative of the ideal of POP envisioned by Herman Goldstein (1990). The researcher sought to minimise the impact of these limitations on the analysis by using problem-oriented projects that were applied by police forces as part of large-scale government-supported crime reduction programmes (Indicator 2) and reviewing the related literature to supplement and triangulate the findings from the first indicator. However, the second indicator has its limitations as well, even though the researcher argued that the more funding a police force received, the more it was committed to POP. The researcher acknowledged that “a well ‘polished’ bid [is] not always a good indicator of the best projects” (Tilley et al., 1999: vi). There might be police forces that applied POP but did not receive funding; conversely, there might be police forces simply ticking boxes in relation to the Home Office and senior officers within their force to secure funding. These limitations suggest that another researcher might use other indicators of commitment to POP (e.g. cumulative intensity measure of POP activity) and can conclude different results. Nevertheless, the researcher believes that the best available data sources were used in the absence of the possibility of primary data collection due to the retrospective nature of the study. In addition, since a categorisation regarding the level of commitment to POP has not previously been made, the researcher’s method is a ‘necessary evil’ to progress knowledge.

Fourthly, as Tilley and Scott (2012) stated, it is difficult to differentiate the policing styles of police forces and their effects on crime over time. The researcher acknowledges this issue. That is why the researcher revisited previous research on policing styles of police forces in England and Wales and revised their findings, and deliberately focussed on highly POP-

committed police forces to identify the relationship between POP and the burglary drop in England and Wales.

Fifthly, the researcher could have used other variables to control for other possible crime drop hypotheses (particularly the security hypothesis). However, merging the CSEW and other data sets that could be used to control for the effects of other hypotheses was not possible due to data availability. In terms of controlling for the security hypothesis, the researcher acknowledges the importance of the security hypothesis but notes that it operates at the household level, whereas the core aim of this thesis was to analyse the effect of POP on burglaries at the PFA level and that this data was not available for the analysis.

Sixthly, the researcher could have used change in levels of burglary across time as the dependent variable rather than correlating overall levels of burglary with POP at two different time points in separate models. Police forces in England and Wales have been implementing POP since the 1980s. However, the CSEW data at the PFA level was available from 1998 to 2007/08. Therefore, it was not possible to examine the effect of POP-related activities of police forces prior to 1997 on the change in levels of burglary across time (e.g. 1980-1997) using multilevel modelling. The thesis could have used the change in levels of burglary between 1997 and 2003/04 as the dependent variable to explore the role of POP in the burglary drop if it was solely interested in whether POP (as a policing strategy) had an effect on burglaries. However, one of the main aims of this present thesis was to examine the effect of POP on burglaries *considering the level of commitment of police forces to POP*. However, the commitment of police forces can clearly vary across time. Therefore, constructing a commitment level for a certain year (i.e. 2003/04) and using overall levels of burglary from the 2003/04 CSEW was the most appropriate way to produce accurate results.

Seventhly, the researcher could have modelled time-lagged effects. Due to the data availability, the present thesis could not apply time series analysis, which could have been used to test the relationship between POP and burglaries because it can be used when 50 or more observations are repeatedly made (i.e. burglaries for 50 years using the CSEW). With regard to using a lagged dependent variable in multilevel modelling (or mixed models), Allison (2017) suggested that researchers cannot put a lagged value of the dependent variable as a predictor as in a mixed model this usually leads to severe bias. Furthermore, modelling time-lagged effects was not necessarily needed. This is because the researcher calculated the level of commitment of police forces to POP in 1997 considering the POP-related activities

of police forces prior to 1997. Similarly, the level of commitment of police forces to POP in 2003/04 was calculated considering the POP-related activities of police forces prior to 2003/04. Therefore, the models tested the effect of POP on burglaries using the ultimate level of commitment to POP in 1997 and 2003/04 as measured in this thesis.

Finally, testing the relationship between POP and burglaries at the PFA level might have masked the role of POP in the burglary drop at a lower level. However, the researcher argues that conducting a rigorous study that will investigate the role of POP in the crime drop at a lower geographic level across all police forces in England and Wales is beyond the capacity of any researcher at the Ph.D. level.

8.5 Theoretical contribution

This research aimed to make an original contribution to the existing policing and the crime drop literature. It first identified a gap in knowledge that previous studies have not explored the role of POP in the crime drop across the world (Weisburd and Majmundar, 2018) (see chapters 2 and 3) and critically reviewed the existing crime drop hypotheses (Chapter 3) to be able to explore the relationship between POP and burglary rates at the PFA level in England and Wales more accurately. The overarching hypothesis of the study was, therefore, that *there would be a relationship between POP and the burglary drop in England and Wales between 1988 and 2007/08*. In order to accept or reject this hypothesis, different methods and data sources were used. As a result, the researcher proposes three main explanations regarding the relationship between POP and the burglary drop in England and Wales: (1) POP-related leadership in policing, (2) policies targeting repeat victimisation, and (3) a disconnect between theory and implementation of POP and some other factors (e.g. police workload). The effect of number of police officers on burglaries is also discussed.

8.5.1 POP-committed senior leadership in policing

Senior police leaders are the key figures in enabling a change in mindset of police forces, which have historically always been resistant to change as an organisation (Goldstein, 1990). For example, only POP-committed senior leaders can overcome difficulties such as internal resistance to change and partial implementation of POP. Senior police leaders are, therefore, crucial to operationalise POP (Goldstein, 2003; Laycock and Tilley, 2018).

The literature consistently suggested that if POP is applied rigorously in a jurisdiction, it is primarily due to having a senior leader promoting its principles (Goldstein, 1990; Read and Tilley, 2000; Bullock et al., 2006). In line with the literature, the results presented in Chapter

6 suggested that having greater reductions in CSEW and PRCD burglaries in a number of POP-committed PFAs (especially Lancashire) compared to the most similar PFAs to them over time was owing to have senior police leaders who supported the POP philosophy (see Chapter 5, Table 5.10). For example, previous research (John and Maguire, 2003: 64) reported that “senior police managers in Lancashire were not keen to abandon the force’s commitment to POP, and decided therefore to base their implementation of the NIM [National Intelligence Model] explicitly on the POP principles which had already been widely instilled among operational staff” (see also Leigh et al., 1996; 1998; Scott, 2000; Tilley and Scott, 2012). As noted in Section 8.3.2, there was a much greater decrease in burglaries in Lancashire compared to it’s the most similar PFAs to it, particularly after 2001/02. Overall, it seems that the crucial role of senior police leaders with regard to operationalising POP and reaching the crime reduction objectives of police forces has been confirmed. Therefore, senior police leaders who do not prefer to implement POP in their area of responsibility should be encouraged to review the POP-related literature (at least). They will encounter the fact that even if POP is applied weakly, it reduces crime in certain circumstances (see Weisburd et al., 2010).

8.5.2 Policies targeting repeat victimisation

The overall decrease in repeat burglary victimisations in England and Wales was evident between 1995 and 2007/08 (Thorpe, 2007; see also Chapter 6, Figure 6.30). However, Thorpe (2007) was not concerned with the cause of the fall in repeat burglary victimisations. Therefore, Chapter 6 filled this substantial gap and examined the role of POP in the falls in repeat burglary victimisations. Chapter 6 suggested that there might have been a relationship between the implementation of POP and the decrease in repeat burglary victimisations (using the CSEW) in POP-committed PFAs between 1995 and 2007/08.

The reason for this finding is as follows. As discussed in Chapter 2, one of the core aims of POP is reducing repeat victimisation (Goldstein, 1990). Using the SARA framework, recurring problems of concern to the public and the police can be identified. Although all police forces claimed that they had a system to target repeat victimisation (Laycock and Farrell, 2003), it seems that a few POP-committed police forces prioritised targeting repeat burglary victimisations. For other police forces, it might be the fact that they did not target their tactics at the protection of victims, or their tactics otherwise had a weak preventive mechanism (Pawson and Tilley, 1997). Overall, given the success of POP-committed police forces in reducing repeat burglary victimisations, all police forces might embrace targeting

repeat victimisation as a primary tactic to reduce burglary rates.

8.5.3 Disconnect between theory and practice of POP and some other factors

The findings from Chapter 6 seemed to suggest a relationship between POP and the drop in burglaries in some POP-committed PFAs. However, Chapter 7 did not find a statistically significant negative relationship between POP and burglaries in both 1997 and 2003/04. There might be three reasons for this result. Firstly, as noted in Section 8.4, the measure of commitment to POP for 1997 and 2003/04 might be imperfect. Secondly, police forces are burdened with additional responsibilities along with crime prevention, and they are rarely provided with the resources, authority, or the necessary skills to accomplish their expected tasks (Goldstein, 2018). Therefore, police forces might have spent most of their time to solve community problems other than burglary (e.g. mental health). In addition, police forces “focus too much on offenders relative to other aspects of crime and disorder problems” (Eck and Gallagher, 2016: 133). Thirdly, although police forces claim that they apply POP, in practice, POP is more rhetoric than reality (Bullock et al., 2006). In other words, there might have been a disconnect between theory and practice of POP, which might have been due to the following five major impediments proposed by Goldstein (2003: 26-34):

- the absence of a long-term commitment to POP (see also Eck and Gallagher, 2016)
- the lack of skills within a police agency that are required to analyse problems and to evaluate strategies for dealing with those problems
- the lack of a clear academic connection (see also Fleming et al., 2015 for a detailed discussion)
- the absence of informed outside pressures
- the lack of financial support (see also Applegate, 2004).

Considering the three reasons mentioned, it should be noted that the findings of this study do not reflect the effect of ideal POP implementation on burglary rates in England and Wales.

