NPIA
National Policing Improvement Agency
PROFESSIONAL PRACTICE

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NPIA
National Policing Improvement Agency

PROFESSIONAL PRACTICE

PRACTICE ADVICE ON

ANALYSIS

2008

Produced on behalf of the Association of Chief Police Officers
by the National Policing Improvement Agency

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PRACTICE ADVICE ON ANALYSIS

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Section 1
INTRODUCTION

Analysis is an important tool for policing. It is used to understand crime and disorder issues, to investigate criminal incidents and to support the development of knowledge in increasingly diverse specialist areas. This section provides the reader with an overview of this practice advice and how practitioners should use it.

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1.1 PURPOSE OF THIS PRACTICE ADVICE

The purpose of this document is to give advice on analysis to staff working within policing and other law enforcement roles, and to organisations that work in partnership with the Police Service.

This practice advice covers the skills required to provide high-quality analytical products. It focuses on the work of those carrying out analysis within crime, disorder and community safety roles, such as police analysts working within local policing units, Crime and Disorder Reduction Partnerships and Community Safety Partnerships (CDRP and CSP). It is also relevant to those working at force level within specialist units, and to those that manage analytical work. The term **analyst** is used throughout the document, and refers both to those who work in a specifically analytical role and to those for whom analysis is part of a wider role.

This practice advice is designed to be used on a daily basis, whether to learn new skills, or develop or refresh existing skills.

1.2 STRUCTURE OF THIS PRACTICE ADVICE

The practice advice follows each of the core skills required for successful analysis. They form the basis of the national occupational standards (NOS) and are to:

- Discuss and develop terms of reference;
- Obtain and evaluate information;
- Apply analytical techniques to interpret information;
- Use inference development to make judgements based on analysis;
- Develop recommendations from the results of analysis;
- Create a product to support decision making;
- Disseminate the analysis product;
- Review the effectiveness of the analysis.

By following the advice given, analysts will be able to improve their skills, resulting in a high standard of analysis. These skills will also assist analyst managers to supervise performance effectively.

For information on the national competencies and occupational standards for analysts see **http://www.skillsforjustice.co.uk**

1.3 PRACTICE ADVICE AND MINIMUM STANDARDS

This document refers to legislation and codes of practice as they relate to analysis. The relevant Minimum Standards established for both the management of police information and the National Intelligence Model are also referenced. These should be read together with ***ACPO (2005) Guidance on the National Intelligence Model*** and ***ACPO (2006) Guidance on the Management of Police Information.***

This publication is an advisory document. Its adoption is at the discretion of chief officers. The content is based on the effective practice of analysts across England and Wales, Scotland and Northern Ireland, and should be used as a model by all analysts.

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1.4 RELATIONSHIP WITH EXISTING DOCTRINE

Analysis is a key component of the National Intelligence Model (NIM). Meeting the NIM Minimum Standards in relation to analysis and the management of analytical output will improve the quality and relevance of information for meaningful direction of resources and performance improvement.

It is recommended that, before using this practice advice, those undertaking analysis are familiar with the basics of intelligence-led policing as described in ***ACPO (2007) Introduction to Intelligence-Led Policing,*** which covers important detail on the evaluation of intelligence, the basics of the NIM and the collection of information.

The role and responsibilities of the analyst or the set-up and role of colleagues in other units, including the intelligence unit can be found in ***ACPO (2007) Practice Advice on the Resources and People Assets of the National Intelligence Model.***

The role of analysts specifically within major incident investigation is covered in ***ACPO (2005) Major Incident Analysis Manual, ACPO (2005) Core Investigative Doctrine, ACPO (2006) Murder Investigation Manual, ACPO (2005) Major Incident Room Standardised Administrative Procedures (MIRSAP)*** and ***ACPO (2006) Practice Advice on Financial Investigation.***

Research and horizon-scanning are important parts of the analysis function and, where specialists are not recruited to undertake these roles, they will often fall to the analyst. This practice advice does not cover the roles specifically but covers elements of the intelligence process and sources of information relevant to research and horizon-scanning.

1.5 CORE DEFINITIONS

For the purposes of this practice advice the following definitions have been used.

Data

Data is a factual statement – words or numbers – which can be organised and used either by an analyst or a computer. Information is constructed by processing or interpreting data.

Information

Information is the result of gathering, organising and processing data for a specific purpose. Information includes intelligence that has been through the 5x5x5 evaluation process.

Knowledge

Knowledge is a theoretical or practical knowledge of a subject which has been gained through experience or learning. Knowledge is also an understanding of information, within a specific context in which that information is relevant, for a defined purpose.

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Section 2
UNDERSTANDING ANALYSIS

The purpose of analysis is to develop an understanding of issues in order to prioritise them and inform problem-solving responses. This section gives an introduction to analysis within a broad policing context.

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2.1 DEFINITION

Analysis is the process of collecting, reviewing and interpreting a range of data and making inferences and recommendations.

Analysis identifies patterns in information and draws inferences based on what is occurring to allow operational decision makers to decide on appropriate further activity. This might include enforcement activity, further information gathering or a crime and disorder reduction strategy. It supports strategic decision making and the tactical deployment of resources to prevent, reduce and detect crime and disorder. Analysis also has a role to play in identifying effective practice and lessons learned through a review of tactical and strategic activity.

2.2 BACKGROUND

Analysis is used in all police forces and partner agencies including the Serious Organised Crime Agency (SOCA), HM Revenue and Customs (HMRC), the Prison Service, and the Border and Immigration Agency (BIA). Analysts are also employed locally within CDRPs and CSPs. Analysis has become firmly embedded in these organisations as a result of management recognition that analysis assists in solving problems. The recent focus on intelligence-led policing has ensured that the maximum potential of analysis is exploited for the purposes of reducing and investigating crime and disorder.

The majority of police analysts are deployed within local command units in support of volume crime and disorder investigation, local problem solving and to inform those making decisions through tasking and co-ordination processes.

> Neighbourhood policing focuses on identifying and addressing neighbourhood priorities, improving communication and delivering safer neighbourhoods.
>
> Analysis supports this aim by identifying and developing an understanding of local problems to help decide which of these problems should be prioritised.

There are increasing numbers of analysts employed regionally and within specialist departments including counter-terrorism, road policing and major incident investigation units.

2.3 INTELLIGENCE CYCLE

The skills for analysis are based on the intelligence cycle. There are a number of variations of the intelligence cycle which are used widely across the world and throughout law enforcement and the military. The intelligence cycle is shown in **Figure 1.** It describes the process through which information is usefully turned into intelligence.

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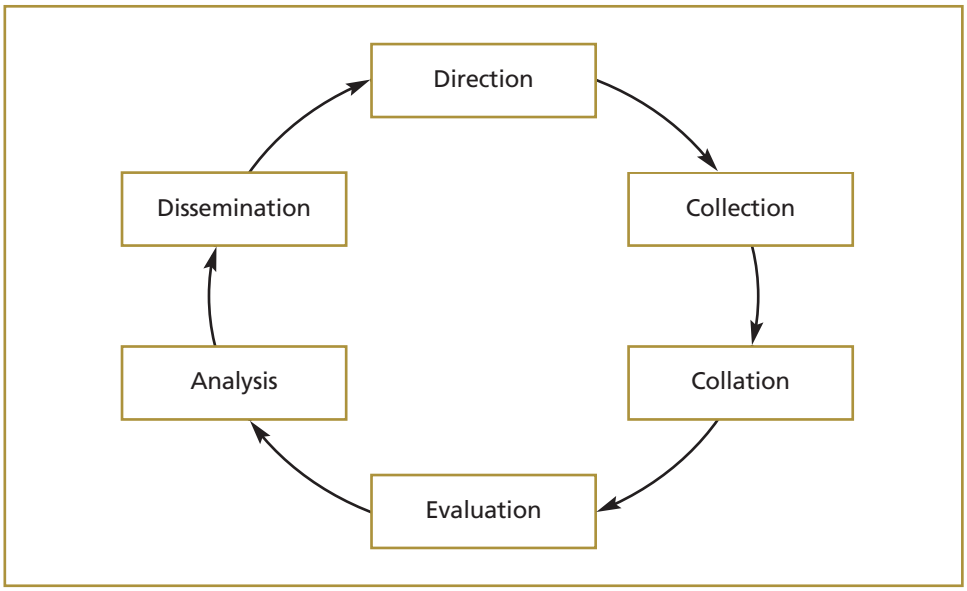
Figure 1 Intelligence Cycle



The elements of the intelligence cycle are:

- **Direction** – sets the objectives and scope of the task;
- **Collection** – gathers information relevant to the task;
- **Collation** – organises material in a logical, useable form;
- **Evaluation** – considers the validity and reliability of information and its usefulness to the task;
- **Analysis** – the analysis of information to develop inferences, identify information gaps and make recommendations relevant to the task;
- **Dissemination** – effectively communicates the outcomes of analysis based on the initial task.

Analysts should understand the intelligence cycle as it forms the basis of their daily work, which is to collate and analyse information to assist the decision-making process.

2.4 CRIME THEORY AND APPROACHES

There are several theories that underpin the discipline of analysis. A general understanding of academic theory can help infer where and when future offences might happen and improve the understanding of how and why crime and disorder occurs.

It is also important to understand the concepts of policing, and the development of the role that analysis plays within the Police Service. The development of the use of analysis to focus resources and improve prevention and detection of crime and disorder should also be appreciated.

Academic study of crime and criminal behaviour is largely environmental. It attempts to explain both the role of environmental factors in shaping criminal behaviour, and how they can affect types and patterns of crime. Relevant theories include:

- Rational choice theory;
- Routine activity theory.

Two approaches which can support analysis are the Problem Analysis Triangle and the Scanning, Analysis, Response and Assessment (SARA) approach.

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2.4.1 RATIONAL CHOICE THEORY

Rational choice theory states that crime is not a random event and that people are predictable in their habits and behaviours – ***Hobbs et al, (2005) Violent Hypocrisy: Governance and the Night-time Economy.*** It explains a person's decision-making process in committing a crime, how to perpetrate it, and the preference to carry out a crime which is easy, rewarding, and safe. See also ***Cornish, D. and Clarke, R. (1987) Understanding Crime Displacement – An Application of Rational Choice Theory,*** and ***Clarke, R. and Mayhew, P. (1988) The British Gas Suicide Story and its Implications for Prevention.***

A number of decisions will be made by a potential offender in relation to the opportunity, such as the desirability of a particular commodity or the likelihood of being caught.

A common acronym used to describe the desirability of items is CRAVED:

Concealable
Removable
Available
Valuable
Enjoyable
Disposable

This acronym helps understanding of why one type of item may be stolen more, or is more vulnerable, than another.

2.4.2 ROUTINE ACTIVITY THEORY

Routine activity theory suggests that a person may choose to offend if they have the motivation to attack a target, have the right kind of target to attack, and if a target does not have a guardian. ***(Cohen L. and Felson M. (1979) Social Change and Crime Rate Trends: A Routine Activity Approach.)***

By identifying and understanding these three elements of an offence, or series of offences, it is possible to determine options for reducing crime either by providing protection, or removing the motivation or target. Routine activity theory relates mainly to acquisitive crime.

2.4.3 PROBLEM ANALYSIS TRIANGLE

For a crime or incident to occur, an offender and a suitable target must come together in a specific location without an effective deterrent. **Figure 2** shows how these three elements: victim, offender and location, form the Problem Analysis Triangle (PAT).

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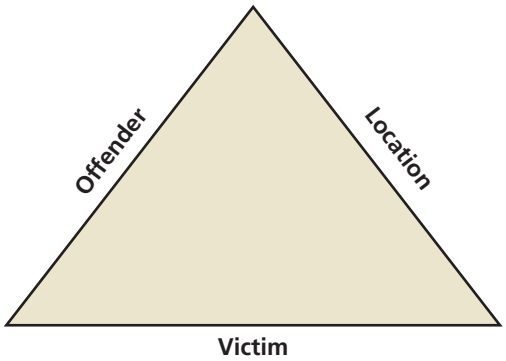
Figure 2 Problem Analysis Triangle



When developing a description and understanding of a particular crime or disorder problem, or individual, analysis should consider each of the elements of the triangle. Further, when developing solutions to that problem, the three elements should again be considered as a focus for activity.

2.4.4 SCANNING, ANALYSIS, RESPONSE AND ASSESSMENT MODEL

The scanning, analysis, response and assessment (SARA) model is a process used in problem-solving policing. SARA can be used to manage problems of all types of crime, disorder and substance misuse. For further information see
http://www.crimereduction.homeoffice.gov.uk/skills/skills04.htm

The four stages of SARA are:

- **S**canning – identifying issues or problem areas using basic data;
- **A**nalysis – identifying the nature of the problem, including the identification of trends and series of crime and disorder, and problematic locations, and further, suggesting the potential causes;
- **R**esponse – developing a solution for the problem including partners and the community;
- **A**ssessment – reviewing the success of the solution and identifying learning for the corporate knowledge.

A further tool is Problem, Cause, Tactic/Treatment, Output and Result (PROCTOR), which emphasises the importance of analysis throughout the SARA process, rather than as a discrete step. For further information see
http://www.crimereduction.homeoffice.gov.uk/skills/skills05.htm

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Creative and Critical Thinking

Creative thinking requires the ability to imagine or invent something new by combining, changing or reapplying existing ideas. Creative thinkers can accept change and have a willingness to develop ideas and possibilities.

Critical thinking involves analysing and evaluating statements or propositions that have been offered as true in order to form a judgement. Critical thinkers can reach reasoned conclusions and solutions. They are also open-minded to alternatives and remain objective.

A tool for developing thinking skills is 5WH (Who, What, Where, When, Why and How). These are the key questions to consider when addressing any new analysis, and can be used to organise brainstorming sessions and the collection and presentation of information.

For further information see ***Fisher (2001) Critical Thinking: An Introduction*** and ***Buzan (2006) The Mind Map Book.***

Checklist 1 Getting Started

A successful analyst should be:

- Organised
  - use existing filing protocols or establish your own;
  - keep a day book which records tasks, sources and achievement against milestones;
  - keep a reference of relevant legislation, policies and national or corporate minimum standards.
- Checking their work against analytical skills checklists and acronyms such as 5WH, PAT and SMART (see **7.3 Recommendations**).
- Constructively critical throughout the analytical process.
- Creative and innovative.
- Knowledgeable about local and other relevant priorities and targets.
- Knowledgeable about the area they cover.
- Able to establish good working relationships with colleagues who have access to useful information or specialist knowledge.
- Able to quality check analytical reports with a network of other analysts.
- Actively seeking and recording feedback to improve their own development and better communicate analytical output.
- Responsible for their own professional development by identifying strengths and weaknesses from review and feedback, and assessing progress in developing analytical skills.
- Aware of the current legislation which influences the way in which analysis is undertaken (see **Checklist 10 Complying with Legislation**).
- Taking current legislation into account when collecting and collating information, using analytical tools, in report drafting and the final dissemination of the analytical report.

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Day Books

All analysts should keep a record of the work that they have completed, including their research and thought processes. A day book is usually used for this, and should be retained and be disclosable. For larger projects, a separate book should be considered.

The day book should be kept up to date. It can also be used as an aide-memoire if an analyst is away from the project for a while. All enquiries should be recorded in the day book, along with any negative searches. A record of thought processes and decisions should also be recorded for future reference.

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Section 3
DEVELOPING TERMS OF REFERENCE

Setting clear direction is fundamental to producing useful analysis. This section describes how terms of reference capture that direction. It also describes the skills necessary to establish and agree terms of reference as the basis of analysis.

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3.1 SETTING THE DIRECTION FOR ANALYSIS

The direction of any piece of analytical work is set through terms of reference. It is important to set clear terms of reference to ensure that analysis remains focused. Clear terms of reference also ensure that the analysis addresses the questions that need to be answered in order to allocate the appropriate resources and agree actions to deal with the issue.

Analysis will usually be tasked through a tasking and co-ordination process to ensure that it focuses on current priorities, and the outcomes contribute to crime and disorder reduction and investigation. Analysis may also be required to provide information for management meetings and to support intelligence development within the intelligence team. For more information on tasking and co-ordination group meetings, see ***ACPO (2006) Practice Advice on Tasking and Co-ordination.***

Terms of reference should reflect the extent of the tasking. For example, terms of reference may be recorded and agreed by email and in no more than one paragraph. A longer-term piece of analysis may require an extensive, detailed document to record and define the direction of the product.

3.2 PURPOSE OF TERMS OF REFERENCE

Terms of reference should capture the tasking and define the scope and research methods for a piece of analysis. Terms of reference will ensure that the resulting product:

- Set a clear direction leading to a focused piece of analysis;
- Ensure that analytical tasking is in line with current priorities;
- Focus on the questions that need to be answered by analysis;
- Be agreed between the analyst and the customer.

The terms of reference should focus on the questions that need to be answered by the analysis. The aim of the piece of analysis is likely to be to develop a picture and understanding of a crime or disorder problem. However, the final report may include supporting material in the form of maps, charts or graphs.

They will:

- Is what was expected by the person setting the task;
- Answers all the questions posed;
- Is tailored to suit the purpose;
- Is completed to an agreed deadline;
- Meets the needs of the customer.

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3.3 CREATING TERMS OF REFERENCE

Terms of reference are usually prepared by the analyst in direct consultation with the customer.

The recommended minimum content for terms of reference is:

- Details of the customer, eg, name of the Tasking and Co-ordination Group (T&CG) chair;
- Details of the analyst(s) who will complete the task;
- Date of the tasking;
- Deadline and any milestones set for the task;
- Timeframe to be covered by the analysis;
- Justification for the tasking;
- Operational name, if relevant;
- List of questions to which the customer seeks answers;
- Scope and methodology;
- Purpose and objectives of the analysis.

The discussions to build terms of reference may be aided by a board blasting exercise. This will expose all aspects of the issue to be analysed and prevent important areas being missed. Issues can then be specifically included or excluded from the scope of the tasking. It will also help to identify the information required to complete the analysis, give an indication of the feasibility of the tasking and the likely time needed to complete it.

Once prepared and agreed, the terms of reference should be stored (electronically or in hard copy) so that they can be referred back to, both during and at the end of the analysis. The terms of reference may require review and amendment during the analysis if the analysis forms part of a wider strategy or major investigation, or if it is a significant piece of analysis, or where it is developed into a further piece of work such as an intelligence product.

Negotiation Skills

Good negotiation skills are important to ensure that terms of reference are clear and reasonable. This is not a competitive or confrontational step, but will ensure that the output is discussed and agreed in advance.

Negotiation involves discussion, preferably face-to-face, with the person setting the direction of the task which, following agreement, can be documented and signed off. It will ensure that the person setting the task does not have unreasonable expectations of the analysis.

Negotiation requires the ability to listen to what is being asked for and to understand the feasibility of the task. This requires an awareness of the background of the analysis, an understanding of the different techniques that will be required to undertake the analysis and the sources of information available.

The analyst needs to take responsibility for the negotiation, and manage the conversation by being prepared. **Checklist 2** will assist in preparing for negotiation of terms of reference.

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Checklist 2 Developing Terms of Reference

To successfully create and negotiate useful terms of reference the analyst needs to:

- Have an awareness of the analytical tools and techniques that can be employed to meet the tasking.
- Build an awareness of the information that is available and can be accessed within the timeframe.
- Be able to communicate what can and cannot be achieved, based on skills, training, experience, knowledge and the existence of necessary information sources.
- Be able to predict an appropriate timescale for completion.
- Capture the tasking and define the scope and research methods for a piece of analysis.

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Section 4

OBTAINING AND EVALUATING INFORMATION

This section details the collecting, collating and evaluating information steps of the intelligence cycle. It describes open and closed sources of information and effective ways of managing all information. It also explains how to establish the validity and reliability of information and the impact of this on analysis.

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4.1 INFORMATION FOR ANALYSIS

Analysis is based on an extensive variety of data, information (including intelligence) and knowledge from police, partners and more widely available sources. The breadth of sources grows continually as new sources are identified and awareness increases of the importance of understanding the context in which crime and disorder occurs.

Collection, collation and evaluation are three inter-linking steps of the intelligence cycle, although they may be presented in a different order. Arguably, evaluation occurs at every step of the intelligence cycle.

4.2 COLLECTION

Analysts must be able to identify sources of information to support their analytical work. The collection of information involves identifying information from both open and closed sources that are relevant to the terms of reference.

- Closed sources of information are those with restricted access, for example, police crime recording systems and information available through sharing agreements with partners. For more information about closed-source information, see **4.2.1 Closed-Source Information.**

- Open sources of information are those that are widely available. They may require the user to register or pay a small fee, for example, online news media, academic research and the electoral roll. For more information about open-source information, see **4.2.2 Open-Source Information.**

A list of currently available open and closed information sources can be found at **http://www.genesis.pnn.police.uk**

Analysts should maintain their own list of potential sources of information together with a description of the information available, its reliability and the procedures for acquiring it. This will act as a tool on which to base a collection plan and focus the development of sources where gaps are identified in information-sharing agreements, or where barriers exist that require action from managers. Lists of sources should be available to colleagues and updated following each piece of analysis. Some sources may be identified as regular contacts, especially for routine work such as strategic assessments. In these cases the development of an information-sharing protocol may be useful.

The collection of information should be managed by using a collection plan. This ensures that the information collection remains focused on the terms of reference. For more information on collection plans, see **4.2.3 Collection Plans.**

4.2.1 CLOSED-SOURCE INFORMATION

Closed-source information is the primary material for analysis and should be directly available to the analyst, although it may be held in separate databases. **Figure 3** details the most frequently used police closed-source information.

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Figure 3 Frequently Used Police Closed-Source Information

Information Source	Information Available	Useful Tools and Techniques
Crime and Incident Records	Crime or incident records for each reported event, including: • Unique identification number; • Location; • Time and date; • Victim details; • Forensic information.	Spreadsheets can be used to manage crime data. See **Appendix 2.** They are especially useful for comparative case analysis (CCA) see **5.2.1.** Crime pattern analysis uses crime and incident data to identify trends, hot spots and series.
Custody Records	Records of arrests and detained persons including: • Name; • Address; • DOB; • Arrest details; • Crime record numbers; • Bail and court details; • Charges; • Vehicles.	Custody data can be used to inform network and subject analysis (**5.2.3** and **5.2.7**) by identifying associates, current home address, access to vehicles and details of incident involved in.
Intelligence Reports	Intelligence refers to information that has been sanitised and evaluated using the 5x5x5 system, and is held on force and other organisational intelligence systems. This can provide information about: • Individuals; • Vehicles; • Addresses.	Following crime pattern analysis (**5.2.1**) intelligence may identify potential perpetrators of a series. Intelligence can support the development of network and subject analysis (**5.2.3** and **5.2.7**) as well as identifying patterns of a particular market and who is involved (market analysis **5.2.4** and criminal business analysis **5.2.5**).
Police National Computer (PNC)	PNC records hold details of: • Individuals; • Vehicles; • Stolen property (firearms, plant, machinery and animals). Individual's records provide a wide range of information including offending and custodial history, aliases, associates and descriptions. Vehicle records provide details such as registered owners and insurance. A set of PNC regulations exist to ensure that it is appropriately used.	Information on the PNC can be used in the development of most types of analysis, specifically it can be used to support network and subject analysis (**5.2.3** and **5.2.7**).

Performance data can be used when compiling analytical reports and intelligence products to assist in priority setting. This data can be provided by corporate or local performance analysts and should be used where appropriate to do so. It is important to understand the different roles carried out within intelligence and performance, and for each to recognise where their roles overlap and support each other.

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Closed-source information is also available from organisations other than an analyst's police force. These may include:

- Closed-source information from other police forces;
- Specialist closed-source information, for example, financial intelligence, football intelligence, special branch intelligence, prison intelligence, information from neighbourhood policing teams;
- Existing intelligence and analytical products;
- Information from partners including SOCA and HRMC;
- Information from organisations that are part of the local CDRP or CSP.

4.2.2 OPEN-SOURCE INFORMATION

The main uses of open-source information are to:

- Develop an understanding of the locations relevant to the piece of analysis;
- Identify the potential impact of social and demographic changes;
- Identify external factors that may impact on crime, disorder and community concerns;
- Support and develop investigations by indicating lines of enquiry or corroborating other information.

The internet is often used to access open-source information, but a footprint will be left on the website that identifies the police address. The use of a covert IT identity is required to avoid law enforcement being identified as the originator of the enquiries. Access to open-source information, even when using a covert IT identity, does **not** require a Regulation of Investigatory Powers Act (2000) (RIPA) authority. Only when a covert **relationship** is being maintained through the use of the internet would authority be required and, in these cases, such operations would only be conducted by an accredited covert internet investigator.

Open-source information is not subject to the same quality standards as closed-source information so may not be accurate, reliable or valid.

There are several factors to take into account when using open-source information. These are:

- Knowledge of available information that can be used;
- Understanding of appropriate access;
- Legal sourcing and use of open-source information;
- Auditing all use of open-source information;
- Ensuring open-source information is only used with corroborating information;
- Effect of local security policies on the use of open-source information;
- Full evaluation of information. For more information on evaluation, see **4.3 Collation.**

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It is not only analysts that need to understand how to access and use open-source information. Neighbourhood Policing Teams are responsible for producing Neighbourhood Profiles, which are largely based on the collation of open-source information.

Neighbourhood Profiles give the police a better understanding of communities, the people that live in them and how changes, such as new ethnic communities or major commercial development, can change the patterns of local crime and disorder.

For more information on Neighbourhood Policing, see ***ACPO (2006) Practice Advice on Professionalising the Business of Neighbourhood Policing.***

4.2.3 COLLECTION PLANS

Collection plans provide a structure for the collection of information; they assure focus on the terms of reference and can be used to monitor the successful acquisition of the information required. Collection plans may be structured in a table or spreadsheet.

Collection plans should contain the following:

- The information required, such as a specific question from the terms of reference;
- Potential internal and external information sources and contact details;
- The date that the source has been contacted or searched;
- A deadline for the return of information;
- A tick box or date to signify that the information has been received.

The collection plan must be updated regularly so that information collection can be properly managed. This will ensure that information gaps, additional potential sources and possible access difficulties are identified. The collection plan will also need to be updated if the terms of reference are altered.

Regular updates to the collection plan help to manage the working relationship with sources providing information. Analysts should be aware of local procedures for approaching sources including information-sharing protocols and single points of contact (SPOC) for data from partners and regular sources. Communication SPOCs have established information-sharing agreements with Communication Service Providers (CSP) and are able to request information accurately, using the correct forms. This ensures that the information is appropriately sourced and the process is fully audited. If there is no established local procedure for accessing information from a source, analysts should ensure that sources are contacted a minimum number of times. Sources should be contacted only once, with a clear request for information. This will help to build a strong working relationship for future information collection.

Six Key Questions for Analysis – 5WH

There are six questions that any analysis should seek to answer: What, When, Where, Why, Who and How. These questions can be applied to most situations, although some, like what and where, are usually easier to answer than who and why.

These questions can be used to support the collection process by organising what is already known and where information is required to answer what is unknown. **Figure 4** shows how this information can be presented in a table to identify information gaps. Examples of the types of questions that might be asked are given for each analytical technique in **5.2 Analytical Techniques.**

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Figure 4 Table to Support Information Gathering based on 5WH

Question	What is already known	What is not yet known
What		
When		
Where		
Why		
Who		
How		

Hints and Tips – Collection

- Brainstorming is a useful tool to identify data requirements on which to base the collection plan. Data requirements should be linked to the terms of reference and identify who can provide the data or information.
- Where possible, see people in person to discuss the information requirements.
- Speak to colleagues to identify established data sources and information-sharing protocols.
- Be clear about what data is required and why.
- Confirm the format the data is on, or will be available in.
- Determine the best way to collate the information including maps, charts, spreadsheets and databases.
- Decide how frequently the information is required and who is responsible for providing it.
- The impact of gaps in information should be referenced within any associated analytical report or intelligence product.
- Solutions should be developed to resolve the problems identified.

4.3 COLLATION

Collation is the ordering of information that has been collected for analysis. Collation ensures that information is appropriately stored, remains retrievable and is accessible for undertaking analysis.

4.3.1 INITIAL COLLATION

Information can be stored and organised using databases, spreadsheets, tables, maps and charts. These products are not an analytical output; it is the evaluation and subsequent interpretation of collated information that leads to an analytical product. The stages for the collation process are illustrated in **Figure 5.**

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Figure 5 Collation Process

Stage	Activity
Reading	Develop understanding of information and annotate material for future use. Use a corporate standard where this exists or develop a task specific unique referencing standard.
Categorisation	Helps to manage large amounts of information both electronically and in paper copy. Again, a corporate standard may exist, but is likely to be different for each task.
Evaluation	Record initial evaluation with relevant information along with an accurate description of the source, the justification for use and method of collection. For more information on evaluation see **4.4 Evaluation.**
Labelling	Add the appropriate Government Protective Marking Scheme (GPMS) grading, document version, author's details, date, any relevant operation name, weed date and source.

This is also a useful point to start version control. Version control is crucial in order to:

- Have an audit trail of the development of products;
- Provide an accurate view of what facts the analyst is aware of at any given point in time;
- Ensure officers have the most up-to-date information on the right document;
- Maintain good document housekeeping procedures.

4.3.2 INFORMATION STORAGE

Collated information needs to be stored safely, both physically and within electronic systems. It also needs to be accessible to the analyst and colleagues. Accessibility is defined by the GPMS protective marking code and the 5x5x5 dissemination code. For more information on GPMS marking, see ***ACPO (2001) Adoption of the Government Protective Marking Scheme (GPMS).*** For more information on intelligence reports and the 5x5x5 evaluation process, see ***ACPO (2007) Introduction to Intelligence-Led Policing.***

All documents must be stored according to the GPMS. This means that documents may need to be stored in locked cabinets or within password protected or restricted areas on electronic storage systems. The analyst must also consider the appropriate storage of documents that may be displayed on walls to support briefings.

The electronic documents used by analysts will need to be stored on relevant systems. Documents produced by analysts must be stored in line with appropriate legislation, such as the Data Protection Act (1998) (DPA). Force policy may dictate that all work is stored on a shared drive; access to that drive may be restricted.

When constructing a system to store a volume of documents, using folders and a naming convention can assist. An example of a naming convention is shown in **Figure 6.**

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Figure 6 Example of a Naming Convention

C:\Op X\050323 XXX BLOGGS subject profile analysis				
C:\	Op X	050323	XXX	BLOGGS subject analysis
Drive name	Operation name folder	Date YYMMDD	Author's Initials	Document Title Including named individual

Documents can be password protected to ensure that they are not amended by anyone other than the author; this maintains the audit trail. Analysts may also wish to consider converting their documents to pdf format as this will minimise storage space required and prevent documents being altered.

Data Protection Act 1998 (DPA)

The DPA concerns the processing of data relating to individuals, and includes the obtaining, holding, use or disclosure of such information.

Data refers to both paper and electronic files and, therefore, makes the analyst liable for the data received. The DPA also covers the length of time that data may be kept, storage of data, how it is processed and its relevance.

The DPA is based on eight principles regarding personal data. These are that all data must be:

- Fairly and lawfully processed;
- Obtained and processed only for one or more specified and lawful purpose;
- Adequate, relevant and not excessive;
- Accurate and up to date;
- Kept no longer than necessary;
- Processed in accordance with rights of data subjects;
- Surrounded by appropriate security measures;
- Transferred only to those countries outside the European Economic Area which ensure adequate levels of data protection.

Section 55 is especially relevant to analysis as it states a person must not knowingly or recklessly, without the consent of the data controller:

- Obtain or disclose personal data or information contained in personal data; or
- Procure the disclosure to another person of the information contained in personal data.

Unless:

- It was necessary for the purpose of preventing or detecting crime;
- Was required or authorised by or under any enactment, by any rule of law or by the order of a court;
- The person acted in the reasonable belief that he has in law the right to obtain or disclose the data or information or to procure the disclosure of the information to another person;
- The person acted in the reasonable belief that he would have had the consent of the data controller if the data controller had known of the obtaining, disclosing or procuring and the circumstances of it; or
- That in the particular circumstances the obtaining, disclosing or procuring was justified as being in the public interest.

All analysts should be familiar with the eight Data Protection Principles contained within Schedule 1 of the Act.

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4.4 EVALUATION

Evaluation is the assessment of the reliability and validity of all information that has been collected, as well as its relevance to the terms of reference and links to other information.

All information must be evaluated before it is used, although some information, such as intelligence, should be evaluated before the analyst accesses it. An understanding of the following factors is necessary for an effective evaluation:

- The source of the information;
- The content of the information;
- How that information supports the outcomes of analysis.

The results of evaluation influence how the final product is prepared, how supporting charts are presented and inferences are made, and how the final report is disseminated.

Analysts should understand the basis on which data is collected, whatever the source. For example, the completion of crime reports by a busy response officer or the collection of statistics in other agencies such as the health service or military. This is an important element in determining the reliability and validity of the information.

Information can be evaluated in a range of ways depending on its source. Common sense should underpin any evaluation and analysts should consider whether the information is sensible and/or true. The following subsections explore common evaluation techniques for different information sources.

4.4.1 EVALUATION OF INTELLIGENCE

The 5x5x5 evaluation system is used across UK law enforcement to evaluate intelligence. This system considers the source of the information, the information itself, and the direction from the information owner on how the information may be used.

Any information for a policing purpose that is not generally recorded on another system will be submitted for recording on the intelligence system. This is done using the 5x5x5 Information/Intelligence Report. The grading of information in the report is subjective but critical to protecting the source of the information, while still allowing it to be used.

Those undertaking analysis must be familiar with the 5x5x5 form and how it is completed. A detailed description and the form are available in ***ACPO (2007) Introduction to Intelligence-Led Policing*** and ***ACPO (2006) Guidance on the Management of Police Information.***

4.4.2 EVALUATION OF OTHER POLICING INFORMATION

Plenty of other information is available through police closed sources such as crime and incident records and the PNC. See **4.2.1 Closed-Source Information.** This information is not evaluated through the 5x5x5 process and is usually assessed to be reliable. The analyst or researcher should, however, still seek to critically view the information and understand the context in which the information has been gathered, and its purpose.

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4.4.3 EVALUATION OF OPEN-SOURCE INFORMATION

The majority of open-source information is accessed from the internet. There is no quality control over the information made available on the internet. All open-source information, especially that which is sourced from the internet should be subject to careful evaluation before it is used.