One might also reasonably question why POP-committed police forces experienced higher burglaries compared to police forces that were not committed to POP at all in 1997. There might be two main reasons for this result. Firstly, police forces committed to POP might have been inclined to record more burglaries due to an increased sensitivity to such. Secondly, police forces with a higher number of burglaries might have applied POP as a remedy to their burglary problem. Although there is no previous research exploring the role of POP in the burglary drop at the PFA level, a study which assessed the performance of

community policing on crime rates found that the problem-solving dimension of community policing was associated with higher crime rates (Sozer, 2009). He also argued that the amplifying effect of problem-solving activities might be due to increased sensitivity to crime problems.

With the above discussion in mind, the reader should bear in mind that, "...evidence for effectiveness is not a statistical condition for the success of a policy" (Eck and Gallagher, 2016: 135) as Sparrow (2018: 5) suggested

"Focusing on statistically significant crime reductions may not recognise or reward the best problem-solving performance. The best performance, in a risk control setting, means spotting emerging problems early and suppressing them before they do much harm. The earlier the *spotting*, the less significant (in a statistical sense) would be the resulting reductions. The very best risk-control performance, therefore, would fail to produce substantial reductions, and might not, therefore, be visible under the lenses of standard statistical inference".

8.5.4 Increasing number of police officers

Whilst analysing whether POP had had a statistically significant independent effect on burglaries in 1997 and 2003/04, the effect of the number of police officers per 1000 residents in a PFA on burglaries was controlled. In both years, police forces with a greater number of police officers per 1000 residents experienced fewer burglaries. However, this relationship was statistically significant only in 2003/04 (see Chapter 7, tables 7.18 and 7.19, Model 3). This finding is in line with previous research (Marvell and Moody, 1996; Sherman et al., 1998; Levitt, 2004, see Chapter 3, Section 3.2.6.1). Therefore, rather than reducing the number of police officers (ONS, 2018), the UK government might consider hiring more police officers.

8.6 Policy implications regarding policing

Chapter 6 concluded that there seemed to be a relationship between POP and the burglary drop and the reduction in repeat burglary victimisations in a number of POP-committed PFAs between 1995 and 2007/08 (see Chapter 6, tables from 6.1 to 6.6). Chapter 7 also found that although the relationship was not statistically significant police forces that applied POP experienced fewer burglaries when compared to police forces that did not apply POP at all in 2003/04. Therefore, the results of this study support the implementation of POP by police forces in England and Wales and elsewhere. However, as discussed in Section 8.5.3,

there is a gap between theory and practice of POP and this gap can be narrowed by several means that are discussed in the following sections.

8.6.1 Increasing awareness regarding the related literature

Senior and frontline officers should read and comprehend the related literature in relation to POP (Clarke and Goldstein, 2003). For example, the What Works consortium, in partnership with the College of Policing, has developed an online tool⁵⁶ which uses the EMMIE framework⁵⁷ developed by Johnson et al. (2015) to improve the accessibility of the evidence base to policy makers and practitioners (Fleming et al., 2015). Police officers can also benefit from the Centre for Problem-Oriented Policing (<https://popcenter.asu.edu/>), which provided 73 problem-specific guides at the time of writing. When the literature is not read, or such available tools are not used (Goldstein, 2003), police forces tend to shout slogans without action and waste the wealth of the nations. There needs to be a tradition within policing that seeks knowledge and makes use of it (ibid). A system like Evidence Champions Network that will link police forces, which implement or want to implement POP can also be created (Eck, 2003).

8.6.2 Having POP-committed senior leaders

“How does a police agency make the shift to problem-oriented policing? Ideally, the initiative will come from police administrators” (Goldstein, 1979: 256). “It requires, initially, that the chief executive of an agency fully understands the rationale behind problem-oriented policing and be committed to it” (Goldstein, 2003: 27; see also Scott, 2000).

Having senior leaders who support the principles of POP as part of everyday practice within their PFAs is crucial (see Section 8.5.1). Those chief officers are also important figures in terms of turning the current reactive police culture into a proactive one. They are the ones who can motivate personnel and embrace the new ideal (Townesley et al., 2003; Eck, 2014). For this, knowing ‘organisational psychology’, which is outside the scope of this thesis, is desirable. However, there are some essential facts that senior police officers should consider whilst implement POP. They should commit resources, hire specialist crime analysts and consider their recommendations. They also should acknowledge the fact that although Goldstein argues that POP should be applied primarily by senior management, it has been

⁵⁶ <http://whatworks.college.police.uk/toolkit/Pages/Toolkit.aspx>

⁵⁷ EMMIE stands for Effect, Mechanism, Moderators, Implementation, and Economic cost.

largely implemented by a small group of committed and enthusiastic line officers (Bullock et al., 2006). However, relying heavily on individual police officers is not preferable. This is because when those committed individuals retire or leave their forces, a sustainability problem would occur. Therefore, senior leaders should “lead and institutionalise problem-solving activities at all levels of the police organisation” (Mazerolle et al., 2013: 556) to reduce crime (see also Scott, 2000).

8.6.3 Establishing partnerships

Police forces should develop partnerships with other agencies, especially with academia (e.g. N8 policing collaboration) (Knuttsen, 2013; Eck, 2014; Goldstein, 2018). Goldstein (1979: 256) suggested: “[t]he police administrator who focuses on the substance of policing should be able to count on support from others in key positions in the police field” (see also Tilley and Scott, 2012). Partnership was found to be a more effective way of reducing crime rates (Eck and Maguire, 2000; Bullock et al., 2006; Eck, 2014) as it ensures approaching crime problems in a more scientific way and from different perspectives. For instance, a problem-solving officer interviewed by Applegate (2004: 40) who evaluated the process of POP in Plymouth explained what partnership means to a police force: “[i]n partnership with other organisations and agencies, possibly taking a different look at the problem and aiming to resolve that problem in a different way, rather than just throwing manpower at it”.

8.6.4 Considering the interests of other governmental parties

According to Scott (2003: 62-63), the gap between the theory and practice of POP can be narrowed by considering the interests of:

- prosecutors, the defence bar, and the judiciary
- mayors, city managers and other elected officials
- community groups
- media
- academia and police research organisations
- government funding agencies
- private industry.

For instance, if the principles and methods of POP and examples of good problem-oriented analysis are explained to the first and second groups of the above list; if the media can engage with POP (e.g. through case studies), and if the funding and publication opportunities are

increased for the fifth group, then the external support for POP may increase (ibid), and POP can be implemented more rigorously.

8.6.5 Increasing perceived time for POP

Senior police leaders (e.g. Police and Crime Commissioners) should be advised that POP is a long-term investment (Goldstein, 2003; Bullock and Tilley, 2003) but is also a cost-effective way of reducing crime rates as a problem-solving officer interviewed by Applegate (2004: 45) noted: "...that's been fundamental in saving money". The following sections provide recommendations on what POP investment should look like.

8.6.6 Hiring specialist crime analysts

A thorough analysis of conditions that give rise to crime problems is essential to reducing crime rates according to the POP philosophy (Tilley and Scott, 2012). In other words, analysis is at the core of POP (Goldstein, 2003; Clarke and Goldstein, 2003; Sparrow, 2018). To be able to conduct a rigorous analysis, police forces should hire more specialist crime analysts (Goldstein, 2018) who are capable of analysing different types of crime data (Braga, 2008; Tilley and Scott, 2012), have extensive knowledge of a variety of statistical and mapping tools, are trained in POP, who do not serve other non-crime tasks (Goldstein, 1979; Knutsson, 2003; Goldstein, 2003; Laycock and Farrell, 2003) and who are paid well in the era of big data (Ridgeway, 2018).

Universities and research organisations might be the best place to produce such crime analysts (Tilley and Scott, 2012). Those people should also be capable of networking with practitioners. On the one hand, governments should provide funding to universities and police forces to be able to equip people with those skills. On the other hand, governments should advise practitioners to open their doors to academics (Goldstein, 2003).

8.6.7 Providing internal training

Police forces should also provide internal training on POP to personnel. "The greatest potential for improvement in the handling of some problems is in providing police officers new forms of specialised training" (Goldstein, 1979: 253) and "... systematic analysis of substantive problems requires developing a capacity within the organisation to collect and analyse data and to conduct evaluations of the effectiveness of police operations" (Goldstein, 1979: 256).

8.6.8 Increasing incentives

Incentives play a crucial role in getting the police to take POP seriously (Scott, 2003; Goldstein, 2003; Bullock et al., 2006; Sparrow, 2018). A good example of an incentive for the police to implement POP in the UK is the Tilley Award scheme. It is one of the best methods of sharing good practice in POP that “will benefit other police agencies and that will ultimately contribute to ... building a body of knowledge that supports the further professionalisation of the police” (Goldstein, 2001, cited in Scott, 2003: 50). After a break in service due to financial issues in 2010, the scheme was officially reopened for application on 7th September 2018 for the first time in eight years by the Problem Solving and Demand Reduction programme, which was set up by South Yorkshire Police in 2017 following a successful Police Transformation Fund Award (£6.35 million) (South Yorkshire Police, 2018). The UK government should continue to support POP-related initiatives such as the Tilley Award scheme.

8.7 Methodological implications

The overarching aim of this research was to test whether POP played a role in the burglary drop in England and Wales between 1988 and 2007/08. To address the overarching aim, the researcher argued that “simply counting the number of agencies that claim to be using ... [a policing strategy]... is a poor indicator of the diffusion of the innovation” (Eck and Maguire, 2006: 245). Instead, an analysis of whether POP affects crime rates should consider the level of commitment of police forces to POP.