An assessment of information quality is essential for an accurate evaluation of open-source information. The quality of information can be determined by using the checklist set out in **Figure 7.**

Figure 7 Source Evaluation Checklist

Element	Goal	Checklist
Completeness	Analysts should seek information that includes sufficient background information to evaluate it.	Author's name Author's title or position Author's organisational affiliation Date of page creation or version Author's contact information Some indicators of information quality
Credibility	Source is authoritative and supplies some good evidence of its trustworthiness.	Known and previously evaluated source Author's credentials Evidence of quality control Known or respected authority
Corroboration	Source provides convincing evidence for the claims made and can be supported by other evaluated sources.	Listed sources Contact information Available corroboration claims supported Documentation supplied
Relevance	The information should be relevant to the terms of reference for the analysis.	Date of version Geographical area covered by the information Reason for original information collection
Impact	The impact of the information on the analysis should be evaluated; it may support or refute a working hypothesis or suggest a further inference.	Link to other information Reference to additional information in the text Corroboration for information provided
Accuracy	Source is correct.	Up-to-date Factual Detailed Exact Comprehensive Audience and purpose reflect intentions of completeness and accuracy

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Figure 7 Source Evaluation Checklist (continued)

Element	Goal	Checklist
Reasonableness	Source engages the subject thoughtfully and reasonably, concerned with the truth.	Fair Balanced Objective Reasoned No conflict of interest Absence of fallacies or slanted tone

Developed from the work of Robert Harris at **http://www.virtualsalt.com/evalu8it.htm**

4.4.4 GENERAL EVALUATION OF INFORMATION

Analysts must know where information used for analysis has come from. This helps to understand the purpose for which the information was originally collected and the likely impact on its accuracy.

New information should be compared with information already collected. This will confirm whether it corroborates other information or identifies anomalies. The analyst should also consider whether the new information is worth collating by asking how it contributes to the analysis.

The timeliness of the information is also an important aspect of evaluation. An assessment will have to be made on the impact of the age of the information against the value of waiting for new information. This will depend on the potential delay to the analysis and whether it fits with the time period stated in the terms of reference. Old information, such as census data, is useful. It can be used as an indicator or to identify long-term patterns and trends on which a prediction of future crime and disorder can be based. It can also be used to provide a context for the current situation.

Analysis must be based on the best possible information available within a defined timeframe. Any issues identified with the information must be captured in the introduction to the final analytical report.

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Checklist 3 Obtaining and Evaluating Information

These are the key points to consider when obtaining and evaluating information for analysis.

- Only information that is relevant to the terms of reference should be collected.
- A collection plan should be used to manage the collection of information.
- The collection plan should ensure that information sources are approached only once and that all information required is requested and successfully collected.
- A simple, logical method should be established for the collation of information where a corporate standard does not exist.
- Tools for the management of information should be familiar to, and accessible by, the analyst, including spreadsheets and tables.
- Ensure that information has been collected, and that it is being stored, according to relevant legislation, codes of practice, standards and guidelines. Local policy on the registration of databases must be adhered to.
- Evaluation should establish how useful information will be on the basis that the source is reliable, the information is accurate and that it may be used freely for analysis.

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Section 5

APPLYING ANALYTICAL TECHNIQUES

Comprehensive analysis assists in the understanding of the root cause of a problem. This leads to the development of an effective response. This section describes the techniques available for analysis and how they can be applied.

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5.1 ANALYTICAL TOOLS AND TECHNIQUES

Analytical tools assist in the development and application of analytical techniques. Analytical tools range from basic software applications such as spreadsheets, through to specifically designed analytical programmes including geographical and charting software. Using the tools in an innovative way is important for managing and understanding large amounts of information.

Data description is the product of using these tools and includes graphs, charts, maps and matrices. The output from analytical tools can be used to support inferences in the final analytical product, or as a briefing tool.

Analytical techniques are applied to identify patterns in crime and disorder-related information. They are used in a variety of combinations to develop the analysis that is used in decision making. By using defined analytical techniques, analysts can extract meaning and develop inferences and theories from a wide range of information. For more information on developing inferences, see **6 Developing Inferences.**

The comprehensive analysis of a problem is required to understand its root cause. It is important to set aside the necessary thinking time to analyse the problem. The outcome of analysis must be more than presenting facts and figures that merely confirm what is known and do little to inform. If analysis only represents what is already known then it has failed to be useful in its support of decision making.

Appendix 6 contains an overview of Operation Flood, which was developed following the identification of a series of burglary offences at student accommodation in Greater Manchester. Combinations of techniques were used to identify the problems and to support decision making and problem solving. Continuous analysis during the initiative enabled resources to be focused and provided regular tactical updates.

The following subsections introduce techniques that can be used for analysis and provide practical tips for their application. Useful tools are included in **Appendix 2.**

5.2 ANALYTICAL TECHNIQUES

The ten analytical techniques are defined in ***ACPO (2006) Guidance on the National Intelligence Model,*** and should be selected according to the task to be completed. Creating an analytical report may involve a combination of techniques, and these may be defined within the terms of reference. The analytical techniques are also suitable, again in combination, to form the basis of intelligence products. A set of questions is included as a checklist for each of the analytical techniques

5.2.1 CRIME PATTERN ANALYSIS

Crime pattern analysis (CPA) identifies the nature and scale of emerging and current crime and disorder trends, linked crimes or incidents, hot spots of activity and common characteristics of offenders and offending behaviour. Useful tools for CPA are maps, graphs and tables. For information on tools see **Appendix 2.**

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The main sources of information for CPA are crime and incident reports. Patterns may be found within the detail of crime and incident reports, such as the location of the event, the type of property involved, or the method by which the event was progressed. Some of the areas where patterns can be seen are included in **Figure 9.** Pattern identification is not the role of the analyst only; crime and incident recorders, officers working in neighbourhoods, managers and the public may all identify patterns, and these will need to be verified through analysis.

Those undertaking analysis should have a general awareness of the types of crime and disorder within their geographical or specialist scope. Being aware of these problems makes it easier to identify patterns as they emerge and to identify unusual or developing event factors. Management of the often large volumes of information, using tools such as spreadsheets, for example, is a useful skill for identifying, verifying and monitoring patterns.

The main advantages of CPA are that it:

- Determines current, new or emerging problems;
- Predicts criminal activity;
- Identifies the most significant offenders in hot spots;
- Aids linking between committed offences and possible offenders;
- Focuses intelligence gathering;
- Highlights preventive, reduction or diversion opportunities;
- Can be used to make decisions about resources.

There are four main types of CPA:

- Hot spot identification;
- Crime and incident trend identification;
- Crime and incident series identification;
- General profile analysis.

Hot Spot Identification

Hot spots are locations that display significantly higher than usual levels of crimes and/or incidents. They may be identified as priority locations for problem-solving responses. Hot spots develop as a result of increasing targets, increasing offenders or decreasing controls. They can be short term, such as an area with a low burglary rate experiencing a sudden increase, or long term, for example, a problem residential estate. Short-term hot spots can be reduced using intervention tactics such as intelligence gathering and disruption methods. Long-term hot spots require intervention that is more focused on problem solving, and is usually in partnership with other organisations.

There are three main characteristics of hot spots that can explain why the area may be experiencing problems. Each of these characteristics, described in **Figure 8,** requires a different focus for analysis and problem solving.

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Figure 8 Three Characteristics of Hot Spots

Hot Spot	
Crime Generators	Areas that larger numbers of people are generally attracted to, or where there are a large number of targets. For example, shopping centres, festivals or sporting events.
Crime Attractors	Places that provide many criminal opportunities, are well known and used by criminals. Caused because the location attracts offenders. For example, drug dealing areas, red light districts, late-night entertainment areas linked to the night-time economy.
Crime Enablers	Locations where there is little regulation of behaviour and rules of conduct are absent or not enforced. For example, car parks with no attendants or security guards after a certain time of day.

Hot spot analysis can provide early indications of where to focus attention. Useful comparisons with hot spot areas can be made by examining crime neutral areas (cold spots), which have relatively few crimes, to establish why the hot spot area is affected by crime and if there is anything within the cold spot that can be copied within the hot spot. Continuing analysis can help maintain an understanding of the nature of offending and offence levels within identified hot spots.

Crime and Incident Trend Identification

This type of analysis looks at trends in crime or incidents. A crime or incident trend is a broad direction or pattern that specific types or general crime and/or incidents are following.

Three types of trend can be identified.

- **Overall trend** – highlights if the problem is getting worse, better or staying the same over a period of time.
- **Seasonal, monthly, weekly or daily cycles of offences** – identified by comparing previous time periods with the same period being analysed.
- **Random fluctuations** – caused by a large number of minor influences, or a one-off event, and can include displacement of crime from neighbouring areas due to partnership activity or crime initiatives.

Crime and Incident Series Identification

A series is where a number of similar crimes or incidents are identified as probably being committed by one offender or group of offenders because they are linked by modus operandi (MO), signature behaviour, intelligence or forensic evidence.

A series can also occur where the offenders are able to locate temporarily vulnerable targets and places, or where offenders are new to a crime type or area. The controllers of these targets and places may act to prevent future attacks, but offenders move on to other similar targets and places. The method of analysing crime series is called Comparative Case Analysis (CCA).

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Comparative Case Analysis

CCA is a method for identifying series or linked events. CCA aims to find patterns within the detail of an incident or crime event that will potentially link them because they are distinct enough from other events.

A useful tool for CCA is spreadsheets. Information is put into a spreadsheet and ordered under relevant headings for analysis.

Spreadsheets used for CCA should:

- Be focused;
- Contain objective information;
- Allow for discrepancies to be identified;
- Be detailed enough to ensure descriptions are comparable;
- Use colour to show links.

Crime and incident reports are the main data source for CCA. Additional data sources may be used to add further detail to the analysis. These may include:

- Witness statements;
- Intelligence reports;
- Partnership data;
- Communications, ANPR and financial data.

Once a CCA spreadsheet has been populated, the analysis of the detail will lead to the linking of offences and the development of inferences.

When undertaking CCA, it is important to gather and record as much information as possible. Headings and subheadings are a useful way of displaying the information prior to analysis. Suggested headings and areas to consider are listed in **Figure 9.**

Figure 9 Comparative Case Analysis: Areas to Consider

Heading	Areas to Consider
Crime and disorder type	• Look at attempted as well as successful crime and disorder events; • Look at other events within the location or hot spot, which might be linked or be pre-cursor events
Location/address Road name, area or location	• Subcategorise by exact or specific feature/location such as stairwell, subway or alleyway.
Time of offence	• Include date and day of the week.
MO – how the event progressed	• Point of entry – eg, vehicle, house; • Instrument/tool/weapon used; • Words used; • Level of violence; • How entry was gained; • Approach method – eg, climbed over fences, removed window; • Anything left at scene – eg, torch, tools, cigarette ends, clothing; • Behaviour at the scene – eg, food eaten, tried on clothing, furniture moved, secured front door from the inside, cut telephone/alarm wire;

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Figure 9 Comparative Case Analysis: Areas to Consider (continued)

Heading	Areas to Consider
MO – how the event progressed (continued)	• Forensics – were fingerprints, DNA, shoe marks found at the scene – what type of shoe? • Is this linked to other crime scenes?
Stolen Property	• Type of property; • Vehicle crime offences – make, model, age of vehicle, colour etc; • Value of the property; • Value of damage caused (criminal damage offences and attempts).
Victim characteristics	• Age; • Sex; • Reason why in location – eg, tourist, evening out, resident, associate of offender; • Repeat victim; • Occupation; • Description; • Associates; • Locations frequented; • Negligence or provocation. Understand why they are victimised.
Crime generators	• Lighting; • Venue of offences, shopping centre, car park, town centre, pubs, nightclubs, fast-food outlets, cinema, taxi rank, bus stop; • Design of houses, buildings; • Level of security – eg, no CCTV, warden. Determine why offence(s) were able to occur.
Offender details	• Age; • Sex; • Lone/accompanied; • Previous offences of known/suspected offenders; • Description.
Recovery location of stolen property	Recovered vehicles may help to confirm/corroborate MO used for linking offences or offenders; May provide clues to offender's identity or residence.
Involvement of alcohol/drugs	Could be the motive for offending or the reason why victim was targeted.

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General Profile Analysis

This type of analysis identifies and examines the characteristics of victims, or common characteristics of offenders displaying particular offending behaviour. It tends to be strategic in nature and is based on large information sets and statistical analysis. Examples of general profiles are: the examination of the characteristics of serial rapists, or the characteristics of repeatedly attacked individuals or groups of individuals; these are used especially to identify vulnerable victims.

The general profiling of victims may help to identify which people are most at risk and when they are most at risk. Victim profiles can be based on categories, for example, occupation, relationship with the offender, demographic group or general description or characteristics. Analysis of previous repeat victims within these general profiles may give an indication of the average time between crimes; this could then be used to focus crime prevention efforts on specific repeat victims.

Hints and Tips – Crime Pattern Analysis

- Know what usual patterns and types of crime and disorder are in the geographical or specialist area.
- Start with increases in a particular type of crime or disorder and attempt to identify if they are linked by geography or MO, or are an unusual increase compared with previous time periods.
- Visit locations, where possible, to understand the environment and context in order to develop an understanding of potential crime generators, attractors and enablers.
- Consider key addresses, such as schools or suspects, within identified hot spots, not just the crime locations.
- Extend the data to include time and geographical locations outside the identified trend or hot spot to understand usual or unusual patterns of crime and disorder.
- Re-read the detail of crime and incident reports or intelligence reports to ensure that a full description of the event is considered.
- Be aware when linking offences or incidents by descriptions of offenders that individuals' recollections can differ.
- Look for further information that can develop an understanding of the pattern, corroborate existing inferences and suggest problem-solving options.

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Figure 10 Crime Pattern Analysis: Questions to Consider

5WH	Crime Pattern Analysis: Questions to Consider	Type of CPA
Who	Have any potential offenders been identified within crime reports or from forensic evidence? What current intelligence is there to suggest possible offenders? Who has previously carried out this type of offence/series – look at recent prison releases. Is there enough detail from witness/victim descriptions to produce a profile of the offender? Has the offender altered their MO – more violence being used, more forensically aware etc? Victim analysis – repeat individuals or locations?	Trend Series Hot spot General Profile
What	What intelligence is there regarding offending in the hot spot or location? This will assist in prediction – generalisations can be made regarding patterns of offending and offenders. Predictions can be based upon: • Previous trends; • The likelihood of offences increasing/decreasing, based upon seasonal or cyclical trends; • Potentially vulnerable locations or victims; • Analysis of repeat victims – this may enable predictions to be made regarding average time between offending; • Repeat victim locations; • Seasonal/cyclical trends – is the offending increasing or decreasing? • Identification of crime generators, attractors and enablers. Is this a short or long-term hot spot? Have offences changed over time – if so how? How do levels compare with other areas – what are the differences? What is the frequency of occurrences? Is the problem getting worse over time? What types of offences or incidents are involved – are they specific types or a variety of offences? What type of property is being targeted, are these CRAVED items? What is the market for this type of property? Are there repeat victims? Is the trend overall, seasonal or cyclical? What types of premises or locations are targeted? What is the geographical spread of the offences/offender? Have the offences altered as the series progresses? What if any external influences exist? What are the situational factors? What control methods are there at the locations – eg, security, CCTV? What is the average distance travelled to commit offences? Are there links between the types of offences the offender is committing?	Trend Series Hot spot General Profile

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Figure 10 Crime Pattern Analysis: Questions to Consider (continued)

5WH	Crime Pattern Analysis: Questions to Consider	Type of CPA
Where	Identified through the scanning of crimes and incidents on a regular basis. Increases identified will lead to further analysis. The use of spreadsheets will allow the capture of the relevant information to inform the 5WH.	Trend Series Hot spot General Profile
When	Time, date, day of the week. Identification of core operational times. Frequency of occurrence and intervals between offences. Seasonal and cyclical trends.	Trend Series Hot spot General Profile
Why	This should be outlined in an inference.	
How	What are the associated traits and methods? What types of offences or incidents are being committed and what are the associated MOs? How is the series linked – use CCA to identify common factors such as MO, victim, property type? Is there any forensic evidence linking the crimes? Are there any links to previous crime series (detected or undetected)? What type or types of location are targeted? What is the MO? What is the offender behaviour? What situational , economic and/or environmental factors are present?	Trend Series Hot spot General Profile

5.2.2 DEMOGRAPHIC AND SOCIAL-TREND ANALYSIS

Demographic and social-trend analysis (DSTA) examines how demographic and social changes within an area or within a demographic group can affect levels and types of crime and disorder.

These changes may be an individual occurrence, such as a live music event, or may be, for example, a long-term change in either the ethnic make-up or age profile of a geographical area. DSTA is often used to develop an understanding of a particular problem which has been identified by crime pattern analysis.

Demographic and social-trend analysis:

- Can be used to make decisions about resources at a strategic level;
- Highlights where future pressures on resources are likely to arise;
- Identifies current or emerging problems;
- Can be used to improve knowledge in relation to partnership working;
- Aids the planning process for seasonal or tactical operations in response to emerging social phenomena or movements of people;
- Highlights preventive, reduction or diversion opportunities;
- Helps to focus intelligence gathering;
- Predicts criminal activity.

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DSTA often depends on the collection of information from openly available sources and organisations outside of policing. Examples of information used for DSTA include:

- Unemployment levels;
- Truancy rates;
- Homelessness levels;
- Details of socio-economic status;
- Population growth;
- Inward and outward population migration;
- Family size;
- Types of domestic, business and community premises;
- Ethnic origin of the population;
- The age of individuals living in an area;
- Media publication of forthcoming events;
- Details of new housing estates, schools, businesses and transport routes.

There are many different sources of information for DSTA. **Figure 11** lists some of the more useful sites and the type of information that can be found on them.

Figure 11 Sources of Information for DSTA

Source	Type of data
http://www.neighbourhood.statistics.gov.uk	Compiled data at ward level and above. National statistics including census data.
Research Development and Statistics – Home office **http://www.homeoffice.gov.uk/rds**	Government reports, crime statistics, national trends, force comparisons.
Communities and Local Government department **http://www.communities.gov.uk**	Local data such as census data, including maps.

DSTA can be applied to a number of different scenarios. For example, to examine the likely impact of a new housing estate or seasonal fluctuations in tourist numbers at holiday resorts, on policing and partners. Useful questions to ask when completing DSTA are included in **Figure 12.**

Trend variations influence the number of policing resources required. This type of analysis is, therefore, closely linked to business planning, it can also be used to develop policy.

The Vulnerable Localities Index (VLI) is a method that uses DSTA to identify specific locations within an area that may require extra resources to protect it from the impact of crime and disorder. This method was developed by Centrex and the Jill Dando Institute; it identifies communities that are suffering breakdown and fragmentation. For more information regarding VLI see ***Community Cohesion, identifying vulnerable localities – analysts' handbook,*** available at **http://www.genesis.pnn.police.uk**

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Hints and Tips – Demographic and Social-Trend Analysis

- As there are large amounts of information available, use a collection plan prior to carrying out DSTA to determine what data is required.
- Use community information, neighbourhood policing team knowledge and neighbourhood profiles to develop an understanding of the usual demographic and social constitution of the geographical area.
- Identify and develop relationships with partner agencies and neighbourhood and community teams to encourage data sharing.
- Map VLI areas against crime and incident data, and customer satisfaction data.
- Research results analysis and problem profiles in similar areas to understand the likely impact of individual events or social and demographic changes.

Figure 12 Demographic and Social-Trend Analysis: Questions to Consider

5WH	Demographic and Social-Trend Analysis: Questions to Consider	Linked Techniques and Data Sources
Who		
What	What is the nature of the trend/change examined? What is the background – ie, the situation prior to the change/trend? Consider **PESTELO** issues as well as demographic and crime data. What are the factors that have altered/are likely to alter? What factors may have caused/may cause changes in crime trends or offending behaviour? Consider: **Political** eg, dedicating resources to political initiatives; **Economic** eg, price of goods locally such as metal and fuel, level of local investment; **Social** eg, employment opportunities, unemployment figures, truancy, drug use, health, homelessness; **Technological** eg, levels of e-crime in the area, issues with local communication networks and IT infrastructure for crime recording; **Environmental** eg, alterations in housing, schools, businesses, transport routes; **Legal** eg, new powers and processes through new/changes to legislation; **Organisational** eg, levels of staffing and sickness, resources dedicated to long-term initiatives. What are the current/emerging/expected law enforcement issues? What issues have arisen in other areas that have undergone similar trends/changes?	Crime and incident data Partnership data Open-source information Home Office website British Crime Survey iQuanta data Horizon scanning documents Local authority reports Strategic assessments

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Figure 12 Demographic and Social-Trend Analysis: Questions to Consider (continued)

5WH	Demographic and Social-Trend Analysis: Questions to Consider	Linked Techniques and Data Sources
Where	This will be the focus of the DSTA and will be determined by a number of factors – crime/incident increases and decreases identified through CPA, vulnerable locations identified by VLI, new building projects etc.	Horizon scanning documents Local authority planning documents – areas of regeneration
When	May be of use to identify when issues occur – depends on the DSTA being carried out.	Seasonal trends Predictions Problem profiles
Why	This should be outlined in an inference.	
How	How the identified issues affect a location, Basic Command Unit (BCU) or force will be identified through the DSTA.	Problem profiles Strategic assessments

5.2.3 NETWORK ANALYSIS

Network analysis provides an understanding of the nature and significance of the links between people who form criminal networks, and organisations that interrelate. It also assesses the strengths and weaknesses of criminal groups or organisations.

Network analysis:

- Provides a detailed picture of the roles played by individuals, including their rank in a hierarchy and level of control;
- Supports the identification of intelligence gaps and subjects to target;
- Gives an understanding of the scale and seriousness of the threat posed by criminal groups;
- Shows associations within and outside the network;
- Identifies key areas and possible tactics for investigation and disruption;
- Focuses intelligence gathering and provides information for making decisions about prevention, enforcement or intelligence responses.

Network analysis will often be developed using graphical software to demonstrate the links between individuals, locations, events and organisations. Charts are a useful briefing tool and will often accompany the final report. For more information about network charts, see **Appendix 2.** Carrying out a piece of network analysis often triggers the production of other analytical techniques, such as criminal business analysis and market analysis. Network analysis is also frequently used to support the development of intelligence products, especially subject profiles.

Network analysis can be used to examine the type of links between individuals. These might include links between a small set of youths believed to be responsible for disorder in an area, or links within an organised crime group. Network analysis can also be used when examining links between people who are not believed to be committing criminal offences, for example, links between victims or family associations and relationships.

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Hints and Tips – Network Analysis

- It should highlight vulnerabilities within the network.
- It assists in the identification of exploitation and disruption opportunities.
- It may identify that an individual, other than the initial subject, should be the priority for targeting activity either due to their role in the network, the impact of their removal from the network or an identified vulnerability.
- Criminal business analysis can help identify the roles of individuals within a network, and may identify where individuals have yet to be identified.
- A variety of information should be used to link individuals with others, money, means of communication, events and locations.
- Graphical software requires specialist training and must be used according to national and local charting protocols.
- Usually a snapshot of a network chart, rather than the whole chart, is most useful for briefing purposes or inclusion in a report.
- Intelligence gaps should be prioritised to focus intelligence gathering on inferred links between individuals or organisations.

Figure 13 Network Analysis: Questions to Consider

5WH	Network Analysis: Questions to Consider	Linked Techniques and Data Sources
Who	The subject(s) of the network analysis. Who are the key associates and individuals involved in criminal activity? Strengths, weaknesses, opportunities and threats of the network.	Intelligence reports Market analysis Criminal business analysis
What	What is the general nature of the criminal network? There are a number of possible associations that can be focused upon within a network. These include family, criminal and general associations. Vulnerabilities of the network – identify exploitation opportunities, disgruntled associates/family, internal rivalries, business/money/power disputes. Type of criminality involved – is the network linked to other significant groups?	Intelligence reports Analysts' reports
	Family Associations Who are the family members, partners/ex partners and their children? What are their occupations? What is their address (same different from main subject(s)? What is their involvement in/knowledge of criminality? What is their relationship/amity with main subject(s)?	Subject profile Witness statements Intelligence reports

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Figure 13 Network Analysis: Questions to Consider (continued)

5WH	Network Analysis: Questions to Consider	Linked Techniques and Data Sources
What (continued)	**Criminal Associates** What are the roles of individuals within the group? Is there a hierarchy within the group? What is the size of the group or organisation? What are the activities of the group? What business/offences are they involved in? What is the ability of the network to attract/retain members? To what extent do key players protect themselves? How do they evade detection/identification/prosecution? What is the group's knowledge of law enforcement techniques? What means is used to control the network? What is the use of violence/corruption? What are the links to legitimate business (if any)? What is the currency/significance/length/permanency of relationship to main subject(s)? What links are there (if any) between associates? What links are there (if any) outside of the organisation? What internal discipline and control are used within the network?	Subject profile Witness statements Intelligence reports PNC Intelligence products Market analysis Criminal business analysis
	General Associations What vehicles are being used? Where are the associates seen? What places are frequented socially, for example, to take drugs? What access does the network have to resources?	PNC ANPR data
	Specialism and Skills What is the current/historic technical, mechanical, financial, legal expertise; other specialist knowledge/skills including knowledge of law enforcement techniques?	Financial data Criminal business analysis Intelligence products
	Communications Analysis What is the preferred means of communication? (Face to face, landlines, mobiles, internet etc.) What languages are spoken, jargon/slang used? Patterns of communication. What is the sophistication and surveillance awareness of the network?	Communications analysis

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Figure 13 Network Analysis: Questions to Consider (continued)

5WH	Network Analysis: Questions to Consider	Linked Techniques and Data Sources
What (continued)	**Financial Links** What are the sources of legitimate income? Are there signs of unattributable wealth? What property/businesses are owned? What are the methods of financing and making payments – both internally and externally (size and routes)? Is there a financial controller? Is the network involved in money laundering (how, who)? What assets does the network have – illicit/licit, onshore/offshore?	Financial data Subject profile
Where	Network analysis will identify locations of interest such as meeting points which could be intervention opportunities. Geographical base of the network. What is the crime impact area?	Intelligence reports Network analysis
When	Meetings and associations will be outlined, this will assist in corroborating the associations. How long has the network been established?	
Why	Why the network exists will be identified/visualised through the network analysis.	Network analysis
How	The type of association and how it is maintained and carried out will be identified – in person, telephone conversations and by email. Criminal Activity – MO.	Network analysis

5.2.4 MARKET ANALYSIS

Market analysis aims to identify the criminal market around a commodity or service, and can be used to describe any criminal market at any level.

Market analysis is used to:

- Outline the level of activity of a market;
- Assist the selection of subjects for targeting;
- Establish an audit trail regarding subject selection, to comply with the Human Rights Act (1998) (HRA);
- Highlight potential new sources of information;
- Provide a focus for intelligence gathering;
- Identify emerging market trends;
- Provide information to make decisions about resources;
- Identify prevention, reduction and diversion opportunities.

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Hints and Tips – Market Analysis

- Market analysis regarding different commodities can be compared and overlaps identified.
- Criminal business analysis can help to identify the elements of the market that are required to be successful, such as logistical requirements, and that may raise opportunities for enforcement activity.
- Specialist teams may already exist that have dealt with criminal activity in this area and may provide specialist knowledge to support the development of the analysis.
- The analysis should be continually reviewed and updated to ensure that the content is current.
- Identify any existing analysis of the commodity or service, or analysis for other geographical areas, to enable comparison of markets and show possible links.

Figure 14 Market Analysis: Questions to Consider

5WH	Market Analysis: Questions to Consider	Linked Techniques and Data Sources
Who	**Who are the key players involved in the market – (identify hierarchy and vulnerabilities)?** How are they involved? Where do they reside and operate (suppliers and customers)? Who are the handlers or suppliers? What are the interrelationships of key individuals and associates? Are there any principal offenders on bail and/or due for release from prison? Who are the current targets? Who are the long-term players? Are there any important organisations? Who are the victims?	Network analysis Subject analysis Intelligence reports Existing analysts' reports Market analysis Criminal business analysis
What	**What is the market to be examined – outlined in terms of reference?** **What is the size and nature of the market – strengths, weakness, opportunities and threats?** Risk factors associated with the market identified. **What is the size of the market?** Level of acquisitive/volume crime. Type and quantity of property stolen, value of item(s) stolen. Drugs market number of suppliers, number of overdoses, quantity of product, frequency of service. What is the price and purity?	Crime pattern analysis Comparative case analysis Intelligence reports Intelligence documents DrugScope reports – http://www.drugscope.org.uk Drug and Alcohol Action Team (DAAT) reports Criminal business analysis

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Figure 14 Market Analysis: Questions to Consider (continued)

5WH	Market Analysis: Questions to Consider	Linked Techniques and Data Sources
What (continued)	What are the supply and demand drivers? What is the predicted growth, activity? What are the physical and psychological effects or side effects of the commodity? **What type of market is it?** Seasonal or cyclical. Open or closed. Product or service based. What has been the impact of law enforcement activity on the market? Criminal activity associated with market. What is the type and frequency of criminal activity associated with the market over time? Have there been any increases or decreases in activity and are there any seasonal or cyclical trends? Is there a relationship with other criminality? **Geographical** What is the geographical distribution of the locations for the property traded in the market? For example, hot spots where specific items have been stolen, repeat/vulnerable locations. Supply routes, cross-border links. Are there any notable MOs used by the product/service supplier? Where is the customer? Are there any links to legitimate markets? Are there any external influences, for example, environmental features?	
	What is the target commodity/service? What types and quantities are being stolen or traded? What is the rarity of the commodity, quality of the product? What types of property/victims are targeted – are there repeat victims? Are there links between the types of offences/commodities? What is the cost and how is it paid for (money, drugs, debts, stolen property etc)? How does the price compare with local, regional and national prices?	Intelligence reports Crime pattern analysis Comparative case analysis

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Figure 14 Market Analysis: Questions to Consider (continued)

5WH	Market Analysis: Questions to Consider	Linked Techniques and Data Sources
Where	Where do offences take place, transactions occur? Where are supply routes? Are there any cross-border links? Where are the locations the commodity is available? Is the market surrounding the commodity local to a particular area, if so what are the demographics?	
When	Dealing occurs, transactions take place etc.	
Why	This should be outlined in an inference.	
How	What types of offences or incidents are being committed and what are the associated MO – (customer and suppliers)? How is the commodity/service traded – methods used to avoid detection? Techniques used. Trends and patterns. How is the market structured and how many levels are there? How do the key players/network protect the market?	Crime pattern analysis Comparative case analysis

5.2.5 CRIMINAL BUSINESS ANALYSIS

Criminal business analysis (CBA) is used to develop an understanding of how criminal activity, businesses and techniques work. CBA is especially useful for technical, complicated and new criminal activity such as that facilitated by the internet, including fraud.

CBA is used to:

- Develop knowledge and understanding about the way criminals work;
- Identify key points for disruption;
- Provide information to focus intelligence gathering;
- Predict criminal activity;
- Highlight crime prevention and reduction opportunities;
- Facilitate investigative techniques;
- Identify requirements for alterations in resource levels to meet unprecedented threats;
- Highlight the need for any changes in legislation or other working practices.

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CBA shows the various activities required to achieve a specific criminal aim. The analysis should identify the logical order of these activities and their interdependency. Interdependent activities are those which cannot be achieved without the completion of others, such as the theft of a vehicle to escape the scene of an incident. These activities are often the points where intervention will have the greatest disruptive effect.

A flow chart is a useful tool for CBA, and can be used to show business and financial processes. For more information on flow charts see **Appendix 2.**

CBA is often used in conjunction with market and subject analysis to provide a comprehensive picture of criminal activity and the people involved.

Hints and Tips – Criminal Business Analysis

- Research legitimate businesses to help understand how illegitimate businesses operate, eg, internet auction sites.
- All common elements of a business, whether legitimate or not, should be considered. These include premises to operate from, staff, necessary skills and knowledge, documentation required, the need for financial or legal support and the need to make a profit.
- Seek specialist knowledge either through identifying where such activity has been analysed elsewhere, perhaps in another organisation, through appropriate research of the internet or by asking colleagues in specialist teams or agencies.
- Parts of the operation of the business may need to be inferred, perhaps using brainstorming. Information gathering may be focused on corroborating these inferences.

Figure 15 Criminal Business Analysis: Questions to Consider

5WH	Criminal Business Analysis: Questions to Consider	Linked Techniques and Data Sources
Who	**Who are the key players?** Who are the organisers – where do they operate from, frequent, live? Who are the individuals with specialist roles? How are members recruited? What are the rewards or motivation for the offenders? What is the structure of the criminal group/network/business? **What current intelligence is there to suggest possible offenders?** **Who has previously carried out this type of offence/business?** **Victim type?** What vulnerabilities are being targeted? How are victims selected? Repeat individuals or locations.	Network analysis Intelligence reports Subject profiles

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Figure 15 Criminal Business Analysis: Questions to Consider (continued)

5WH	Criminal Business Analysis: Questions to Consider	Linked Techniques and Data Sources
What	**What is the criminal business being examined – offence type?** Is the business likely to grow or change? If so how and to what extent? **What is the nature of business** – (analysis should provide an overview of, and background to, the criminal business) Are there any connections with other groups (local, regional, international)? What is the geographical nature of the business, where is it based, what is the crime impact area? Scale of business – frequency/quantity/quality. Legitimate business interests. Knowledge of law enforcement techniques. What is the group's ability to corrupt and coerce? What are the weaknesses in systems or procedures that are being exploited? What are the strengths, weaknesses, opportunities and threats of the criminal business? **What are the commodities traded/produced?** Is there single or multi-commodity involvement? What are the levels of dealing or production? What are the methods of sourcing, procuring, manufacturing and hiding/storing materials? What is the access to resources? What sales and marketing techniques are used? What/who are the suppliers/outlets? **What are the financial links?** What are the methods of financing and making payments both internally and externally? Is there a financial controller? How is money laundered and by whom? What are the businesses assets: illicit/licit, onshore/offshore? **Methods of transport** What are the routes (shipping, supply), logistics, transit points? **Communications analysis** What is the preferred means of communication? Who communicates with whom? What are the patterns of communication? What is the level of sophistication/surveillance awareness? What languages are spoken? Is jargon or slang used?	Market analysis Crime pattern analysis Comparative case analysis Network analysis Subject profiles Market analysis Financial data Communications data

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Figure 15 Criminal Business Analysis: Questions to Consider (continued)

5WH	Criminal Business Analysis: Questions to Consider	Linked Techniques and Data Sources
What (continued)	**Distribution** What are the methods of distribution of illicit goods? What are the preferred routes and channels (strengths/weaknesses)?	
Where	**Key Locations** Places frequented. Safe Houses. Property owned. Where key individuals reside/operate. Storage locations associated with criminal business, meeting places, storage warehouses.	
When	When does the crime activity occur? What is the typical length of the criminal operation or stages of the operation? What time? What dates? Which days of the week?	
Why	This should be outlined in an inference.	
How	**What techniques and methods are used** Are the methods used likely to remain stable? Identify how the business vulnerabilities can be exploited. What are the methods of operating (MO)? What skills or IT awareness are needed? Are there any routines and patterns used by the offenders? Are there system or procedural weaknesses exploited by offenders? Is the business divided into different stages? How are victims chosen? Are there any specific measures used to evade detection/identification/prosecution? Have the methods changed over time, if so how?	