Identifying the level of commitment of police forces to POP was a challenging task to accomplish. Drawing upon two indicators of commitment to POP selected by the researcher and reviewing the related literature, the researcher tried to overcome the challenge. However, a more rigorous classification of police forces in terms of the level of commitment to POP could have been made if a survey, which asks the questions presented in Appendix 4.1, was available as a secondary data source like the CSEW.

The CSEW is a gold-standard data source (Flatley, 2014). However, it clearly needs some improvement, particularly with regard to questions asked in relation to policing. The lack of questions about police authorities restricted the analysis. This is understandable since it is a victimisation survey. However, one of the major objectives of the police is to prevent crime (see Chapter 2, Section 2.4). The police authorities (particularly Police and Crime Commissioners) are also accountable to the communities they serve (Lister, 2013). For

example, the CSEW questions regarding the Neighbourhood Watch programme, which can be implemented to reduce burglaries at the Response stage of the SARA framework, can be improved (see Tseloni and Tura, 2019). Collectively, employing a survey that assesses the state of POP across England and Wales, for example, biennially or improving the questions regarding the Neighbourhood Watch programme in the CSEW might be beneficial to the examination of the effects of POP on crime over time.

8.8 Original contribution to knowledge

The present study has made a number of original contributions to knowledge. Chapter 5 firstly identified and collated highly POP-committed police forces in England and Wales over time for the first time. Secondly, Chapter 5 criticised existing limited research on policing strategies of police forces in England and Wales and revised their findings. Thirdly, Chapter 5 determined the level of commitment of police forces to POP in 1997 and 2003/04, separately. For this, it used two indicators of commitment to POP selected by the researcher and reviewed the related literature to supplement and triangulate the findings from the analysis of these two indicators. To the researcher's knowledge, this marks the first time such an analysis has been conducted. Fourthly, Chapter 6 used ten sweeps of the CSEW along with PRCD to initially investigate the role of POP in the burglary drop at the PFA level (using most similar police force groups) in England and Wales between 1988 and 2007/08. To the researcher's knowledge, this is the first time such a study has been carried out (see Weisburd and Majmundar, 2018). Fifthly, Chapter 6 examined the relationship between POP and the decrease in repeat burglary victimisations in a number of POP-committed PFAs between 1995 and 2007/08 and suggested that the decrease in repeat burglary victimisations might be a product of POP as it generally focusses on repeat victimisation. Therefore, the study particularly showed that the concept of repeat victimisation in policing practice is an important factor to be able to solve the crime drop puzzle. Finally, Chapter 7 assessed whether POP had had a statistically significant effect on burglaries from 1995 to 2003/04. For this, it identified burglary risk factors at the household and PFA levels drawing upon the existing literature and relevant theories (routine activity and social disorganisation theories). By controlling for the effects of characteristics of households and PFAs and the number of police officers per 1000 residents in a PFA, Chapter 7 assessed whether POP had had a statistically significant independent effect on the mean number of burglary victimisations in 1997 and 2003/04, separately, for the first time. Chapter 7 also examined bivariate correlations between POP and the mean number of burglaries from

1995 to 2003/04 for the first time. Overall, the thesis has made a unique contribution to the policing and the crime drop literature.

8.9 Recommendations for future research

This final section recommends some avenues for future research that are related to the scope of the research, data sources and methods that can be used to further investigate the role of POP in the crime drop in England and Wales.

Firstly, future studies can extend the scope of the analysis to other crime problems at the PFA level. They might particularly focus on repeat victimisation. For example, future research might examine whether POP has affected repeat victimisation of personal crimes. Secondly, future research can narrow the scope of the analysis and explore the role of POP in the crime drop at a lower geographic level (e.g. police beats). For this, future studies might select a police force that has been interested in applying POP more recently (e.g. Durham or South Yorkshire). This would enable researchers to examine the state of POP within those police forces more accurately through primary data collection (e.g. interviews, observations, ethnographic studies).

8.10 Concluding remarks

The role of policing in crime reduction has been debated in the existing literature for a long time. Whilst some scholars asserted that policing has little or no effect on crime rates, others proposed that the primary aim of the police service is to reduce crime rates, and indeed does so. Crime is a complex social phenomenon, and many factors influence it. Readers should bear in mind that those factors cannot be included in a single study due to data availability issues. As Goldstein (1990: 49) suggests “[h]igh quality evaluations of the effectiveness of major changes are difficult because of the large number of variables that can affect outcomes and because of the enormous effort and cost involved in setting up controlled experiments” (see also Scott, 2017). With the above general limitation and the limitations of the current study presented in Section 8.4 in mind, the findings of this thesis provide a number of contributions to the field of policing and the crime drop:

1. POP has been one of the main policing strategies preferred by police forces in England and Wales since the 1980s.
2. A number of police forces in England and Wales have been consistently committed to POP.

3. Some POP-committed police forces experienced greater reductions in burglaries compared to their most similar police forces, which were not committed to POP to the same extent, over time.
4. However, police forces that applied POP experienced more burglaries compared to others from 1995 to 2002/03. It was only in 2003/04 that police forces that applied POP experienced fewer burglaries compared to others, and indeed this was not a statistically significant finding.

Based on the findings presented, the overall conclusion of this study is that there seemed to be a relationship between POP and the fall in burglaries and repeat burglaries in a number of POP-committed PFAs in England and Wales between 1995 and 2007/08 (see Chapter 6). However, there was no statistically significant negative relationship between POP and the mean number of burglaries from 1995 to 2003/04 (see Chapter 7). This result does not necessarily mean that POP does not reduce crime, as by contrast, Chapter 7 found police forces that applied POP experienced fewer burglaries compared to police forces that did not implement POP in 2003/04. In addition, there is a wealth of existing evidence suggesting POP is an effective policing strategy (e.g. Weisburd et al., 2010). The priorities of the police service should thus be reassessed. Targeting repeat victimisation should (continue to) be one such priority to reduce crime and bring POP into the policing mainstream. If meticulously implemented, POP might also have had a statistically significant negative effect on burglaries in England and Wales over time.

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APPENDICES

Appendix 1.1: Definition of burglary in England and Wales

Burglary – CSEW

“The CSEW is a survey of the population resident in households and, as such, information collected on burglary offences only relates to domestic burglary; that is, unauthorised entry into the victim’s dwelling or non-connected building to a dwelling (for example, a shed or a non-connected garage). Non-domestic burglary (for example, theft from business properties) is not covered by the CSEW.

The main CSEW estimates differentiate between burglary in a dwelling and a non-connected building to a dwelling. Subcategories are defined as follows:

- “burglary with entry” comprises burglary where a building was successfully entered, regardless of whether something was stolen or not
- “burglary with loss” comprises burglary where a building was successfully entered, and something was stolen
- “burglary with no loss” comprises burglary where a building was successfully entered but nothing was stolen
- “attempts” comprises incidents where there is clear evidence that the offender made an actual, physical attempt to gain entry to a building (for example, damage to locks, or broken doors) but was unsuccessful

Domestic burglary does not include theft by a person who was entitled to be in the dwelling at the time the offence occurred (for example, a party guest or worker); such offences are classified as theft from a dwelling and are included in the separate category of “other household theft”.

Burglary – police recorded crime

The police record an incident of burglary if a person enters any building as a trespasser with the intent to commit an offence of theft; this includes dwellings and other properties, such as sheds, garages not connected to dwellings and businesses.

Prior to April 2017, police recorded burglary offence categories were split such that dwellings (domestic burglary) and buildings other than dwellings (non-domestic burglary) were separately identifiable, where:

- domestic burglary covers residential premises, including attached buildings such as garages

non-domestic burglary covers non-residential premises, including businesses and public buildings, as well as non-attached buildings within the grounds of a dwelling, such as sheds and detached garages”.

Source: Flatley (2017)

Appendix 2.1: Before/after studies from the UK

1. Aspin, Mark. (2006). Trafford Park security initiative- Reducing crime in Trafford Park. Safer Trafford Partnership. Tilley Award Submission.
2. Burton, Steve. (2006). Safer travel at night: Transport for London. London Transport Policing and Enforcement Directorate. Herman Goldstein Award Winner.
3. Cator, Marcus. (2006). Operation Mullion: Reducing anti-social behaviour and crime in and around Mayfield School. Hampshire Police. Tilley Award Finalist.
4. Coombs, Adrian. (2006). Policing the Glastonbury Festival. Avon and Somerset Police. Tilley Award Submission.
5. Davies, Amanda. (2006). Operation clean up. Staffordshire Police. Tilley Award Submission.
6. Donaghy, Jim. (1999). Northfields Project: Project brings peace back to city estate. Leicestershire Police. Tilley Award Winner.
7. Earle, Julie and Alan Edmunds. (2004). Operation Cobra: Tackling vehicle crime in the city of Portsmouth. Hampshire Police. Tilley Award Runner-Up.
8. Hopkins, Matt. (2004). Targeting hotspots of alcohol-related town centre violence: A Nottinghamshire case study. *Security Journal* 17(4): 53-66.
9. Maguire, Mike and Hilary Nettleton. (2003). Reducing alcohol-related violence and disorder: An evaluation of the 'TASC' project. London: Home Office Research, Development and Statistics Directorate.
10. Middleham, Neil and Caroline Marston. (2004). Mole hills from mountains. Lancashire Police. Herman Goldstein Award Finalist.
11. Pease, Ken. (1991). The Kirkholt Project: Preventing burglary on a British public housing estate. *Security Journal* 2(2): 73-77.
12. Forrester, David, Mike Chatterston, and Ken Pease. (1988). The Kirkholt burglary reduction project, Rochdale. London: Home Office Crime Prevention Unit.
13. Pearson, Gareth and Steve Armes. (2004). The Hopwood Triangle: Revitalizing a depressed neighbourhood in Lancashire. Lancashire Police. Herman Goldstein Award Finalist.
14. Siggs, Richard. (2005). Operation Dodger: Policing the street community in Brighton and Hove. Sussex Police. Tilley Award Winner.
15. Smith, Andy. (2004). Safe and secure- Twenty-four seven. Staffordshire Police. Tilley Award Finalist.