5.2.6 RISK ANALYSIS

Risk analysis is one of a number of sources used to support risk assessment. Risk analysis can be applied to a range of different situations in order to identify the likely impact of law enforcement action or inaction, and to predict criminal activity. Risk analysis supports the assessment of the scale of the risk posed by individual offenders, organisations or crime types to potential victims, the public generally, the law enforcement agencies or the criminal justice system.

Risk analysis should include a SWOT analysis (strengths, weaknesses, opportunities, threats) of an offender, criminal organisation, or crime or disorder type.

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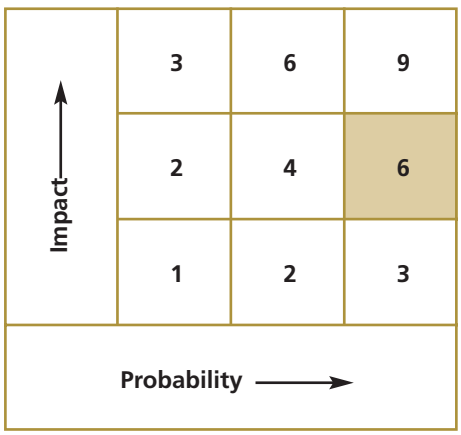
Risk analysis is closely linked to threat analysis and, together, they can be used in the identification of priorities during the strategic assessment process. Threat and risk analysis provide a framework for comparing criminal activities and groups against one another. Matrices are the key tool for completing the analysis and can be developed using a spreadsheet or table.

Threat and Risk Analysis:

- Ensure that responses are appropriate and proportional;
- Enable issues to be prioritised;
- Provide information for making resource decisions;
- Focus intelligence gathering;
- Justify the targeting of individuals or crime and disorder types;
- Analyse the likely impact of law enforcement action or inaction;
- Highlight preventive, reduction or diversion opportunities.

Varying methods of both threat and risk assessment are used throughout law enforcement in areas including firearms, sexual offences and business management. One of the models in use is the 'Probability x Impact' formula, also referred to as the 3x3 Matrix, which assesses 'threat'. This model is shown in **Figure 16** and is commonly used throughout policing.

Figure 16 Probability and Impact Matrix



Crimes or incidents are first considered separately from one another. Each is allocated a score that signifies its priority level based on the reviewed information about the assessment subject (1 – low to 3 – high) on both probability and impact. The two scores are then put into the 3x3 table to obtain an overall score. This score can then be used for prioritisation.

The ACPO 3PLEM method uses the 3x3 matrix and highlights six elements that should be included when assessing the probability and impact of crimes and incidents:

- Police/organisational and community concerns;
- Physical risks;
- Psychological risks;
- Legal risks;
- Economic risks;
- Moral/ethical risks.

Figure 17 shows how the elements are then used, within the matrix, to score each crime area.

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Figure 17 3PLEM Matrix

3PLEM Matrix	**P**olice/ Organisational and Community Concerns	**P**hysical Risks	**P**sychological Risks	**L**egal Risks	**E**conomic Risks	**M**oral/ Ethical Risks	Totals
Distraction Burglary	9	6	9	9	2	9	**44**
Theft From Motor Vehicle	4	1	2	2	2	2	13
Theft From HGV	4	6	6	2	6	6	30
Anti-Social Behaviour	9	2	9	4	6	6	**36**
Town Centre Violence	9	9	6	6	6	6	**42**
Truancy	6	4	2	2	1	6	21

It should be noted that an assessment based only on the evaluation of probability and the possible impact, excludes many additional factors that should be taken into account. Inclusion of additional factors to influence the risk assessment will reflect a more accurate understanding of risk. These extra weighting factors can include:

- Statistical information used to assess probability;
- Assessment of vulnerability or volume of crime;
- Consultation with community groups;
- Public perception surveys.

Extra weighting factors should be taken into consideration to clarify the distinction and the order of priority given to the risks and threats assessed at a similar level.

Hints and Tips – Threat and Risk Assessment

- The chosen method must be simple and easy to apply.
- Ensure the matrix contains clear, unambiguous headings and clearly defined factors of assessment.
- The scoring of each of the factors should follow a consistent application of analysis to each crime type.
- When comparing threats from various crimes types, these should be assessed in the same way to allow for a sound basis for prioritisation of one crime type over another.
- Some crime types are incompatible by definition due to various factors, including differences in the level of reporting, the level of operation and the lack of intelligence. Extra weighting factors can be added to make the crimes compatible.
- The credibility of a method can be improved further by reducing the need for a subjective judgement.

Further information can be found in ***ACPO (forthcoming) Practice Advice on the Use of Threat and Risk Methods to Set Strategic Assessment Priorities.***

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Figure 18 Risk Analysis: Questions to Consider

5WH	Risk Analysis: Questions to Consider	Linked Techniques and Data Sources
Who	**Network Analysis** Are there potential victims within the family or associate network? Who are the potential accomplices? Who are the offenders, their associates, what vehicles are used, places frequented? What are their addresses, businesses? Have there been any changes in: size of network, type of associates, types of offending, locations of criminal activity? Is any specialist knowledge required? What access is there to resources? Has the offender(s) shown the ability to adapt to change? Who is affected by the problem? Victim analysis – what is the profile of the victims?	Network analysis General profile analysis Intelligence reports Intelligence products Analyst reports Threat and Risk Matrix
What	**What is the nature of the risk?** Assist in prediction – can the risk be prevented, avoided, reduced or transferred to specialists? Is the risk acceptable? SWOT analysis of the offender, criminal organisation or crime type.	Crime pattern analysis Comparative case analysis Intelligence reports Intelligence products Analyst reports Threat and Risk Matrix
	What is the trend profile? Can past offending behaviour be used to predict the risk of reoffending in the future? Is it possible to identify growing or reducing seriousness of offending? Is it possible to identify increasing or decreasing occurrence of offences? What are the triggers that affect offending? Is it an isolated incident or part of a larger pattern? What successful or unsuccessful techniques have been used in the past against this particular risk or similar risk?	Crime pattern analysis Comparative case analysis Intelligence reports Intelligence products
	External factors What are the comparative risks (PESTELO)?	Threat and Risk Matrix Horizon scanning documents Public perception survey

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Figure 18 Risk Analysis: Questions to Consider (continued)

5WH	Risk Analysis: Questions to Consider	Linked Techniques and Data Sources
What (continued)	**Impact study** What affect is police action or inaction likely to have on the levels of crime, the police, public and victims? What is the potential impact from the media? What are the implications if the risk is not dealt with?	Intelligence reports Intelligence products Analyst reports Public perception survey British Crime Survey Threat and Risk Matrix
Where	Geographical impact of the criminal activity. Describe hot spot areas, geographical patterns and features.	Crime pattern analysis Comparative case analysis Hot spot identification
When	Peak times, days, seasonality.	Crime pattern analysis Comparative case analysis
How	Has there been an increase/decrease in offences? Is the seriousness of the offences increasing or reducing? Are the offences increasing in frequency? Can predictions be made of future offending based on past behaviours? What techniques have been exploited in the past to counter this or similar types of risk? MO employed. How and why are victims chosen? Have the methods changed over time and if so why? Are there any specific methods used to evade detection/identification/prosecution?	Crime pattern analysis Comparative case analysis Intelligence reports Intelligence products Analyst reports

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5.2.7 SUBJECT ANALYSIS

Subject analysis provides detailed analysis of an individual identified as a suspect or offender, victim, or witness, and can be used to initiate or support an ongoing operation or investigation. This analysis can be used to produce a subject profile which provides a clear picture of the intelligence and analysis assembled, together with a response plan for dealing with the subject.

A subject profile includes a number of sections which are compiled by the intelligence unit and are not the analyst's responsibility to compile. These include personal record, criminal record, communication and financial data, physical description/appearance and lifestyle information. This information may be gathered by research resources or other intelligence staff.

Subject analysis:

- Develops an understanding of the scale and seriousness of the threat posed by the individual(s);
- Provides a picture of the subject including their associates, access to vehicles and communications, their financial assets and previous criminal activity;
- Assists in the prioritisation of subjects;
- Focuses intelligence gathering;
- Is used to make and justify decisions about resources;
- Highlights prevention, reduction or diversion opportunities;
- Predicts criminal activity;
- Highlights potential new sources of information;
- Guides investigative activities.

Hints and Tips – Subject Analysis

- Subject analysis should be continually updated and saved as a new, dated version.
- Intelligence gaps identified should be prioritised based on the assessed risk.
- Any warnings regarding access to firearms and propensity to use violent behaviour should be highlighted within the analysis.
- Other agencies or the Prison Service may already have subject profiles which can be used to support the analysis.
- Intelligence reports and police records, such as custody reports, communications, Automatic Number Plate Recognition (ANPR), financial and Prison Service data can provide information for subject analysis.
- Subject analysis may be accompanied by network and market analysis, as well as links to a series identified by crime pattern analysis within a subject profile.

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Figure 19 Subject Analysis: Questions to Consider

5WH	Subject Analysis: Questions to Consider	Linked Techniques and Data Sources
Who	**Who is the subject** **Who are the subject's associates?** **Family associations** What is their relationship with the subject? What is their involvement in criminality? **Criminal associations** What are the roles of individuals within the group and links between associates? Is there a hierarchy within the group? What is the size of group or organisation? What are the activities of the group? What businesses/offences are they involved in? What is the ability of the network to attract/retain members? To what extent do key players protect themselves? What methods are used to evade detection/identification/prosecution? What is the group's knowledge of law enforcement techniques? What means do to the group use to control the network? What is the use of violence/corruption? What are the links to legitimate business? Is the group linked to other groups/organised crime networks? **General associations** What vehicles are being used? What places are being frequented socially/to take drugs etc? **Victim** Who are the victim's associates? Relationship between the victim, offender and/or witnesses. Risk to the victim (now and potential risk). Routes travelled by the victim. Analysing the victim and factors of the crime they are involved with may help to identify the offender. **Witness** Who are the witness's associates? Relationship between the witness and the offender and/or victim. Risk to the witness (now and potential risk). Routes travelled by the witness. Analysing the witness and their connections to the offence may help to identify further witnesses and possible suspects, offenders or victims	PNC Intelligence records Communications data Financial data Department of Work and Pensions Social services Witness statements Network analysis Crime pattern analysis Comparative case analysis Criminal business analysis Market analysis Witness statements Threat and Risk Matrix Case Analysis

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Figure 19 Subject Analysis: Questions to Consider (continued)

5WH	Subject Analysis: Questions to Consider	Linked Techniques and Data Sources
What	**What is the offender profile of the subject?** What are the locations of the subject's previous offences? What was the distance travelled from base? What was the frequency of occurrence? What type of victim/property/premises was targeted? Was there any repeat victimisation? What was the MO including use of violence, tools, weapons, skill etc? What mode of transport was used, were there any preferred routes? What is the current intelligence regarding offending and the subject's readiness to offend? Are there offences being committed that are similar to previous MO, location, victims etc? Previous offending history. Geographical influences. External factors influencing subject – environmental, personal changes in circumstances. **This will assist in predicting:** When and where offences will be committed next; How the is market changing; Whether the business is likely to grow or change in the future; What trends/developments may occur in the future.	Crime pattern analysis Comparative case analysis PNC Analysts' reports Intelligence products
	What market or criminal businesses is the subject involved in? What is the overview of the market, including size and general nature, type and quantity of property stolen, geographic scope of market? Are there cross-border links? What is the relationship/impact on the legitimate market? What is the overview of the business? How does the business operate? Is the business divided into discrete stages? What are the commodities traded/produced? What techniques are used? What IT awareness is required? What are the methods of operating, production, manufacture, hiding of materials? Do different groups or individuals specialise in certain stages? What are the methods of financing and making payment, money laundering?	Communications and financial data Comparative case analysis Network analysis Market analysis Criminal business analysis

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Figure 19 Subject Analysis: Questions to Consider (continued)

5WH	Subject Analysis: Questions to Consider	Linked Techniques and Data Sources
What (continued)	What access do the group have to resources for offending? What are the transport methods and distribution routes used? How does the business communicate? What are the links to legitimate business? Who are the victims?	
	Communications and financial analysis What is the preferred method of communicating? Analysis of itemised billing. Are there any patterns in the calls? What is the frequency and level of contact? What are the sources of legitimate income? Are there signs of unattributable wealth? What property/businesses are owned? What accounts are used? Is there any unusual account activity? Potentially, what money and assets are generated?	Communications and financial data Commodity flow charts Sequence of events chart Pivot table Network analysis Subject profile analysis
	What are the potential risks posed? Is the subject committing more offences? Are the offences of a serious nature? Are the offences increasing in frequency? Can predictions be made of future offending based on past behaviour? Are there external factors to take into account? Who is affected? What effect will police action have on the crime, the public, police, victims? What is the potential impact from the media? What are the implications if the risk is not dealt with? What other offences are precursor or linked to the subject?	Crime pattern analysis Comparative case analysis Subject profile analysis
Where	**Identified within other questions**	
When	**Identified within other questions**	
Why	What are the reasons for offending?	
How	**What is the offending profile of the subject?** What law enforcement techniques have been deployed against the subject in the past?	Crime pattern analysis Comparative case analysis

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5.2.8 RESULTS ANALYSIS

Results analysis evaluates the effectiveness of policing and partnership activity in relation to a crime or disorder problem. For further information see ***ACPO (2006) Practice Advice on Tasking and Co-ordination.***

Results analysis is a critical evaluation of all aspects of the operation or initiative. This includes:

- Enforcement tactics;
- Intelligence gathering;
- Impact of prevention activity;
- Cost benefit analysis;
- Cause and effect analysis.

It also includes whether the crime or incident levels have changed in the way expected as a result of the operation or initiative.

Results analysis:

- Identifies effective practice and highlights areas for improvement;
- Prevents continued use of ineffective strategies;
- Ensures investment in what works;
- Facilitates knowledge management;
- Provides valuable input to the knowledge products and organisational memory database;
- Supports resource decisions;
- Aids the development of skills and knowledge levels of personnel;
- Monitors the progress of plans;
- Assesses the effectiveness of pilot projects;
- Aids and refines professional development.

For results analysis to be successful, the operation or initiative must have specific objectives and a process to measure them, that were agreed at the outset. Results analysis should be considered within the terms of reference, and may be most useful where a new crime or disorder area is being addressed, where new law enforcement techniques are likely to be used, or where the threat posed by the problem or group of individuals is assessed to be high.

Any results analysis carried out before a trial or appeal is subject to the rules of disclosure. This should be considered when deciding to undertake this type of analysis.

Results analysis must be an honest assessment of the operation or initiative and should identify problems that occurred and areas for improvement. This analytical technique can be enhanced by the use of an operational debrief, which should be agreed at the start of the operation or initiative. Ownership of the debrief process should be allocated and a record of all relevant debriefs made, these records should be available to the analyst conducting the work.

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The output of results analysis should be made available to the person in charge of the operation or initiative so that lessons can be learned. They should also be stored and accessible in a searchable format for future reference when planning similar operations.

As part of results analysis, analysts will need to assess the impact of an operation. There are several tools analysts can use to do this. They include:

- Understanding unintended consequences;
- Using controls;
- Assessing beneficial repercussions;
- Examining the nature of criminal networks;
- Identifying displacement.

Understanding Unintended Consequences

To carry out an objective study of the impact of an operation, analysts must understand the possible unintended consequences of law enforcement activity.

Offenders often believe that prevention measures have been brought in before they actually have; this can lead to anticipatory benefits. For more information see ***Ronald V. Clarke and John Eck (2003) Becoming a Problem-Solving Crime Analyst.***

Police and other agencies can make deliberate efforts to create and accentuate anticipatory benefits to their advantage. Some of these anticipatory benefits are shown in **Figure 20.**

Figure 20 Anticipatory Benefits

Preparation – Anticipation	Offenders believe initiative is operational before it is working. For example, CCTV cameras installed but not working.
Preparation – Disinformation	Offenders believe covert enforcement exists as a result of publicity or rumour.
Preparation – Disruption	Offenders are deterred by initial stages of an operation. For example, resident surveys conducted prior to an intervention.
Preparation – Training	Planning and training make the public better prepared to address the problem. For example, shop staff trained prior to an anti-shoplifting campaign.
Creeping Implementation	Occurs when parts of a response are put in place prior to the official start of intervention and offenders alter their behaviour.

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Using Controls

Analysts use controls to identify how the planned response to an issue or operation affected levels of public satisfaction, fear of crime, crime and disorder. **Figure 21** illustrates typical situations and the controls that should be used.

Figure 21 Controls for Results Analysis

Changes in Size	Cycles of Activity	Trends in the Problem
Situation Expect a decline in burglaries if there is a decline in tenants in a housing block as there are less potential victims.	**Situation** Activity tends to follow a cyclical pattern, eg, going to school, holiday seasons.	**Situation** Problems may be getting better before the response was put in place. Need to be sure the response and not the trend is responsible for the improvement.
Control Divide the number of burglaries before and after the response with the number of tenants before and after response.	**Control** Compare the same part of the cycle before the response with the same part after the response.	**Control** Measure the problem for a long period prior to the response or identify a control group, eg, an area which has the same problem but where no intervention occurs.

Assessing Beneficial Repercussions

Analysts will undertake a qualitative assessment of the beneficial repercussions of an operation. Examples might include intelligence that can be used elsewhere or reassuring the public. Beneficial repercussions can be identified through a board blasting session with staff involved in the operation.

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Identifying Displacement

There are five different types of displacement that may occur as a result of policing activity. The analysis should be able to identify which of them, if any, have occurred. They are shown in **Figure 22.** For further information see ***Ronald V. Clarke and John Eck (2003) Becoming a Problem-Solving Crime Analyst.***

Figure 22 Types of Displacement

Geographic Displacement	Temporal Displacement
Definition Offenders move to other similar areas close to the original area to continue offending.	**Definition** Offenders shift the times they commit offences.
Identification Method Select areas close to original area with similar characteristics and monitor them as initiative progresses.	**Identification Method** Check levels of offending at identified core times and throughout the whole day before, during and after the operation and compare results.

Target Displacement	Tactical Displacement	Crime Type Displacement
Definition Offenders move from newly protected targets to unprotected targets.	**Definition** Offenders change their tactics or MO.	**Definition** Offenders change the type of crime they commit.
Identification Method Look for changes in MO, victim or offence type within an area where a current or recent initiative has been run. The focus of the initiative may cause offenders to choose a new unprotected victim or offence type.	**Identification Method** Look for offenders using new or different methods to defeat security measures.	**Identification Method** Compare levels of all offences before and after the operation or policing activity.

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Figure 23 Results Analysis: Questions to Consider

Results Analysis: Questions to Consider	Linked Techniques and Data Sources
What is the background? What was the situation before the initiative was implemented? Why was the initiative implemented? Were there particular reasons for the choice of initiative or location? What was the inference from intelligence products and/or analytical reports? What was the desired outcome of the initiative?	Terms of reference Intelligence products Analysts' reports Operational order(s) Briefing documents
What were the framework issues? What were the desired outcomes, aims, objectives? What was the purpose of the initiative? What has been used to measure success or failure? What crime prevention measures have been used to avert reoccurrence of the situation? Were the aims and objectives in retrospect realistic? Were there problems with the measures used (relevant, quantifiable)?	As above These need to be checked against original intelligence products and analysts' reports
External factors – what external factors may have affected the success or failure of the initiative? Were there other initiatives running at the same time that may have had a direct or indirect impact? What requirements were made of other agencies – were they able to fulfil them?	Operational orders Organisational memory databases
Impact study **First ask**, was the intervention put into place as planned and what alterations were required for implementation? **Then ask**, what has been the effect of the action? Did the problem decline or increase – **This can be seen by comparing the level of the problem before and after** – if the problem declined did it decline during or before the initiative? **Then look to identify** – if the response caused the decline or increase, or was it something else? Has the nature of the criminal/crime/network changed?	Market analysis Operational debrief findings
Was the initiative successful in terms of the outcomes/ aims/objectives/purpose – if so, is it likely to be sustainable? What is the public perception of crime before and after?	Brainstorming success criteria with those involved – outcome of this can assist in identifying success
Repercussions Have there been side effects? Has there been displacement/replacement? Has the nature of crimes, incidents or problems changed, have the methods changed? Has the public perception of the problem changed? Have there been spin-offs – ie, intelligence that can be used elsewhere? Look to identify positives and negatives – must be objective.	

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Figure 23 Results Analysis: Questions to Consider (continued)

Results Analysis: Questions to Consider	Linked Techniques and Data Sources
Cost Benefit Analysis – in respect of the operation/ initiative carried out. Analysis should consider the following areas within the results analysis: **Cost of the crime** • Property Crime – Monetary cost of the items stolen. – Repair costs of the things damaged during the crime. – Intangible costs to the property owner – ie, loss of time because of dealing with the impact of the offence, stress (time taken off sick, due to injury or stress). • Personal Crime – Value of property stolen – Damage to property – Medical costs of injuries. • Consensual Crime – ie, prostitution and drug dealing – the cost to the user of drugs in respect of the price of drugs. **Cost of the response** Personnel time, equipment purchased, materials used, this should be provided by the finance department who have carried out the overall cost benefit analysis outlined above. Once this is known it is possible to calculate cost effectiveness. This is calculated by the cost of the response divided by the number of crimes averted. CPA will need to be carried out to identify this.	Financial data supplied by finance departments – this is used by the analyst and should contain interpretation from the finance department, it is not the analyst's role to collate this. Home Office website – details costs to policing of crimes.
Conclusions and Recommendations – should include: • Areas for improvement – includes processes that could have been put into place that would have assisted the results analysis. • Possible alterations – which would have made the initiative more effective. • Effective and poor practice – do additional crime prevention measures need to be put in place to achieve sustainability. • Repeatability of the measures – will this work again, what other situations may benefit from this initiative? • Contributions from other agencies that should/could have been sought. • Was the initiative/operation a success or failure?	These must be developed collaboratively with those involved in the operation/initiative.

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5.2.9 OPERATIONAL INTELLIGENCE ASSESSMENT

Operational intelligence assessment (OIA) is a method of ensuring that investigations remain focused on their original objectives. OIA identifies if diversification from the agreed objective is occurring and is best applied to any medium to long-term investigation.

An operational intelligence assessment:

- Assists the prevention of mission creep;
- Identifies priorities for the intelligence effort involved in the investigation or operation;
- Focuses decisions about resources;
- Guides investigative activities;
- Verifies that protocols such as the correct authorisations are present;
- Highlights diversification from agreed objectives;
- Aids compliance with HRA, RIPA and other legislation.

A number of the issues examined within an operational intelligence assessment are outside the experiential scope of the analyst. Analysis is used to support this process, in particular by identifying changes in criminal activity. It is not solely the analyst's responsibility to complete an OIA.

Figure 24 Operational Intelligence Assessment: Questions to Consider

5WH	Operational Intelligence Assessment: Questions to Consider
Who	**Who/what were the authorised targets?** What was the justification for targeting this person or these people? Who are the current targets? Are they different from those authorised? If so why? How far removed from the original target(s) are they? Has the reason for targeting them changed, if so how and why? Have new targets for future investigations been identified?
What	**What was the original criminal activity?** Has this changed, if so how and to what? Is it in line with the control strategy? Are new authorisations needed? Is the overall objective of the investigation likely to be met under the present circumstances? Have all the priorities set been achieved? Does the investigation require refocusing? Are there any new priorities in the light of information obtained? Do these new priorities drive the investigation forward in line with its original aim or does a new focus or new aim need to be established at this time? Should a new operation be authorised? Is a further operational intelligence assessment needed in the future, if so when? Would other analytical products or interagency work aid the investigation?

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Figure 24 Operational Intelligence Assessment: Questions to Consider (continued)

5WH	Operational Intelligence Assessment: Questions to Consider
What (continued)	**What are/were the short/mid-term aims?** Were they achieved? Have they been altered? Why and in what way? Do they still fit the overall objectives? Are there side effects, eg, have the risks changed, is further authorisation needed? Has legislation been complied with? **What are/were the long-term aims?** Were they achieved? Have they been altered, if so why and in what way? Do they still fit the overall objectives? Are there side effects, eg, have the risks changed, is further authorisation needed? Has legislation been complied with? What information is missing that will help to focus the investigation? What should be the priorities for the operation's intelligence effort in order to meet the overall objective?

5.2.10 CASE ANALYSIS

Case analysis, also known as incident analysis, examines an incident or series of incidents in order to support the investigation of a series or serious crime. It is often associated with major incident investigation.

Case analysis:

- Identifies new lines of enquiry;
- Corroborates witness accounts with those of possible offenders or subjects linked to a major inquiry;
- Identifies gaps in witness statements;
- Identifies new or potential witnesses;
- Visualises the movements of suspects, observations of witnesses and routes travelled;
- Outlines the entire time span of an incident or a specific period within it.

Useful tools for case analysis are spreadsheets, which can assist in managing often diverse and copious volumes of information. In addition, charts can assist in graphically managing and presenting this information. The types of charts typically used, may be to show the sequence of events prior to, after and during an incident, to show the links between individuals involved in the event, or a comparative case chart to show similarities and discrepancies in statements.

A wide variety of information may be used for case analysis, including witness statements, telecommunications data, video footage, intelligence reports and police records such as crime and incident, and custody reports. Case analysis focuses on developing an understanding of the incident and identifying gaps in information. Supporting charts may identify new lines of enquiry, information gaps and conflicting information. They may be used for intelligence purposes during the investigation, and then evidentially for the legal process. For further information see ***ACPO (2005) Major Incident Analysis Manual.***

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Hints and Tips – Case Analysis

- It is important to be organised because of the volume of data that is usually involved, and the time-critical nature of many investigations.
- Include an explanation or summary of all charts in reports.
- Map incidents to determine potential routes of either the victim or suspect and the scenes of offences.
- Consider other incidents that may be linked or be precursor offences.
- Use analysis from subject profiles to understand the victim profile, subject motivation, previous offending, MO.
- Analysis should identify the risk associated with a series of incidents such as escalating violence and frequency of offending.

Figure 25 Case Analysis: Questions to Consider

5WH	Case Analysis: Questions to Consider	Linked Techniques and Data Sources
Who	Who are the key suspects, witnesses or victims?	Intelligence reports HOLMES 2 records Witness statements Intelligence products Analytical reports
What	Type of offence. Is this linked to other incidents/offences? What if any financial implications are there – debts, fraud, theft of money? What telephone data is available? Call frequency to and from known phone numbers? What other methods of communication were used/ preferred – emails, internet websites, face to face?	Crime report Financial data Communications data Intelligence reports Witness statements HOLMES 2 records
Where	Where were the witnesses and key suspects at the time of the incident? Where did the offence take place, is this different from the location the body was found?	Witness statements HOLMES 2 records Intelligence reports Covert material ANPR data
When	Time of incident/offence Day Date	Crime reports Witness statements
Why	Motive, why was there an altercation, known to possible suspect, history of violence, association?	Witness statements Intelligence reports
How	MO, weapon used, forensic evidence.	Forensic evidence Crime reports Witness statements

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5.3 SPECIALIST DATA SOURCES

Specialist data sources are available to analysts in relevant law enforcement areas, to inform their analysis. Communications, financial and ANPR data are three useful sources for analysis and can be added to the information already available, to build a full picture of crime and criminal activity.

5.3.1 THE ANALYSIS OF COMMUNICATIONS DATA

Communications data is any form of material that refers to the interaction between people using telecommunications technology.

Analysis of communications data can lead to the identification of:

- Associations between individuals, criminal or otherwise;
- Key dates when important events may have occurred;
- Locations of criminal activity;
- Hierarchies, and roles within these hierarchies;
- Telephones that are being used to facilitate criminal activity.

All telephone networks provide communications data in different formats and file types. Data retention also varies according to the type of phone as follows:

- Prepaid phones – data is usually retained for one year (Orange currently retain the data for six months);
- Contract phones – data is retained by all mobile network providers for two years;
- Landline companies – data retention periods vary.

All queries for communications data must be raised with the Single Point of Contact (SPOC) in the force or agency. The SPOC is the contact between the CSPs and the police. Service providers will only deal with the SPOC and any data will be returned via them.

Before requesting data it is important to be familiar with the current force or organisational policy and protocols for applying for communications data. It should be understood:

- Who can apply for data – this is usually carried out by an SIO, investigating officer or intelligence officer, and is not the analyst's role. The analyst will provide supporting detail for the application.

- The impact of the grading of enquiries and what effect this has on how quickly the data may be returned.

There are also important legal requirements regarding the use, storage and manipulation of the data. These include:

- Regulation of Investigatory Powers Act (2000);
- Human Rights Act (1998);
- Data Protection Act (1998);
- Criminal Procedure and Investigations Act (1996);
- Local policy on the retention and weeding of data;
- ***ACPO (2006) Code of Practice on the Management of Police Information (MOPI).***

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Audit Trail and Disclosure Logs

It is important to manage communications data effectively and carefully, both to comply with the relevant legislation and policies, and also to exploit fully the volumes of data provided.

All provided documentation should be given a unique document number or identifier either generated automatically, if the investigation is using a Home Office Large Major Enquiry System 2 (HOLMES 2) database, or a numbering system should be created.

In addition, the following actions should be taken:

- Keep a record of the time and date any documentation is received, who it is received from, and in what format.
- Record if the original copy of the documentation is held or if a copy has been received or made. It is imperative that any amendments or formatting of data is only ever made to a copy of the data.
- Keep a record of every time the data is used in an analytical product such as a timeline or exhibit.
- Keep a record of all decision making within the analyst's day book.
- Save the data in any relevant investigation or analysis folder on a shared drive.

Note: Data showing calls made from the number of interest can only be used for intelligence purposes and not evidentially.

Figure 26 shows how to start using communications data, including tips on how to manage the often large quantity of data and what to look out for to develop the analysis.

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Figure 26 Communications Data: Getting Started

Method/Approach/Findings	Questions to Ask
Always scroll through the data and get a feel for the general usage of the phone. Identify the times and days the phone is being used.	Does the data contain high short messaging service (SMS) content? If so, seizing the handset and subsequent interrogation is likely to reveal SMS content which may prove useful. SMS content is sometimes overwritten once deleted and would, therefore, not be available. This will help to identify between which hours the individual is awake/active.
Use a pivot table to identify commonly called numbers such as a family member or local services number such as a regularly used taxi company. Key telephone numbers may, eventually, be those that are called infrequently, but may be more difficult to exclude.	This is a quick way to get a feel for the closest associates to the individual and also numbers that may not be of interest, such as partners or parents. • Run the top numbers identified through intelligence, custody and incident systems to try and identify them. • Numbers may also be identified through open sources including telephone listings. • Consider subscribers checks for unidentified numbers.
Look at the data in more detail. Look for usual patterns of use. Look for peak days of activity. Look for high call volumes to the same telephone numbers with short call durations.	• Consider representing the data visually in a way that may break it down and highlight key calls or times using flow charts or network charts; • Identify where the call patterning is different from usual. • Unusual call patterns may indicate criminal activity.
Use cell site data.	This can identify potential locations of criminals, crime scenes or body deposition sites and help identify criminals travelling together.
Check for call activity which stops abruptly.	This may be an indicator of criminal activity and is often seen after police intervention. It may also indicate the use of another phone or communications method.

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Hints and Tips – Analysis of Communications Data

- Nothing may be altered within the data unless it has been confirmed with the SPOC.
- Do not assume anything, for example, that a '+44' at the start of a telephone number will always represent a '0'.
- While all other network providers supply information electronically, Orange usually only provide hard copies of their information.
- Ensure involvement in all briefings for which analysis of communications data is required.
- By attending briefings, it is easier to identify what data is required, and within what specific time parameters it is required. This will ensure that the analysis is completed effectively.
- Make sure that the SIO, Officer in Charge (OIC) or person tasking the analysis knows what is needed, and that decisions and requests are recorded in the policy log and analyst's day book.
- Corroborative information/intelligence is required to establish who the user of a phone is, or believed to be; the data will only show activity and usage.
- Know and understand the data – abbreviations may vary from company to company, do not guess or assume anything. Check with the SPOC.

5.3.2 THE ANALYSIS OF AUTOMATIC NUMBER PLATE RECOGNITION DATA

ANPR cameras read number plates and compare these with a number of databases to seek a match. 'Hot lists' can be created of vehicle registration marks (VRM) that are of interest to the police and other law enforcement agencies and held within a force or national database. ANPR data falls into two categories either a 'read' or a 'hit':

- A Read is the capture of the VRM and image of the vehicle as it passes through the camera;
- A Hit is a match to a VRM held within the database being searched.

Hits and reads are saved in a central repository in each force and are then transmitted to the National ANPR Data Centre (NADC). ANPR data is accessed via the Back Office Facility (BOF) or force bespoke system and is searchable by VRM, date and time, force name, force ID, camera name (such as a description of where it is) and the exact location (easting and northing).

The data captured must be stored and retained according to the appropriate legislation. **Figure 27** shows the relevant periods for the retention of ANPR data.

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Figure 27 ANPR Data Retention Periods

Data	Short Term	Long Term	Requirements	Legislative Issues
All ANPR Data	Available, to those authorised, for post-crime interrogation and investigation to identify suspects, witnesses or patterns.			
Reads	Last **90 days** data available via each force's ANPR system through the back office facility.	Data **91 days to 2 years** old requires superintendent's authority.	All reads are kept for **2 Years**, unless linked to counter-terrorism then they are kept **indefinitely**.	ANPR data subject to: European Convention on Human Rights (ECHR), DPA and RIPA.
Hits			All hits kept for **7 years**	

Getting started

Before using ANPR data it is important to know about the cameras that are gathering the data so that assumptions are not made about the location of a vehicle.

The following information must be ascertained.

Type of camera

There are a number of different ANPR camera types including:

- Fixed site cameras that cannot be moved and are located on busy roads; some fixed site cameras provide not only a static image of the vehicle, but also video footage.
- Mobile cameras that can be set on a pole, like a fixed site camera, but are more likely to be carried around in a traffic vehicle.
- Police dedicated twenty-four hours a day seven days a week – some older versions may take black and white images, newer versions take colour images and have greater quality. Infrared capability is also available in a number of police cameras.
- CCTV cameras can be ANPR enabled and this gives the benefits of a dual system. This dual system has limitations in terms of consistency and the ability to provide twenty-four hours a day seven days a week ANPR coverage.

Covert cameras may also be used in sensitive cases. Only the personnel working on the operation will know of the camera location, direction and capabilities.

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Data accuracy and limitations

A small percentage of VRMs captured on ANPR will not be readable for a number of reasons including sun glare, broken or dirty plates, faulty cameras or cameras not operating because of maintenance issues or software failure. In addition, the analysis is limited by the level of ANPR coverage available. A large number of routes are still not covered by ANPR and any analysis should contain this caveat. It is important to choose realistic data sets for analysis. The number of reads currently being achieved by some force ANPR systems exceeds 800,000 per day, making it important to manage the data effectively.