Appendix 2.1: Before/after studies coming from the UK (continued)

16. Smith, Andy. (2005). Nowhere to run to nowhere to hide: Neighborhood burglary reduction. Staffordshire Police. Herman Goldstein Award Finalist.
17. Thistlethwaite, Edward and Paolo Pertica. (2002). The tower project. Lancashire Police. Tilley Award Submission.
18. Thomas, Clive. (2001). Bristol anti-robbery strategy. Avon and Somerset Police. Tilley Award Submission.

Source: Weisburd et al. (2008)

Appendix 4.1: Problem-solving checklist

Problem identification/Scanning

Are repeat calls for service and repeat crimes routinely scanned?

Are efforts to identify and analyse past and emerging problems routine?

Are simple emerging problems allocated to individuals for their response, either on their own or in conjunction with other agencies?

Are more complex emerging problems identified/prioritised in routine discussion amongst partners?

Do partnerships routinely try to anticipate and forestall future problems?

Causal analysis/Analysis

Are adequate data collection and sharing arrangements in place to be used in problem identification and analysis?

Are local analysts available who are familiar with relevant theory, crime reduction literature, and analytic techniques to identify and analyse problems?

Do analysts have the hardware and software they need to do their job?

Do analysts have a competent source of advice and supervision for their analytic work?

Do analysts work in partnership with same agency colleagues responsible for dealing with problems, and with those in other agencies and their analysts?

Do staff in supervisory positions have training and experience in analysis?

Tactic or treatment/Response

Do partnerships addressing agreed problems have sources of informed advice on possible promising responses?

Do members of partnerships have a joint budget to implement or pump prime responses to agreed problems?

Are members of partnerships adaptable in their service delivery patterns where doing so may comprise a promising response to a problem?

Do those allocated problems have sources of informed advice on possible promising responses?

Are external sources of advice in problem-solving being drawn on when needed?

Appendix 4.1: Problem-solving checklist (continued)

Output monitoring/Assessment
Are all problem-solving efforts within the BCU/authority area systematically monitored?
Are initiatives adjusted in the light of monitoring?
Is an evaluation strategy in place?
Are reputable independent evaluators used where significant resource allocation decisions turn on evaluation findings?
Is care taken not to give unqualified support to extending initiatives that have not been subject to independent competent evaluation?
Are provisions in place to conduct 'light' in-house or student evaluations where only suggestive findings are needed?
Incentivisation/enablement
Do members of partnerships encourage their staff routinely to participate in problem-solving?
Are individuals allocated problems given training in their analysis and in forms of response?
Are individuals allocated problems given reasonable time to address them?
Are specialist skills being drawn on and used in problem-solving?
Does the partnership provide a forum for mutual leverage in problem-solving?
Does the partnership have agreed on ways of applying leverage where necessary to third parties in implementing responses to problems?
Is the work of the partnership monitored regularly and members held to account for their problem-solving?
Are individual agencies being performance measured for their local problem-solving work as well as their attention to national priorities?
Do supervisors help subordinates with problem-solving and monitor their problem-solving work?
Are staff oriented to problem-solving, with selection, training and rewards to encourage and enable them?
Do senior members of agencies know of and understand the problems being addressed?
Problem-communication to and from other levels
Is day to day problem-solving monitored and are efforts made to identify broader problems?
Are problems identified within the area that may reflect broader problems passed 'up' for analysis and attention at 'higher' levels?

Source: Read and Tilley (2000)

Appendix 4.2: Recoding

4.2.1: Ethnic Group

1998	2003/04	Recoding
Variable name	Variable name	Variable name
Ethnicid	Ethnic	Ethnicity
White	White - British White - Irish White - Other White Background	White
Black-Caribbean Black-African Black-Other	Black or Black British - Caribbean Black or Black British - African Black or Black British - Other Black Background	Black
Indian Pakistani Bangladeshi	Asian or Asian British - Indian Asian or Asian British - Pakistani Asian or Asian British - Bangladeshi Asian or Asian British - Other Asian Background	Asian
Other	Other Ethnic Group Mixed - White and Black Caribbean Mixed - White and Black African Mixed - White and Asian Mixed - Any Other Mixed Background	Other/Mixed/Chinese
Chinese	Chinese	

4.2.2: Income

1998	2003/04	Recoding
Variable Name	Variable Name	Variable Name
tothnic	tothnic1	Household Income
Nothing/No work or scheme Under £2,500 £2,500-£4,999	Nothing/No work or scheme Under £2,500 £2,500-£4,999	Less than £4,999
£5,000-£9,999	£5,000-£9,999	£5,000-£9,999
£10,000-£14,999 £15,000-£19,999	£10,000-£14,999 £15,000-£19,999	£10,000-£19,999
£20,000-£29,999	£20,000-£24,999 £25,000-£29,999	£20,000-£29,999
£30,000-£49,999 £50,000 or more	£30,000-£34,999 £35,000-£39,999 £40,000-£44,999 £45,000-£49,999 £50,000 or more	£30,000 or more
Refused Do not know	Refused Do not know	No response

Appendix 4.2: Recoding (continued)

4.2.3: HOH class

1998	2003/04	Recoding
Variable Name	Variable Name	Variable Name
Hohclass	hrpsec2	HOHclass
Professional Managerial and technical occupations	Large employer and higher managerial occupations Higher professional occupations Lower professional and higher technical occupations	Professional
Skilled occupations (non- manual) Skilled occupations (manual)	Intermediate occupations Small employers and own- account workers Lower supervisory and technical occupations	Intermediate
Partly skilled occupations Unskilled occupations	Semi-routine occupations Routine occupations	Routine
Armed forces Inadequate description	Never worked Not classified	Never worked/inadequate description/armed forces

Note: To recode social class of HOH, the ONS guide to the National Statistics Socio-economic Classification (NS-SEC) was used (<https://www.ons.gov.uk/methodology/classificationsandstandards/otherclassifications/the-national-statistics-socio-economic-classification-ns-sec-rebased-on-soc2010>).

4.2.4: Type of Accommodation

1998	2003/04	Recoding
Variable Name	Variable Name	Variable Name
accharm1	acctyp	Accommodation type
Detached	A detached whole house	Detached
Semi	A semi-detached whole house	Semi-detached
Terrace	A mid-terrace whole house An end of terrace whole house	Terraced
Maisonette A purpose-built flat A converted flat Other	A maisonette A purpose-built flat A converted flat rooms, bedsitter A caravan or mobile home	Flat/Maisonette/Others
	Unable to code Not coded	Not coded

Appendix 4.2: Recoding (continued)

4.2.5: Lone parent

compute lpar=0.

if ((nchil=1) & (nadults=1)) lpar=1.

Notes:

(1) nchil: number of children; nadults: number of adults

(2) variable name for lone parent is lpar in both years

4.2.6: Area Type

“There is no specific variable which distinguishes between inner city, urban and rural areas contained in the survey pre-2001. Therefore, where the information was not readily available, a new variable was derived using the ‘acorn’, ‘incity’ and ‘inner’ variables using the following syntax”:

recode acorn (1 thru 9,27=3) into areatype

/incity (1=1) into areatype

/areatype (1,3=copy) (else=2).

value labels areatype 1'inner' 2'urban' 3'rural'.

execute.

Adapted from Thompson (2014: 80).

Appendix 4.3: Most similar police force groups

Avon and Somerset	Bedfordshire	Cambridgeshire	Cheshire
Essex Hertfordshire Kent Hampshire Cambridgeshire Devon & Cornwall Thames Valley	Hertfordshire Sussex Hampshire Essex Thames Valley Kent Avon & Somerset	Devon & Cornwall Gloucestershire Wiltshire Avon & Somerset Warwickshire Essex Kent	Staffordshire Northamptonshire Warwickshire Suffolk Wiltshire Gloucestershire Devon and Cornwall
City of London	Cleveland	Cumbria	Derbyshire
City of London does not have an MSG due to the unique nature of the force	Northumbria Merseyside South Yorkshire South Wales West Midlands Gwent	North Wales Derbyshire Norfolk Suffolk Staffordshire Cheshire Durham	Cumbria North Wales Durham Norfolk Staffordshire Humberside Suffolk
Devon and Cornwall	Dorset	Durham	Dyfed Powys
Cambridgeshire Gloucestershire Warwickshire Wiltshire Avon & Somerset Essex Kent	Surrey Thames Valley Hampshire Sussex	Humberside Gwent Derbyshire South Wales South Yorkshire Nottinghamshire Cumbria	Lincolnshire Norfolk North Wales

Appendix 4.3: Most similar police force groups (continued)

Essex	Gloucestershire	Greater Manchester	Gwent
Avon & Somerset Kent Hertfordshire Hampshire Leicestershire Devon and Cornwall Cambridgeshire	Wiltshire Warwickshire Devon and Cornwall Cambridgeshire West Mercia North Yorkshire Cheshire	West Yorkshire West Midlands Northumbria Merseyside South Yorkshire	Humberside Durham South Yorkshire South Wales Cleveland
Hampshire	Hertfordshire	Humberside	Kent
Sussex Hertfordshire Thames Valley Bedfordshire Essex Avon and Somerset Kent	Hampshire Sussex Bedfordshire Essex Avon and Somerset Thames Valley Kent	Durham Gwent Derbyshire South Yorkshire South Wales Nottinghamshire	Leicestershire Essex Lancashire Avon & Somerset Hertfordshire Devon and Cornwall Bedfordshire
Lancashire	Leicestershire	Lincolnshire	Merseyside
Leicestershire Kent Nottinghamshire West Yorkshire Essex Northamptonshire Hertfordshire	Kent Lancashire Essex Northamptonshire Nottinghamshire Avon and Somerset Devon and Cornwall	Dyfed Powys Norfolk North Wales Suffolk	West Midlands Cleveland Northumbria Greater Manchester

Appendix 4.3: Most similar police force groups (continued)

Metropolitan	Norfolk	North Wales	North Yorkshire
Greater Manchester West Yorkshire West Midlands	North Wales Cumbria Lincolnshire Dyfed Powys Suffolk Derbyshire North Yorkshire	Cumbria Norfolk Derbyshire Suffolk Lincolnshire Dyfed Powys	West Mercia Suffolk Wiltshire Warwickshire Gloucestershire Cheshire Devon and Cornwall
Northamptonshire	Northumbria	Nottinghamshire	South Wales
Staffordshire Cheshire Nottinghamshire Leicestershire Warwickshire Devon and Cornwall Kent	South Yorkshire South Wales Cleveland Nottinghamshire Merseyside Greater Manchester West Midlands	South Wales South Yorkshire Northamptonshire Leicestershire Lancashire Staffordshire Northumbria	South Yorkshire Nottinghamshire Northumbria Cleveland Durham Lancashire Northamptonshire
South Yorkshire	Staffordshire	Suffolk	Surrey
South Wales Northumbria Nottinghamshire Cleveland Durham Humberside Lancashire	Cheshire Northamptonshire Warwickshire Nottinghamshire Suffolk Wiltshire Gloucestershire	North Yorkshire West Mercia Warwickshire Cheshire Norfolk Wiltshire Cumbria	Dorset Thames Valley Sussex

Appendix 4.3: Most similar police force groups (continued)

Sussex	Thames Valley	Warwickshire	West Mercia
Hampshire Hertfordshire Thames Valley Bedfordshire Essex Avon and Somerset Kent	Hampshire Sussex Hertfordshire Avon and Somerset Essex Bedfordshire Dorset	Wiltshire Gloucestershire Devon and Cornwall Cheshire Cambridgeshire North Yorkshire West Mercia	North Yorkshire Wiltshire Suffolk Warwickshire Gloucestershire Cambridgeshire Devon and Cornwall
West Midlands	West Yorkshire	Wiltshire	
Greater Manchester Merseyside West Yorkshire Northumbria Cleveland	Greater Manchester Lancashire West Midlands Northumbria Leicestershire South Wales South Yorkshire	Gloucestershire Warwickshire West Mercia North Yorkshire Devon and Cornwall Cambridgeshire Cheshire	

Source: HMICFRS (2017)

Appendix 5.1: Hypotheses to be tested in Chapter 6

Hypothesis	Indicator	Hypotheses
1	1	There will be a sharper decrease in burglaries in highly POP-committed PFAs (according to indicator one) when compared to the most similar PFAs to them which were not committed to POP to the same extent.
1.1	1	There will be a sharper decrease in burglaries in Lancashire when compared to the most similar PFAs to it which were not committed to POP to the same extent.
1.2	1	There will be a sharper decrease in burglaries in the Metropolitan when compared to Greater Manchester.
1.3	1	There will be a sharper decrease in burglaries in Cleveland when compared to Northumbria.
1.4	1	There will be a sharper decrease in burglaries in Merseyside when compared to the West Midlands.
1.5	1	There will be a sharper decrease in burglaries in Cumbria when compared to North Wales.
1.6	1	There will be a sharper decrease in burglaries in Avon and Somerset when compared to Essex.
2	1	There will be a gradual decrease in burglaries in PFAs (where the winner projects were implemented) between the project starting year and submission year.
3	1	There will be a gradual decrease in burglaries in PFAs (where the finalist projects were implemented) between the project starting year and submission year.
4	1	The decreases in burglaries in England and Wales in 1999, 2004 and 2008 will be greater when compared to other years.
5	2	There will be a greater decrease in burglaries in PFAs that received funding for the Safer Cities projects compared to the most similar PFAs to them between 1988 and 1998.

Appendix 5.1: Hypotheses to be tested in Chapter 6 (continued)

Hypothesis	Indicator	Hypotheses
6	2	There will be a steeper decrease in burglaries in Greater Manchester and Kent after 1999 and Avon and Somerset, Derbyshire and West Yorkshire after 2000 when compared to the most similar PFAs to them owing to the implementation of anti-burglary TPI projects.
7	2	There will be a greater decrease in burglaries in the West Midlands when compared to the most similar PFAs to it between 1999 and 2002 owing to the implementation of RBI projects.
8	2	There will be a greater decrease in burglaries in West Yorkshire when compared to the most similar PFAs to it between 1999 and 2002 owing to the implementation of RBI projects.
9	2	There will be a greater decrease in burglaries in South Yorkshire when compared to the most similar PFAs to it between 1999 and 2002 owing to the implementation of RBI projects.
10	Literature	There will be a steeper decrease in burglaries in Cleveland, Lancashire, Leicestershire, the Metropolitan, Surrey and Thames Valley when compared to the most similar PFAs to them owing to be an early implementer of POP.
11	Literature	There will be a gradual decrease in repeat burglaries at the national and PFA-level between 1995 and 2007/08.
12	Literature	There will be a greater decrease in repeat burglary victimisations in PFAs, which were early implementers of POP, compared to their most similar PFAs.

Appendix 5.2: The Targeted Policing Initiative projects by PFA

Police Force	Scale of Project	Targeted Crime Type	Round	Funding (£)	Total Funding (£)
Avon and Somerset	Central Bristol	Robbery and the fear of crime	2	1,005,000	1,280,000
Avon and Somerset		Burglary and distraction burglary ; cheque and card fraud; organised vehicle crime; and shoplifting	2	275,000	
Cambridgeshire	Cambridge South	Cycle theft	2	167,000	167,000
Cheshire	Force-Wide	Robbery in rural areas	2	186,000	186,000
Cumbria	Force-Wide	Violent crime in public places	2	637,000	637,000
Derbyshire	Force-Wide	Drugs	2	317,000	485,000
Derbyshire	Force-Wide	Distraction burglary	2	168,000	
Devon and Cornwall	Force-Wide	Violent crime linked to alcohol abuse	2	950,000	1,031,000
Devon and Cornwall	East Devon	Offender targeting for anti-social behaviour	2	81,000	
Greater Manchester	Stockport	Acquisitive crime	1	431,000	1,387,000
Greater Manchester	North Trafford	Commercial crime	2	456,000	
Greater Manchester	Mosside and Long Sight	Firearms	2	500,000	
Hampshire	Portsmouth	Witness intimidation	2	411,000	411,000
Humberside	Bransholme	Anti-social and low-level criminal behaviour	1	377,000	457,000
Humberside	Scunthorpe	Reduction in anti-social behaviour	2	80,000	
Kent	Medway	Acquisitive crime /Stolen goods market	1	450,000	1,206,000
Kent	North Kent	Vehicle crime	2	756,000	

Appendix 5.2: The Targeted Policing Initiative projects by PFA (continued)

Police Force	Scale of Project	Targeted Crime type	Round	Funding (£)	Total Funding (£)
Lancashire	Blackpool	Reduction in vehicle crime and anti-social behaviour	2	103,000	103,000
Lincolnshire	Force-Wide	Arson	2	268,000	268,000
Merseyside	St. Helens	Vehicle crime	2	397,000	2,322,000
Merseyside	Force-Wide	Non-residential property crime	2	598,000	
Merseyside	Knowsley	Crime and disorder	2	145,000	
Merseyside	Force-Wide	Organised and volume crime	2	1,020,000	
Merseyside		Child Prostitution	2	162,000	
Metropolitan	Hackney	Crime and fear of crime	1	760,000	
Metropolitan	Islington/Camden/South wark	Vehicle crime	1	597,000	
Metropolitan	Hounslow/Merton	Racism/Confidence in policing amongst ethnic minorities	1	500,000	
Metropolitan	Brent	Violent and drug-related crime	2	803,000	
Metropolitan	Westminster/Camden	Drugs related crime	2	2,000,000	
Metropolitan	Haringey	Disruption and reduction in the crack cocaine and open sex markets	2	775,000	
Metropolitan	Hillington	Vehicle crime	2	55,000	
Metropolitan	Southwark	Hate crime	2	688,000	
Metropolitan	Sutton	Anti-social behaviour and other crimes	2	35,000	
Metropolitan		Hate crime	2	287,000	
North Wales	Wrexham	Crime on an industrial estate	2	188,000	188,000
North Yorkshire		Fear of crime in a rural area	2	186,000	186,000
Northamptonshire	Force-Wide	Vehicle crime	2	1,095,000	1,095,000

Appendix 5.2: The Targeted Policing Initiative projects by PFA (continued)