Basic searches of ANPR data can be used to locate lost or stolen vehicles or those linked to suspects and offenders. ANPR data needs to be layered with other data in order to add value to analysis.

Analysis of ANPR data can enhance the intelligence picture of where and when a vehicle has travelled. Overlaying this with crime reports, linked to an offender via inference development and known previous offending methods will provide intervention and enforcement opportunities.

Search results exported into MS Excel or Access can help to identify:

- Who is driving the vehicle or is a passenger;
- What type of vehicle is being driven;
- When the vehicle is used;
- Where the vehicle has been driven and in which direction.

This data can be used to produce a timeline of the vehicle's movements, and mapped to visualise transit routes. In addition, locations where the most hits are being seen can be prioritised for police intervention by identifying the optimum days for the deployment of intercept or surveillance teams.

The location of the camera

Where the fixed ANPR sites are, this includes the eastings and northings for each fixed site camera to enable users to:

- Map these locations;
- Identify where a vehicle has been sighted;
- Overlay crime and incident data.

Direction in which the camera reads the VRM

It is important to know the camera range and what image the camera actually captures. Questions to consider include:

- Is it before or after a roundabout, or on the entry or exit to a roundabout?
- Does the camera cover all lanes and if applicable the hard shoulder?
- Are there any blind spots associated with the camera location?

This detail can assist the user to understand the data and identify where the vehicle has come from and where it may be going.

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5.3.3 THE ANALYSIS OF FINANCIAL DATA

The analyst's role is to condense and summarise the information available. Financial analysis can identify:

- Patterns of financial activity, which will include expenditure, withdrawals, transfers;
- Behavioural patterns, in conjunction with other data and intelligence.

Financial analysis can help to develop new lines of enquiry and can enhance intelligence opportunities and focus resources. It can provide evidence in respect of times and locations of suspects.

Information from accounts needs to be obtained by using a production order. The following information about an individual's account is available:

- Customer profiles;
- Bank account ledgers and applications;
- Credit card statements and applications;
- Cheque and draft copies;
- The source and recipient of finances;
- Transaction details;
- Telegraphic transfers and cash deposits;
- Mortgage statements and applications.

Bank accounts can help in understanding the lifestyle of a subject, based on their spending habits, places frequented and patterns of expenditure. They can also show the level of organisation or disorganisation of a subject's finances. Bank account ledgers often include photocopies of identification with photographs, such as passports.

Financial investigations can be time consuming and the benefits are often slow in developing. In some cases financial sources will provide little benefit to an investigation as a sizeable number of people still do not use bank accounts or credit facilities. Accounts can be used in a deceptive way to corroborate an alibi. As with telephone usage, account use such as automated teller machine (ATM) withdrawal can indicate activity but without corroboration does not mean the registered holder is making use of facilities.

Hints and Tips – Analysis of Financial Data

- It is important to understand when the analysis has become too complicated, and where it should be passed to a financial investigator.
- The Proceeds of Crime Act (2002) makes financial analysis relevant to all crime types as assets can be seized from any criminal activity, not just the highly lucrative.
- Attention to detail is very important in order to ensure that the data is accurately represented. The implications of inaccurate information must be considered.
- Be precise when dealing with terms relating to the legal ownership of assets or companies, for example, the director of a limited company is not the owner of the company.
- Care must be taken to obtain the correct dates and times of transactions, eg, a debit card or foreign transaction is often posted onto a bank statement several days after it occurred.

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Checklist 4 Applying Analytical Techniques

The key points to consider when applying analytical techniques are:

- The analytical techniques are used to develop analysis and should be summarised into an analytical report or intelligence product for dissemination.
- Analytical tools are key to supporting good analysis, and training should be available to ensure they are fully exploited for data management and description.
- Analysis must add value to the information that is collected during the research, it must inform rather than just confirm.
- The analytical techniques can be used on their own or in combination to develop the analysis according to the terms of reference.
- With a broadening range of crime and disorder areas to analyse, innovative and creative use of the analytical techniques is important to successfully complete tasks and support problem solving.
- When undertaking analysis for the first time, try to find other work in a similar area, brainstorm ideas with colleagues and use the Questions to Consider lists provided in this document as a starting point.

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Section 6
DEVELOPING INFERENCES

The ability to develop inferences is a key skill for analysts. This section describes different types of inference and provides advice on how they can be developed.

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6.1 DEFINITION

An inference is a statement that concisely describes what is occurring and outlines the 5WH with sufficient confidence to base decisions and actions. An inference should go beyond what is known and be supported by a series of premises. A premise is a fact that has been identified from the examination of information and analysis. The skill in creating premises is in combining the information examined to a scale that is manageable for simultaneous consideration with the other premises in order to develop the inference.

6.2 THE IMPORTANCE OF INFERENCE DEVELOPMENT

Developing inferences is important because it is the element of analysis that enables conclusions to be drawn. Once these conclusions have been drawn it is possible to identify gaps in the information and to make recommendations regarding past, present and future activity.

If analysts do not develop inferences, they will not go beyond information that is already known. The development of inferences is essential to increasing knowledge about a situation and how it might best be dealt with. It ensures that the analysis informs the reader and does not simply confirm what is already known. Inferences drawn from analysis are used to make decisions about responses and resources. They should, therefore, form the basis of all intelligence products and analyst reports. Inferences contained within tactical and strategic assessments will be developed by highlighting intelligence gaps, setting intelligence requirements and developing recommendations linked to prevention, intelligence and enforcement.

6.3 INFERENCE DEVELOPMENT

6.3.1 THEORY OF LOGIC (REASONING)

Basic logic theory (reasoning) underpins the development of inferences. There are two types of logic: deductive and inductive. **Figure 28** gives an example of each type of logic.

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Figure 28 Deductive and Inductive Logic

Deductive	Information is analysed to arrive at a specific conclusion. Deductive logic has a low level of risk attached to it. The inference follows the facts (premises); therefore, if the premises are true then the inference is true, confirming what is already known.
Example	• Premise 1. Burglary and vehicle crime are high-volume crime types within Southside BCU. • Premise 2. Southside BCU control strategy prioritises high-volume crime. **Inference** – Burglary and vehicle crime are a priority for Southside BCU.
Inductive Logic	Information is analysed and a general conclusion is reached. The hypothesis is then tested to confirm or disprove the inference. Inductive logic informs the reader and adds value to the information and intelligence. This type of logic has some risk attached to it. It goes beyond the facts (premises) to create a hypothesis. There are no guarantees that the inference is true even if the facts (premises) are true.
Example	• Premise 1. The Blue Wood Youth Centre in Western Road is open on Monday to Friday 1800 – 2200 hours. • Premise 2. Crime and incident levels involving nuisance youths, underage drinking and rowdiness in neighbouring areas are 57% higher than Western Road. Offences are occurring on most evenings between 1800 and 2300 hours. • Premise 3. The local authority has recently granted planning permission for the land surrounding and including the Blue Wood Youth Centre to be developed for housing. • Premise 4. A number of shops in the area are thought to be selling alcohol to underage teenagers. **Inference** – The closure of the Blue Wood Youth Centre will lead to an increase in the number of recorded crime and incidents involving youths within the Western Road area. These increases will be fuelled by the lack of activities for teenagers in the area and easy access to alcohol.

6.3.2 THEORY OF INFERENCE

The key to inference development is objectivity and maintaining an open mind to ensure that all of the information available has been considered in order to produce a meaningful analysis. It is easy to make false assumptions based upon personal prejudice or bias, and for omissions to occur. These actions can result in incorrect findings and alter the scope of the analysis from the original aims and objectives. There are four types of inference; these are described in **Figure 29.**

Figure 29 Types of Inferences

Estimation	Made when there are limited premises on which to build the full picture, but the analysis is able to inform on an aspect of the criminality.
Hypothesis	A testable statement that allows the 5WH to be established.
Prediction	An inference that something will or may happen in the future.
Conclusion	An explanation that is well supported by a hypothesis that has been tested.

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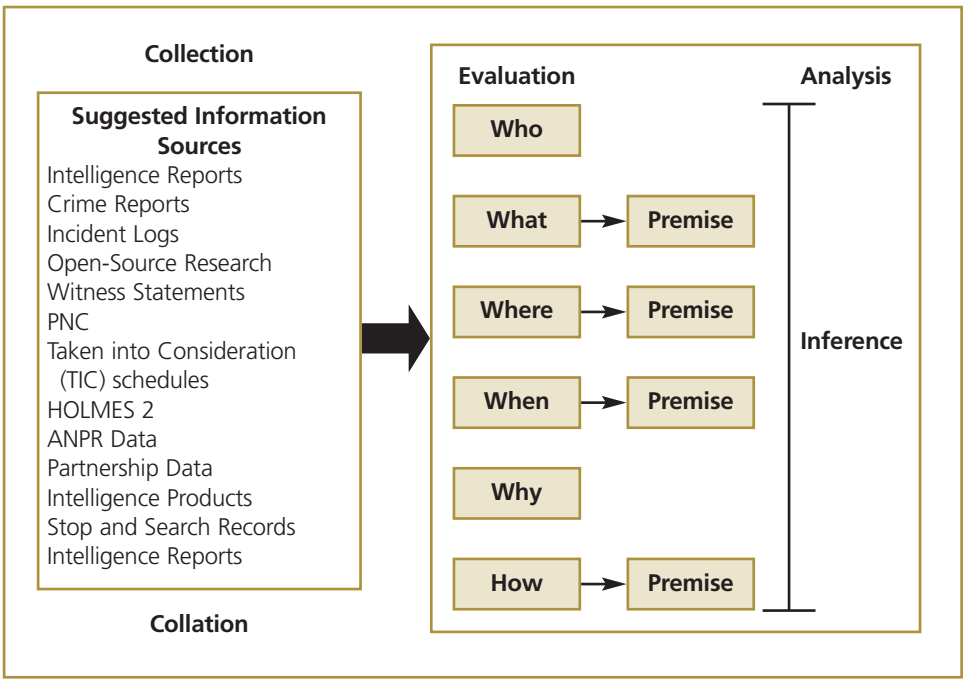
6.3.3 INFERENCE DEVELOPMENT

The information and data relevant to the problem needs to be collected, collated and evaluated. Once this has been done the information should be analysed to identify the 5WH. It can be useful to use a 5WH matrix to determine what is known and unknown, see **Figure 4.** This will establish the premises, assist in developing an inference and outline the intelligence gaps. This process provides an audit trail and ensures that the analyst remains objective. It also makes it easier to focus on the terms of reference. The process for inference development is shown in **Figure 30.**

Figure 30 Inference Development



6.3.4 INFERENCE TESTING

Testing inferences relates to hypotheses and estimations, and these types of inference need to be tested to establish their validity. The first stage is the development of a collection plan; this will help to ensure that any intelligence gaps identified are filled. This will enable the hypothesis or estimation to be refined and lead to the development of further hypotheses or final inferences in the form of a prediction or conclusion. Any alternative hypothesis generated will need to be tested.

The level of information available will have an impact on the quality of the inferences being developed. When developing a hypothesis, it is important that identified intelligence gaps are filled as quickly as possible in order to corroborate or disprove the hypothesis or estimation. It is essential that the analyst does not overcompensate for a lack of information by making assumptions. If inferences are made that cannot be verified or tested then subsequent recommendations will be weak or there will be too many intelligence gaps. Any information that cannot be gathered will need to form part of further collection plans and recommendations. The process for inference testing is shown in **Figure 31.**

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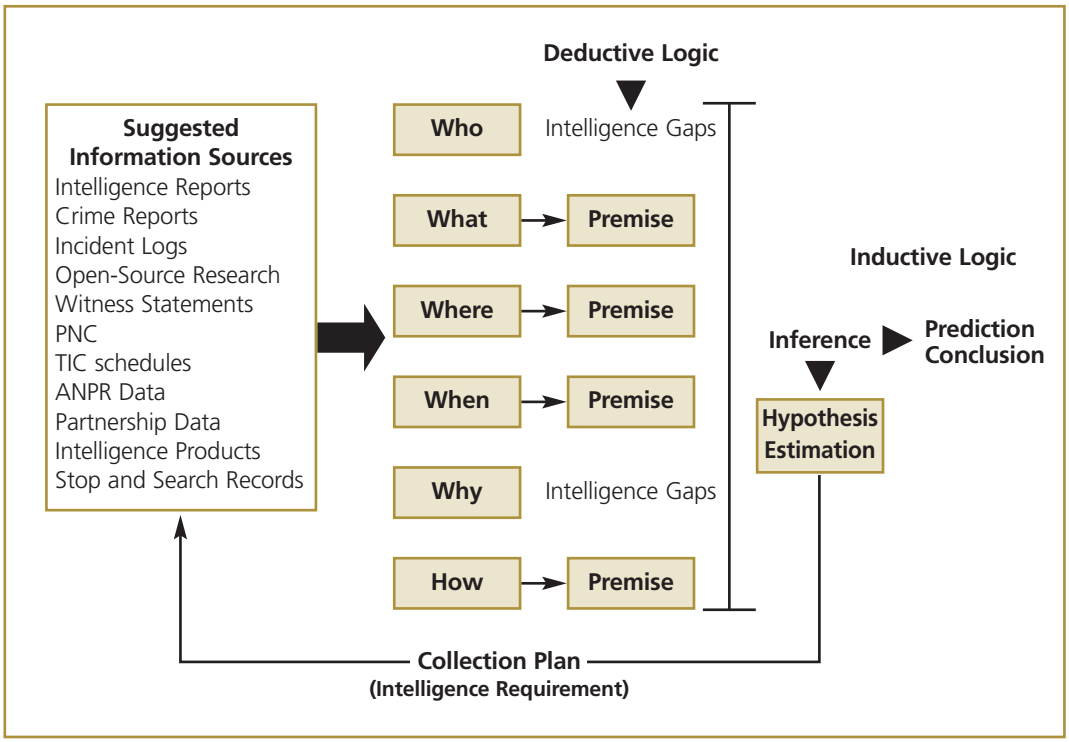
Figure 31 Inference Testing



Checklist 5 Developing Inferences

- Keep an open mind and beware of individual bias and prejudices in order to remain objective.
- Use a 5WH matrix to identify premises.
- Identifying what is known and not known will help in the development of intelligence gaps.
- The intelligence gaps will form the basis of further data collection plans.
- Never make assumptions to compensate for a lack of information.
- Remain objective and focused on the terms of reference.
- Board blast data requirements for inference testing in order to establish the best data sources required.
- Inference testing should not set out to prove the hypothesis or estimation made. It should challenge the statement being made and test its validity and relevance.
- Any alternative hypothesis generated will also need to be tested.
- Keep the inferences short and to the point. It is not necessary to name the type of inference that has been made when writing up the findings of the analysis as this may confuse the reader.

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Section 7
DEVELOPING RECOMMENDATIONS

Recommendations are developed following analysis and the identification of key findings and information gaps. Analytical recommendations are not operational but will assist operational staff to make decisions about how best to use the available resources and tactics. This section describes the process of developing recommendations.

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7.1 KEY FINDINGS

The findings of analysis are presented as key findings, usually within the executive summary of a report. They are either statements of fact or other inferences indicated by the analysis. Key findings should be written as statements and be clearly distinguishable from information gaps and recommendations.

Key findings should be within the scope of the original terms of reference for the analysis. There should only be six or seven key findings. Each statement should be clear, relevant and unambiguous. The analysis that supports the key findings should be visible within the text of the final report and the strength of the inferences clearly indicated. The strength of the inference will be influenced by the evaluation of the source information and whether it is corroborated by other information. Examples of how this can be expressed within an analytical report are given in **Figure 32.**

Figure 32 Expressing the Strength of an Inference

Probability	Phrases
Certainty	
Almost Certain	Will Virtually certain Highly likely
Probably	
About Even	Unlikely Low probability
Probably Not	Virtually impossible Almost impossible Slight chance Highly doubtful Very unlikely Highly unlikely
Almost Certainly Not	Extremely unlikely Little prospect
Impossibility	

Kent, S. (1964) Words of Estimative Probability.

7.2 INFORMATION GAPS

Information gaps are areas that remain unanswered at the end of the analysis. The purpose of this section of an analytical report is to highlight areas where a lack of information had an impact on the outcome of the analysis. Information gaps should be expressed as statements and should be limited to the six or seven most relevant issues.

The collection plan is a useful tool for identifying gaps in the information that the collection plan originally identified as potentially contributing to the analysis. See **4.2.3 Collection Plans.**

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7.3 RECOMMENDATIONS

A clear set of recommendations should be included in any analytical report. These should be based on the analysis and should not include operational recommendations. They may focus on a key finding or information gap as an important next step within the solution of the issue being analysed.

Recommendations should be written as directional statements and be limited to the six or seven most relevant issues. All recommendations should be SMART.

- **Specific** – recommendations should be clear, detailed and unambiguous.
- **Measurable** – recommendations should make it clear exactly what needs to be achieved. They should help to set operational objectives and objectives for results analysis.
- **Achievable** – all recommendations should be achievable and focused on what can be done with available resources.
- **Realistic or Relevant** – the recommendations should be within the scope of the original terms of reference for the analysis and be realistically achieved if adopted.
- **Timely** – recommendations should be presented as short, medium or long-term options. Alternatively, they could be prioritised and given a schedule.

The recommendations that are found in analytical reports are different from the recommendations found in intelligence products. Recommendations within intelligence products focus on the operational activity required to meet the recommendations set out in the analytical report, and activity required to resolve the problem. Intelligence product recommendations are listed under the headings of prevention, intelligence and enforcement.