Police Force	Scale of project	Targeted crime type	Round	Funding (£)	Total funding (£)
Northumbria	Tynedale	Crime and disorder	1	40,000	373,000
Northumbria		Rural Crime	2	333,000	
Nottinghamshire	Force-Wide	Alcohol related violence	2	1,199,000	1,199,000
South Wales	Rhondda Cynon Taff	Absconding, offending and nuisance behaviour of young people	1	500,000	1,000,000
South Wales	Cardiff	Alcohol-related violence	1	500,000	
Surrey	Force-Wide	Safety of hospital staff	2	222,000	222,000
Sussex	Brighton	Hate crime	2	1,200,000	1,906,000
Sussex	Brighton	Vehicle crime	2	706,000	
Warwickshire		Business crime	2	174,000	174,000
West Mercia		Stolen goods markets	2	512,000	512,000
West Midlands		IT system	2	510,000	607,000
West Midlands		Antisocial behaviour and other crimes	2	97,000	
West Yorkshire	Calderdale	Vehicle crime	1	159,000	1,196,000
West Yorkshire	Force-wide	Domestic violence/Hate crime	1	483,000	
West Yorkshire	Leeds	Distraction burglary	2	554,000	

Source: Researcher's Creation, the National Archives (2003a; 2003b)

Appendix 5.3: The Reducing Burglary Initiative projects by PFA

Police Forces	Round 1		Round 2		Round 3		Distraction Burglary Projects		Total	
	Total Number of Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)	Number of Distraction Burglary Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)
Avon and Somerset	0	0	5	241,600	3	688,800	-	-	8	930,400
Bedfordshire	1	70,200	1	73,100	0	0	-	-	2	143,300
Cambridgeshire	1	76,000	3	55,800	0	0	-	-	4	131,800
Cheshire	0	0	1	8,500	0	0	-	-	1	8,500
City of London	0	0	0	0	0	0	-	-	0	0
Cleveland Police	5	340,110	5	248,300	0	0	-	-	10	588,410
Cumbria	0	0	1	13,300	0	0	-	-	1	13,300
Derbyshire	2	120,000	1	44,100	1	492,100	-	-	4	656,200
Devon & Cornwall	2	242,600	3	132,800	1	4,700	-	-	6	380,100
Dorset	0	0	2	72,149	0	0	-	-	2	72,149
Durham	0	0	3	108,800	0	0	-	-	3	108,800
Essex	0	0	1	79,145	0	0	-	-	1	79,145

Appendix 5.3: The Reducing Burglary Initiative projects by PFA (continued)

Police Forces	Round 1		Round 2		Round 3		Distraction Burglary Projects		Total	
	Total Number of Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)	Number of Distraction Burglary Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)
Gloucestershire	0	0	1	39,352	0	0	-	-	1	39,352
Greater Manchester	6	342,815	10	1,382,851	1	31,267	-	-	17	1,756,933
Hampshire	0	£0	0	0	0	0	-	-	0	0
Hertfordshire	0	0	0	0	0	0	-	-	0	0
Humberside	1	135,880	4	684,302	1	830,537	-	-	6	1,650,719
Kent	0	0	1	6,400	1	23,000	-	-	2	29,400
Lancashire	4	233,600	4	206,000	0	0	-	-	8	439,600
Leicestershire	1	60,000	5	229,590	0	0	-	-	6	289,590
Lincolnshire	2	126,000	0	0	0	0	-	-	2	126,000
Merseyside	2	124,300	4	215,700	0	0	-	-	6	340,000
Metropolitan	7	426,880	25	663,080	0	0	-	-	32	1,089,960
Norfolk	0	0	2	49,800	0	0	-	-	2	49,800

Appendix 5.3: The Reducing Burglary Initiative projects by PFA (continued)

Police Forces	Round 1		Round 2		Round 3		Distraction Burglary Projects		Total	
	Total Number of Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)	Number of Distraction Burglary Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)
North Yorkshire	0	0	1	17,065	0	0	-	-	1	17,065
Northamptonshire	1	60,000	2	113,466	1	32,200	-	-	4	205,666
Northumbria	4	285,812	7	455,049	0	0	-	-	11	740,861
Nottinghamshire	2	444,500	4	2,120,860	2	56,341	-	-	8	2,621,701
South Yorkshire	4	401,605	11	700,944	2	897,537	1	272,765	18	2,272,851
Staffordshire	0	0	2	198,452	0	0	-	-	2	198,452
Suffolk	0	0	1	33,000	1	21,700	-	-	2	54,700
Surrey	0	0	0	0	0	0	-	-	0	0
Sussex	0	0	1	176,126	0	0	-	-	1	176,126
Thames Valley	2	193,300	3	156,830	0	0	-	-	5	350,130
Warwickshire	0	0	0	0	0	0	-	-	0	0
West Mercia	0	0	0	0	1	10,100	-	-	1	10,100

Appendix 5.3: The Reducing Burglary Initiative projects by PFA (continued)

Police Forces	Round 1		Round 2		Round 3		Distraction Burglary Projects		Total	
	Total Number of Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)	Number of Distraction Burglary Projects	Total Amount of Funding (£)	Total Number of Projects	Total Amount of Funding (£)
West Midlands	8	480,480	27	1,246,945	5	1,376,362	-	-	40	3,103,787
West Yorkshire	6	434,970	18	1,155,513	2	2,685,714	1	554,098	27	4,830,295
Wiltshire	0	0	0	0	0	0	-	-	0	0
Dyfed-Powys	0	0	0	0	0	0	-	-	0	0
Gwent	0	0	0	0	0	0	-	-	0	0
North Wales	0	0	1	33,300	0	0	-	-	1	33,300
South Wales	1	62,200	1	12,200	0	0	-	-	2	74,400
TOTAL	62	4,661,252	161	10,974,419	22	7,150,358	-	-	245	22,786,029

Source: Researcher's Creation, the National Archives (2003c; 2006)

Appendix 5.4: Constructing the independent variable: the level of commitment to POP

Police Force	IY of POP*	LofC**		Explanation	Source
		97	03/04		
Avon & Somerset	1997	2	3	Introduced POP in 1997 but not force-wide. Received funding for Safer Cities projects (value=£1,140,427). Submitted 40 projects. Received funding for 2 TPI projects (value=£1,280,000) and 8 RBI projects (value=£930,400)	Avon and Somerset Police (1999); Project submissions; Large-scale projects
Bedfordshire	1998	0	2	Introduced POP in 1998. Did not receive funding for Safer Cities projects. Submitted 1 project. Received funding for 2 RBI projects (value=£143,300)	Bedfordshire Police (1999); Project submissions; Large-scale projects
Cambridgeshire	1999	0	2	Introduced POP in 1999. Did not receive funding for Safer Cities projects. Submitted 6 projects. Received funding for 1 TPI projects (value=£167,000) and 4 RBI projects (value=£131,800)	Cambridgeshire Police (1999); Project submissions; Large-scale projects
Cheshire	N/A	0	1	Has not been mentioned in the related literature prior to 1997. Did not receive funding for Safer Cities projects. Submitted 6 projects. Received funding for 1 TPI project (value=£186,000) and 1 RBI project (£8,500)	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions; Large-scale projects

Appendix 5.4: Constructing the independent variable: the level of commitment to POP (continued)

Police Force	IY of POP	LofC		Explanation	Source
		97	03/04		
Cleveland	1996	3	3	One of the early implementers of POP. Received funding for Safer Cities projects (value=£1,745,491+). Submitted 43 projects. Received funding for 10 RBI projects (value=£588,410)	Leigh et al. (1998); Scott (2000); Bullock et al. (2006); Project submissions; Large-scale projects
Cumbria	After 1997	0	2	Introduced POP after 1997. Did not receive funding for Safer Cities projects. Submitted 42 projects. Received funding for 1 TPI project (value=£637,000) and 1 RBI project (value=£13,300)	Lancashire Police (2001a); Project submissions; Large-scale projects
Derbyshire	N/A	1	1	Has not been mentioned in the related literature prior to 1997. Received funding for Safer Cities projects (value is not available). Submitted 7 projects. Received funding for 2 TPI projects (value=£485,000) and 4 RBI projects (value=£656,200)	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions; Large-scale projects
Devon & Cornwall	1999	1	2	Introduced POP in 1999. Received funding for Safer Cities projects (value is not available). Submitted 12 projects. Received funding for 2 TPI projects (value=£1,031,000) and 6 RBI projects (value=£380,100)	Devon and Cornwall Police (2000); Project submissions; Large-scale projects

Appendix 5.4: Constructing the independent variable: the level of commitment to POP (continued)

Police Force	IY of POP	LofC		Explanation	Source
		97	03/04		
Dorset	1998	0	2	Introduced POP in 1998. Did not receive funding for Safer Cities projects. Submitted 6 projects. Received funding for 2 RBI projects (value=£72,149).	Dorset Police (1999); Project submissions; Large-scale projects
Durham	N/A	0	1	Has not been mentioned in the related literature prior to 1997. Did not receive funding for Safer Cities projects. Submitted 4 projects. Received funding for 3 RBI projects (value=£180,800)	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Project submissions; Large-scale projects
Dyfed-Powys	N/A	0	1	Has not been mentioned in the related literature prior to 1997. Did not receive funding for Safer Cities projects. Submitted 3 projects.	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions
Essex	N/A	0	1	Has not been mentioned in the related literature prior to 1997. Did not receive funding for Safer Cities projects. Submitted 12 projects. Received funding for 1 RBI project (value=£79,145)	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions
Gloucestershire	N/A	0	1	Has not been mentioned in the related literature prior to 1997. Did not receive funding for Safer Cities projects. Submitted 5 projects. Received funding for 1 project (value=£39,352)	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions; Large-scale projects

Appendix 5.4: Constructing the independent variable: the level of commitment to POP (continued)

Police Force	IY of POP	LofC		Explanation	Source
		97	03/04		
Greater Manchester	The early 2000s	1	3	Mentioned in the related literature prior to 1997. Received funding for Safer Cities projects (value=£2,052,005). Introduced POP in the early 2000s. Submitted 31 projects. Received funding for 3 TPI projects (value=£1,387,000) and for 17 RBI projects (value=£1,756,933)	Bullock et al. (2006); Project submissions; Large-scale projects
Gwent	1999	0	2	Introduced POP in 1999. Did not receive funding for Safer Cities projects. Submitted 6 projects.	Gwent Police (1999); Project submissions
Hampshire	2002	0	3	Introduced POP in 2002. Did not receive funding for Safer Cities projects. Became one of the highly POP-committed police forces. Submitted 19 projects. Received funding for 1 TPI project (value=£411,000)	Bullock et al. (2006); Project submissions; Large-scale projects
Hertfordshire	1999	0	1	Introduced POP in 1999. Did not receive funding for Safer Cities projects. Submitted 7 projects.	
Humberside	N/A	1	2	Has not been mentioned in the related literature prior to 1997. Received funding for Safer Cities projects (value=£1,226,422). Submitted 6 projects. Received funding for 2 TPI projects (value=£457,00) and for 6 RBI projects (value=£1,650,719)	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions; Large-scale projects
Kent	N/A	0	0	Implemented ILP.	Maguire and John (2006)

Appendix 5.4: Constructing the independent variable: the level of commitment to POP (continued)

Police Force	IY of POP	LoFC		Explanation	Source
		97	03/04		
Lancashire	1998	1	3	Mentioned in the related literature prior to 1997. Received funding Safer Cities projects (value is not available). Introduced POP force-wide in 1998. Submitted 166 projects (21.5% of all projects). Received funding for 1 TPI project (value=103,000) and for 8 RBI projects (value=£439,600)	Kirkby (1997); Leigh et al. (1998); Lancashire Police (2000;2001a;2001b); Scott (2000); Bullock et al (2006); Project submissions; Large-scale projects
Leicestershire	1995	3	3	One of the early implementers of POP. Received funding for Safer Cities projects (value is not available). Submitted 6 projects. Received funding for 6 RBI projects (value=£380,100)	Leigh et al. (1996;1998); Scott (2000); Bullock et al (2006); Project submissions; Large-scale projects
Lincolnshire	N/A	0	1	Has not been mentioned in the related literature prior to 1997. Did not receive funding for Safer Cities projects. Submitted 4 projects. Received funding for 1 TPI projects (value=£268,00) and for 2 RBI projects (value=£126,000)	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions; Large-scale projects
Merseyside	1995	3	3	One of the early implementers of POP. Received funding for Safer Cities projects (value=£2,547,705). Submitted 42 projects. Received funding for 5 TPI projects (value=£2,322,000) and for 6 RBI projects (value=£340,000)	Leigh et al. (1996;1998); Gresty et al. (1997); Merseyside Police (1999); Scott (2000); Project submissions; Large-scale projects

Appendix 5.4: Constructing the independent variable: the level of commitment to POP (continued)

Police Force	IY of POP	LofC		Explanation	Source
		97	03/04		
Metropolitan	2001	1	3	Mentioned in the related literature prior to 1997. Received funding for Safer Cities projects (value=£4,063,265+). Introduced POP force-wide in 2001. Submitted 64 projects. Received funding for 10 TPI projects (value=£6,500,000) and for 32 RBI projects (value=£1,089,960)	Metropolitan Police (2002); Project submissions; Large-scale projects
Norfolk	N/A	0	1	Has not been mentioned in the related literature prior to 1997. Did not receive funding for Safer Cities projects. Submitted 8 projects. Received funding for 2 RBI projects (value=£49,800).	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions; Large-scale projects
North Wales	1999	0	2	Introduced POP in 1999. Did not receive funding for Safer Cities projects. Submitted 16 projects. Received funding for 1 TPI project (value=£188,000) and for 1 RBI project (value=£33,300)	North Wales Police (1999); Project submissions; Large-scale projects
North Yorkshire	N/A	0	1	Has not been mentioned in the related literature prior to 1997. Did not receive funding for Safer Cities projects. Submitted 2 projects. Received funding for 1 TPI project (value=£186,000) and for 1 RBI project (value=£17,065)	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions; Large-scale projects

Appendix 5.4: Constructing the independent variable: the level of commitment to POP (continued)

Police Force	IY of POP	LofC		Explanation	Source
		97	03/04		
Northamptonshire	N/A	0	2	Has not been mentioned in the related literature prior to 1997. Did not receive funding for Safer Cities. Submitted 8 projects. Received funding for 1 TPI project (value=£1,095,000) and for 4 RBI projects (value=£205,666)	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions; Large-scale projects
Northumbria	1997	2	2	Mentioned in the related literature prior to 1997. Received funding for Safer Cities projects (value=2,472,118). Introduced POP in 1997 but not force-wide. Submitted 28 projects. Received funding for 2 TPI projects (value=£373,00) and 11 RBI projects (value=£740,861)	Leigh et al. (1996); Northumbria Police (1999), Bullock et al. (2006); Project submissions; Large-scale projects
Nottinghamshire	2001	1	2	Received funding for Safer Cities projects (value=£1,776,863). Introduced POP in 2001. Submitted 12 projects. Received funding for 1 TPI project (value=£1,199,000) and for 8 RBI projects (value=£2,621,000)	Nottinghamshire Police (2002); Project submissions; Large-scale projects
South Wales	N/A	1	2	Has not been mentioned in the related literature prior to 1997. Received funding for Safer Cities projects (value is not available). Submitted 28 projects. Received funding for 2 TPI projects (£value=1,000,000) and for 2 RBI projects (value=£74,400)	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions; Large-scale projects

Appendix 5.4: Constructing the independent variable: the level of commitment to POP (continued)

Police Force	IY of POP	LoFC		Explanation	Source
		97	03/04		
South Yorkshire	2000	0	2	Introduced POP in 2000. Did not receive funding for Safer Cities projects. Submitted 19 projects. Received funding for 18 RBI projects (value=£2,272,851)	South Yorkshire Police (2001); Project submissions; Large-scale projects
Staffordshire	1998	0	2	Introduced POP in 1998. Did not receive funding for Safer Cities projects. Submitted 15 projects. Received funding for 2 RBI projects (value=£198,452)	Staffordshire Police (1999); Project submissions; Large-scale projects
Suffolk	1998	0	2	Introduced POP in 1998. Did not receive funding for Safer Cities projects. Submitted 7 projects. Received funding for 2 RBI projects (value=£54,700)	Suffolk Police (1999); Project submissions; Large-scale projects
Surrey	1982	3	3	Introduced POP in 1982 and was the only police force implementing POP on large-scale in 1996. Submitted 17 projects; Received funding for 1 TPI projects (value=£222,000)	Leigh et al. (1996); Surrey Police (1999a; 1999b); Scott (2000); Bullock et al. (2006); Project submissions; Large-scale projects
Sussex	1997	2	2	Introduced POP in 1997 but not force-wide. Submitted 16 projects; Received funding for 2 TPI projects (value=£1,906,000) and for 1 RBI project (value=£176,126)	Sussex Police (2000); Project submissions; Large-scale projects
Thames Valley	1992	3	3	One of the early implementers of POP. Submitted 5 projects. Received funding for 5 RBI projects (value=£350,130)	Leigh et al. (1996); Scott (2000); Bullock et al. (2006); Project submissions; Large-scale projects

Appendix 5.4: Constructing the independent variable: the level of commitment to POP (continued)

Police Force	IY of POP	LofC		Explanation	Source
		97	03/04		
Warwickshire	N/A	0	1	Has not been mentioned in the related literature prior to 1997. Did not receive funding for Safer Cities projects. Submitted 1 project. Received funding for 1 TPI project (value=£174,000)	Leigh et al. (1996; 1998); Gresty et al. (1997); Scott (2000); Lancashire Police (2001a); Bullock et al. (2006); Tilley and Scott (2012); Project submissions; Large-scale projects
West Mercia	1997	1	2	Mentioned in related literature prior to 1997. Did not receive funding for Safer Cities projects. Introduced POP in 1997 but not force-wide. Submitted 5 projects. Received funding for 1 TPI projects (value=£512,000) and for 1 RBI project (value=£10,100)	Gresty et al. (1997); Leigh et al. (1998); Bullock and Tilley (2003); West Mercia Police (1999); Project submissions; Large-scale projects
West Midlands	1997	2	3	Introduced POP in 1997 but not force-wide. Received funding for Safer Cities projects (value=£2,388,218). Submitted 27 projects. Received funding for 2 TPI projects (value=£607,000) and for 40 RBI project (value=£3,103,787)	West Midlands Police (1999a,1999b,2000,2002); Gresty et al (1997); Project submissions; Large-scale projects
West Yorkshire	1994	2	3	Introduced POP in 1994 but not force-wide. Received funding for Safer Cities projects (value=£2,034,495). Submitted 12 projects. Received funding for 3 TPI projects (value=£1,196,000) and for 27 RBI projects (value=£4,830,295)	Leigh et al. (1996); West Yorkshire Police (1999); Bullock et al. (2006); Project submissions; Large-scale projects

Appendix 5.4: Constructing the independent variable: the level of commitment to POP (continued)

Police Force	IY of POP	LofC		Explanation	Source
		97	03/04		
Wiltshire	N/A	0	1	Has not been mentioned in the related literature prior to 1997. Did not receive funding for Safer Cities projects. Submitted 5 projects.	Leigh et al. (1996; 1998); Gresty et al. (1997); Lancashire Police (2001a); Scott (2000); Bullock et al. (2006); Tilley and Scott (2012); Project submissions

Notes:

(*) Implementation Year of POP

(**) Level of commitment

Appendix 6.1: The CSEW sample size (adults, unweighted) and proportion of all victims that suffered more than one burglary in the reference period (Weighted), 1995-2007/08

Police force	1995		1997		1999		2001/02		2002/03		2003/04		2004/05		2005/06		2006/07		2007/08	
	Sample size	RV (%)																		
Avon & Somerset	452	7	410	13	460	14	921	13	922	13	891	12	982	17	1,127	22	1,049	0	969	20
Bedfordshire	147	25	187	0	306	29	474	14	623	9	759	15	1,068	4	1,085	21	977	14	1,055	21
Cambridgeshire	274	20	264	17	299	14	583	0	589	9	735	25	1,018	29	1,068	16	1,023	17	989	21
Cheshire	280	14	289	27	367	0	653	20	753	12	774	10	983	13	1,060	19	1,041	13	964	19
Cleveland	141	16	97	10	320	38	590	4	763	14	816	10	964	33	971	9	1,041	0	1,067	6
Cumbria	160	0	118	0	304	13	548	8	644	18	777	0	1,034	0	1,080	21	931	12	1,031	0
Derbyshire	212	40	334	0	341	38	630	14	729	23	733	0	1,017	14	981	0	1,040	11	1,054	25
Devon & Cornwall	507	13	495	13	567	40	873	19	883	16	838	13	1,000	34	979	6	995	0	1,059	22
Dorset	68	0	25	0	305	14	581	27	694	35	788	0	1,043	12	1,033	22	988	11	903	15
Durham	178	30	312	0	318	20	568	0	737	12	777	0	1,002	0	959	13	1,047	32	991	11
Dyfed Powys	70	0	88	33	323	0	570	37	721	54	686	28	944	16	1,028	0	1,000	16	1,102	0
Essex	383	0	388	26	531	0	876	32	919	18	915	0	1,078	0	1,028	48	1,011	10	1,011	0
Gloucestershire	181	0	165	25	327	0	594	29	655	18	764	25	1,045	0	1,014	22	1,019	14	991	0
Greater Manchester	837	7	750	10	880	9	1,313	12	1,414	9	1,556	15	1,374	12	1,535	6	1,540	15	1,553	17
Gwent	213	0	125	12	345	34	701	12	779	31	821	0	896	0	1,041	24	1,042	9	1,004	11

Appendix 6.1: The CSEW sample size (adults, unweighted) and proportion of all victims that suffered more than one burglary in the reference period (Weighted), 1995-2007/08 (continued)

Police force	1995		1997		1999		2001/02		2002/03		2003/04		2004/05		2005/06		2006/07		2007/08	
	Sample size	RV (%)																		
Hampshire	442	28	420	17	611	24	981	31	1,002	10	1,009	22	1,047	20	1,096	13	1,075	9	995	13
Hertfordshire	163	17	209	25	322	0	579	24	635	0	719	16	999	15	1,167	0	1,065	11	1,058	0
Humberside	356	24	275	16	325	56	646	19	725	2	765	0	1,017	15	1,034	10	986	16	1,009	10
Kent	419	38	426	20	526	36	882	0	934	0	883	13	1,024	12	1,072	27	1,016	19	979	18
Lancashire	349	11	279	28	472	0	760	16	840	22	902	7	1,031	12	1,125	11	1,071	4	979	19
Leicestershire	266	22	309	29	280	15	614	27	652	0	738	9	990	0	1,077	18	992	11	993	18
Lincolnshire	306	0	161	0	327	0	563	0	817	0	755	20	945	18	1,086	0	1,039	15	1,015	19
Merseyside	549	4	409	24	479	10	847	8	905	6	858	8	1,021	22	1,056	21	1,013	23	1,011	0
Metropolitan	2,559	24	2,385	18	2,186	13	2,921	18	3,322	13	3,449	1	3,372	10	3,370	11	3,527	15	3,634	3
Norfolk	244	24	205	21	319	17	560	100	775	20	836	0	982	0	997	24	1,036	10	982	0
North Wales	202	38	275	0	314	33	599	19	748	47	771	14	883	0	1,043	31	1,001	25	1,071	12
North Yorkshire	172	0	126	0	305	0	577	23	607	15	731	15	995	0	999	0	1,021	0	1,037	15
Northamptonshire	171	12	74	0	333	0	630	12	682	7	692	10	904	27	1,064	35	1,013	6	1,104	10
Northumbria	652	26	546	7	543	23	779	0	867	0	826	8	934	7	1,032	31	1,066	9	1,028	23
Nottinghamshire	388	16	285	0	359	37	586	0	678	22	759	11	882	16	1,033	14	1,093	20	1,050	11
South Wales	367	4	302	15	445	17	726	0	755	20	737	0	918	8	1,098	19	1,045	11	1,075	28

Appendix 6.1: The CSEW sample size (adults, unweighted) and proportion of all victims that suffered more than one burglary in the reference period (Weighted), 1995-2007/08 (continued)

Police force	1995		1997		1999		2001/02		2002/03		2003/04		2004/05		2005/06		2006/07		2007/08	
	Sample size	RV (%)	Sample size	RV (%V)	Sample size	RV (%)														
South Yorkshire	465	13	462	37	469	0	701	16	863	17	813	18	968	11	998	13	1,078	11	1,025	15
Staffordshire	395	0	388	7	401	14	740	21	628	21	718	0	948	32	1,017	0	999	23	1,106	15
Suffolk	165	0	172	0	299	0	653	0	701	19	723	0	953	18	1,083	0	1,098	0	992	11
Surrey	263	0	58	13	285	25	720	14	800	14	827	9	920	0	1,012	0	1,068	0	963	0
Sussex	583	14	417	15	519	9	877	10	828	0	693	12	1029	7	1,041	0	1,080	7	1,069	11
Thames Valley	723	13	693	5	710	0	983	5	1,178	6	1,210	0	1,272	12	1,233	8	1,238	4	1,195	4
Warwickshire	201	0	129	0	311	13	724	10	698	16	776	16	1069	12	1,074	12	1,104	0	1,057	10
West Mercia	147	0	279	69	425	17	640	17	766	0	811	22	908	0	1,074	0	1,054	10	999	37
West Midlands	962	3	760	3	779	20	1,341	22	1,396	18	1,449	24	1,544	25	1,595	0	1,398	10	1,543	20
West Yorkshire	545	9	654	10	733	23	1,118	4	1,110	11	1,096	3	1,124	3	1,264	27	1,241	28	1,219	8
Wiltshire	189	0	199	25	340	0	602	14	742	26	755	0	993	7	1,067	17	1,042	19	1,052	13
England and Wales	16,346	15	14,944	13	19,410	17	32,824	15	36,479	12	37,931	10	45,120	13	47,796	14	47,203	13	46,983	12
Response Rate (%)	83		79		74		73		74		75		75		75		75		76	

Source: Researcher's calculations, the CSEW, 1996-2007/08

Appendix 7.1: Correlation matrix, 1997

	PFA characteristics	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Renting privately	1.000												
2	Renting from a housing association	0.621	1.000											
3	Renting from a local authority	-0.131	0.395	1.000										
4	Single adult non-pensioner households	0.799	0.858	0.365	1.000									
5	Ethnic diversity	0.669	0.764	0.311	0.901	1.000								
6	People aged between 16 and 24	0.122	0.526	0.473	0.535	0.676	1.000							
7	Migrants	0.717	0.225	-0.367	0.432	0.334	0.036	1.000						
8	Population density	0.645	0.870	0.523	0.936	0.900	0.598	0.206	1.000					
9	Lone parent households	0.261	0.769	0.718	0.672	0.557	0.511	-0.215	0.776	1.000				
10	Households without a car	0.155	0.649	0.841	0.560	0.451	0.396	-0.322	0.685	0.918	1.000			
11	Owner households	-0.390	-0.736	-0.851	-0.758	-0.645	-0.548	-0.060	-0.825	-0.809	-0.850	1.000		
12	Mean number of people per room	0.348	0.727	0.620	0.786	0.832	0.750	0.006	0.842	0.708	0.685	-0.766	1.000	
13	Professional head of households	0.461	0.117	-0.493	0.315	0.324	0.183	0.718	0.109	-0.369	-0.547	0.188	0.059	1.000

Appendix 7.2: Correlation matrix, 2003/04

	PFA characteristics	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Renting privately	1.000												
2	Renting from a housing association	0.607	1.000											
3	Renting from a local authority	-0.102	-0.128	1.000										
4	Single adult non-pensioner households	0.733	0.598	0.446	1.000									
5	Ethnic diversity	0.653	0.540	0.355	0.886	1.000								
6	People aged between 16 and 24	0.302	0.306	0.533	0.654	0.667	1.000							
7	Migrants	0.786	0.391	-0.184	0.493	0.456	0.362	1.000						
8	Population density	0.646	0.622	0.504	0.939	0.905	0.642	0.366	1.000					
9	Lone parent households	0.089	0.209	0.717	0.551	0.424	0.657	-0.146	0.610	1.000				
10	Households without a car	0.285	0.267	0.822	0.707	0.560	0.675	0.060	0.747	0.890	1.000			
11	Owner households	-0.517	-0.448	-0.760	-0.853	-0.729	-0.665	-0.310	-0.876	-0.699	-0.890	1.000		
12	Mean number of people per room	0.209	0.237	0.390	0.487	0.447	0.329	0.100	0.548	0.381	0.454	-0.478	1.000	
13	Professional head of households	0.498	0.454	-0.362	0.395	0.439	0.074	0.540	0.311	-0.372	-0.291	-0.019	0.180	1.000