If an analyst is given responsibility to compile recommendations for an intelligence product, the recommendations must be developed in collaboration with subject specialists. These specialists should be staff members with knowledge of the specific geographical area or the area of crime, or colleagues who are experienced in crime reduction and enforcement techniques. When analysts work with specialists to compile recommendations for intelligence products, they should ensure that there is a distinction between analytical recommendations and operational recommendations.

7.4 PROBLEM SOLVING

Problem solving is supported by analysis and is best achieved by adopting a collaborative approach. Collaboration should include subject experts (for example, crime prevention, neighbourhood teams, forensic staff, analysts, investigators, intelligence staff and partners) and, if possible, a trained facilitator or someone outside the group to run problem-solving meetings or workshops.

Prior to meeting, all those involved must have read the analysis report or intelligence product. Researching websites such as **http://www.homeoffice.gov.uk** or **http://www.crimereduction.gov.uk** for possible responses prior to the meeting can also be beneficial in understanding what has previously been used to counter similar problems. Using organisational memory databases within force and results analysis reports should also be considered.

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There are a number of methods that can be used to develop recommendations for problem solving. These include:

- Brainstorming;
- Reverse Brainstorming;
- SWOT Analysis;
- Impact Analysis.

7.4.1 BRAINSTORMING

Brainstorming is a popular and effective method of generating solutions within a team or group of people by considering how to solve the problem. It is a lateral thinking process that encourages participants to break away from established patterns of problem identification or solution. Brainstorming aims to develop original ideas by not being judgemental and using the experience of those in the session to capture and develop new ideas. A broad range of experience is, therefore, ideal for brainstorming.

7.4.2 REVERSE BRAINSTORMING

Reverse Brainstorming does not look at how to solve the problem but asks how the problem could be caused; the group then brainstorms ways of making the situation worse. The causes are then changed to solutions by adding 'do not' to the beginning of each suggestion. Ideas are then developed from these statements. At this stage it is useful to bring in the findings from any SWOT analysis carried out, and use identified strengths to solve the problem.

7.4.3 SWOT ANALYSIS

SWOT analysis is a simple framework for analysing the **s**trengths, **w**eaknesses, **o**pportunities and **t**hreats related to the problem. It provides an understanding of what strengths and opportunities can be built on to develop solutions, and the weaknesses and threats that need to be kept in mind when evaluating and choosing a solution(s).

7.4.4 IMPACT ANALYSIS

Impact analysis identifies the possible negative and positive consequences of solutions in a bid to ensure that the changes or solutions are positive ones. This analysis can help to spot, in advance, unexpected consequences of a solution or decision. The process of problem solving is likely to lead to the development of a number of solutions.

The key considerations when deciding which recommendations to make are:

- Affordability;
- Potential benefits;
- Potential risks;
- Short, medium and long-term gains;
- Cost effectiveness;
- Required outcome.

The outcome of this stage will assist decision makers to agree solutions based on the recommendations made by those developing the solutions.

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Hints and Tips – Problem Solving

- Be flexible and adopt the problem-solving tool that best suits the situation.
- Problem-solving solutions must be developed collaboratively by subject experts, those responsible for the problem resolution and the analyst(s).
- Successful problem solving is a process that can and should be adapted to suit the circumstances faced.
- Spend time exploring problem-solving methods and learn how to apply them.
- Share your knowledge – when a method works let others know what you did/achieved.

Checklist 6 Developing Recommendations

The key points to consider when developing recommendations are:

- Key findings, information gaps and recommendations should only be developed once the analysis is completed.
- Writing up the analysis before developing the key findings, information gaps and recommendations should ensure that they follow a standard and logical order of presentation.
- Once the analysis is written up, highlight the points that are to be communicated as key findings, and where the analysis suggests further action.
- Discuss the analysis with an experienced colleague who may assist in identifying the most important findings from the analysis.
- Use the collection plan to identify the information that was not received or found, and assess the impact of that gap on the findings.
- Consider what should be added to the terms of reference, or done if there was more time or information. Would this improve the task that was set, or operational activity? If so, consider including the information as recommendations.
- Writing recommendations within the analysis, as a first step, will ensure that they are supported by the analysis and evidenced in the text. They can then be moved to the appropriate section of the report. See **8.4 Writing the Report.**
- Use the review process to check that the key findings, information gaps and recommendations are unambiguous, clear and directly relevant to the terms of reference. See **8.5 Peer Review.**

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Section 8

WRITING UP THE FINDINGS FROM ANALYSIS

The original terms of reference should form the basis of the analysis report. The analysis may have used a combination of different analytical techniques for a single product, or might form part of an intelligence product. This section describes how to produce the findings from analysis in written form.

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8.5 Peer Review 93

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8.1 TYPES OF PRODUCT

The findings from analysis may end up in two types of written report. The first is a discrete analytical report that might include the results of a combination of analytical techniques, but focuses on the needs of the recipient according to the terms of reference. The second type of report is an intelligence product; this is where the analysis has been completed to contribute to one of the standard, defined NIM intelligence products.

8.2 ANALYTICAL PRODUCTS

The outcomes of analysis should be presented in a report covering the four main areas detailed in **Figure 33,** irrespective of the tools and techniques used to reach the findings. Forces or agencies may have their own corporate style for presenting reports, but their structure will be largely similar.

8.3 INTELLIGENCE PRODUCTS

Analysis contributes to each of the four intelligence products. The four intelligence products are:

- Strategic Assessment;
- Tactical Assessment;
- Subject Profile;
- Problem Profile.

For a description of the intelligence products and the minimum content required by NIM, see ***ACPO (2005) Guidance on the National Intelligence Model.***

Different sections of the intelligence products are completed, or contributed to, by the analyst. For full details of the functions involved in creating the intelligence products, including the role of the analyst, see ***ACPO (2006) Practice Advice on Tasking and Co-ordination*** and ***ACPO (2007) Practice Advice on Resources and the People Assets of the National Intelligence Model.***

The sections based on analysis are mainly those which describe and assess crime and disorder within the relevant geographical or specialist area. They are likely to report on the development of previously identified priority areas, and those identified as emerging issues.

The development of intelligence products requires collaboration with a number of experts who can assist with recommendations in the areas of prevention, intelligence and enforcement.

8.4 WRITING THE REPORT

The written output of analysis is key to the communication of analytical findings. Written reports should be professionally presented and accompanied by charts, maps and graphs where necessary to support the key findings, information gaps and recommendations. Where a corporate style or template exists for analytical reports, this should be followed. **Figure 33** shows the recommended content for an analytical report.

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Figure 33 Content of an Analytical Report

Introduction	Explains the original tasking including the purpose, scope, method and dissemination. This section will also list the information sources used.
Summary	Details the outcomes of the analysis including inferences, key findings, information gaps and recommendations.
Analysis	An overview of the analysis that supports the outcomes and recommendations. This section should also highlight the limitations of the analysis.
Appendices	This section will hold any supporting documentation. They should be kept to a minimum. They must contribute to the understanding of the report and must be clearly explained in the text. All supporting products should be clearly labelled. A strategic report is unlikely to include any appendices.

When writing reports analysts should consider the following:

- Their writing should be clear and unambiguous;
- No assumptions should be made about the reader's previous knowledge;
- The report should focus on the agreed scope of the terms of reference;
- Establishing confidence in the inferences made by showing the quality of the information sources used;
- Maintaining unambiguous and objective reporting, for example, by avoiding adjectives such as huge, lacklustre or significant;
- Inviting a colleague to critically read the report to check it is fit for purpose;
- Ensuring that enough time remains to complete the report and that it does justice to the amount of analysis completed.

For more advice on how to complete good quality written reports, see
http://www.plainenglish.co.uk/howto.pdf

8.5 PEER REVIEW OF THE PRODUCT

Once the product is complete, peer review is a useful step to establish that the product is clear and concise and responds to the original terms of reference.

The analyst needs to be confident that the terms of reference have been achieved and that the inferences and key findings are the correct ones and are supported by the report text. When planning the timescale for production of analysis, time should always be built in to allow for peer review.

When seeking a peer review, the analyst should choose a colleague who will provide an objective view. It is important to provide the reviewer with the terms of reference so that they are aware of what the analysis is trying to achieve, and can check that any specific questions are fully answered. Examples of the questions that the reviewer should answer are:

- Are the key findings clear?
- Does the document make sense? Does it read well?
- Does the reviewer agree with the findings based on the content of the document?
- Does the inference make sense?
- Do the key findings support the inference?
- Do the recommendations flow from information gaps and key findings?
- Are relevant minimum standards complied with?

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The reviewer should give honest, constructive feedback, and the originating analyst should receive the feedback in such a light. If the answer to any of the questions listed is 'no', then the originating analyst may like to consider amending the way the information is presented. The most effective way of exchanging feedback is to ask the reviewer to brief the originating analyst directly, thereby enabling clarification of any feedback and discussion of changes suggested. Any changes can then be made immediately without delaying the dissemination of the product.

Dissemination should occur as soon as the review is completed. See **9 Disseminating Analysis.**

Checklist 7 Writing Up the Findings from Analysis

The key points to consider when writing up analysis are:

- Review the terms of reference for the analysis and focus on this when compiling the report.
- Identify the audience and understand how this will affect the content of the report.
- Identify any relevant minimum content, corporate standards or templates that can assist in compiling and structuring the analysis report.
- Write clearly and concisely.
- Clearly identify inferences and be confident that the evidence to support them is included in the text.
- Seek the assistance of a colleague locally, or an analyst based elsewhere, to give constructive feedback on the analysis report.
- Clearly title, date and number the report.
- Maintain appropriate records that are accurate and complete for further reference.
- Allow enough time to write up the findings.

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Section 9
DISSEMINATING ANALYSIS

The output of analysis needs to be disseminated so that it can be used by others to make decisions. This section explains how analysis can be presented for different uses.

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9.2 Analytical Briefings and Presentations 96

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9.1 DISSEMINATION OF ANALYTICAL OUTPUT

Dissemination should be agreed and set out as part of the terms of reference, based on who needs the information and what the most appropriate format for dissemination is.

The amount of information disseminated will vary, depending on the audience. For example, for one audience it may be appropriate to provide detail of the analysis, for others it may be more appropriate to provide only the intelligence gaps and give direction on how they might be filled. The two most common forms of dissemination are written reports and briefings. For more information see **8.4 Writing Up the Findings of Analysis** and **9.2 Analytical Briefings and Presentations.**

The analyst is responsible for production of the appropriate material. They should ensure that any dissemination is version controlled and complies with the corporate style and any minimum requirements. This ensures a professional approach and supports the improvement of future work.

Specifically, the analyst must ensure that:

- The correct GPMS grading is considered and properly shown;
- The document is being disseminated in accordance with the GPMS;
- The most appropriate media for dissemination is chosen;
- The recipient is able to access the report and has any graphical or mapping software necessary to read attached charts or maps;
- The recipient is aware of any restrictions on the storage of the report;
- The original report is stored correctly and is easily accessible in the future.

9.2 ANALYTICAL BRIEFINGS AND PRESENTATIONS

Briefings and presentations are often used by analysts to supplement written reports. They may also be used in the place of written reports to disseminate results to some audiences. Good presentation and briefing skills are, therefore, an important part of an analyst's skills and abilities.

When creating a briefing or presentation, existing corporate styles or templates should be followed. For more information about preparing briefings, see ***ACPO (2006) Guidance on the National Briefing Model.***

Some key elements to remember for preparing and giving briefings and presentations are:

- Know the material, and be prepared for questions;
- Keep it brief, and never over-run a specified time;
- Focus on three or four key messages;
- Keep supporting slides to a minimum, and never read from them;
- Use charts and maps to support the content;
- Know the audience, and pitch the presentation accordingly;
- Avoid fidgeting and standing with hands in pockets, or arms folded in front of the body;
- Maintain eye-contact, breathe and smile.

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Checklist 8 Disseminating Analysis

The key points to consider when disseminating analysis are:

- Identify barriers to dissemination early on in the analysis process, and assess the risk of not removing them.
- Check that the required dissemination, defined in the terms of reference, is followed.
- Double check that the GPMS is correct and is appropriately displayed on the report and any supporting media.
- Keep a list of the recipients of the report and consider asking them for feedback, if this is not done automatically.
- Ensure that any deadlines are adhered to by leaving time to check that the customer has received the report and that any consultation processes have been followed.

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Section 10
REVIEWING EFFECTIVENESS

Analysts are responsible for their own professional development. This involves learning from each piece of work undertaken. The operational effectiveness of the analysis should also be reviewed to ensure that learning contributes to the organisational knowledge. This section explains how such learning can be achieved.

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10.1 ONGOING REVIEW OF ANALYSIS

Once the analysis has been disseminated any subsequent action should test the identified inference. The inferences that have been included should be reviewed to establish whether or not they were correct, and that resources are being deployed effectively.

Once the inference has been tested available options include:

- If the inference is assessed to be correct, but the problem persists, further direction may be required to address the issue and the intelligence cycle may need to commence again;
- If the inference is correct and the problem no longer persists, the next stage is to end operational activity and commence a review of all activity to date;
- If the inference is assessed to be incorrect and the problem persists, further information collection will need to be initiated and further analysis tasked.

Direction regarding how information should be communicated to the analyst, to allow for a final review to occur, should not be overlooked. This direction needs to be clearly provided, agreed within the terms of reference and communicated at the time of dissemination to those required to provide feedback and inform a final review. The plan owner and analyst must, prior to dissemination, agree a timescale for this review to occur, with the first intention being to determine the accuracy of the inference.

10.2 FINAL REVIEW OF ANALYSIS

Results analysis may be appropriate at the completion of any tactical options. The objective of results analysis is to evaluate the results of law enforcement activity, including analysis.

Results analysis is a structured review of action that should be tasked at the very outset and documented in the terms of reference. The reason for it being commissioned at the outset is to enable the development of an effective manner in which to collect appropriate information for the analysis.

Results analysis evaluates the effectiveness of resource deployment and identifies effective practice and any issues that hindered the outcome. Not all activity is suitable for results analysis, and so it may not be commissioned. Alternatives, such as a formal review, may be tasked instead.

An analyst should try to continuously develop and identify new and better ways to work. If no results analysis has been tasked, or if no operational activity has followed the analysis, then the analyst should still consider reviewing their own work to capture learning points. The analyst may seek feedback from colleagues in order to assist their learning. For further information on results analysis, see **5.2.8 Results Analysis** and ***ACPO (2006) Practice Advice on Tasking and Co-ordination.***

Once a final review has begun, whether formal or informal, it should concentrate on the value of the information gathered, the processes used to obtain information, the contribution of colleagues who collaborated on the work, as well as the final content of the analysis.

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A list of possible questions to ask includes:

- Was the necessary information easily available?
- Were there any difficulties in collating or receiving information?
- Was assistance provided with recommendations?
- Were all the recommendations accepted and progressed?
- Did the plan owner feel the analysis supported their decision making?
- What was the impact of the analytical recommendations?

The analyst should seek constructive criticism from colleagues to ensure that any weaknesses are addressed and any pitfalls avoided in the future. The output of both formal and informal reviews should contribute to the organisational memory and be shared with colleagues. Useful information to share would include sources of information and the type of information received, the identification of colleagues with specialist knowledge and the most successful methods of communicating analytical output.

The analyst should ensure that their analytical products are available to their colleagues, through appropriate means, as both a source of good practice and to share knowledge. At the end of a particularly innovative piece of work, and with the agreement of the plan owner, the analyst should capture their work in a written report which might be shared on internal websites, through a professional journal, or communicated verbally at a professional workshop.

Checklist 9 Reviewing Effectiveness

The key points to consider when reviewing the effectiveness of analysis are:

- Seek feedback from line managers and colleagues if this is not available routinely.
- Use annual performance monitoring processes to obtain feedback to ensure that any weaknesses are progressed through a personal development plan.
- Create a personal development plan, which should highlight your own professional goals, monitor progress and motivate you to reach milestones.
- Seek the support from a mentor, such as a more experienced colleague, to offer suggestions for improvement and development with both your analysis and career generally.
- Use the list of analytical skills to review your own work against.
- Work with your line manager or an analyst colleague to identify any areas of weakness and to help identify how you can improve in these areas.
- Use **Checklist 1** to identify any gaps in your knowledge that, again, can be progressed through a personal development plan.
- Obtain copies of analytical reports from colleagues, to find good practice that you can use in your own work, and judge for yourself how you would offer feedback, if you were asked.
- Expect to offer feedback yourself to colleagues. This should be offered constructively and positively. It will also help to critically evaluate your own work in the future.

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APPENDIX 1 CHECKLIST 10 COMPLYING WITH LEGISLATION

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Checklist 10 Complying with Legislation

To ensure compliance with legislation the key points to consider when conducting analysis are:

- Analysts should be familiar with legislation and understand how it impacts on their work.
- Find out where local knowledge assets are that will cover the legislation, any updates, and any corporate procedures or policies that will ensure compliance.
- Know who can advise on legislation, ie, the local Freedom of Information Officer, Data Protection Officer, Single Point of Contact (for telecommunications data) and Compliance Officer.
- If horizon scanning is done corporately, ask to receive the reports, which should cover new legislation, policies and procedures.
- Go on the mailing list for the NPIA Digest, which also gives an indication of new legislation and how it might impact on analytical work.
- Ensure that terms of reference cover justification and authority to undertake each piece of work.
- Be organised – keep a day book, list of sources, maintain a logical filing system and use naming conventions and versioning to manage information and interim reports and charts.
- Be familiar with the methods used to obtain information, and know how all information used in analysis has been acquired.
- Keep a clear record of sources used and reference them in reports where necessary.

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APPENDIX 2
ANALYTICAL TOOLS

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ANALYTICAL TOOLS

TABLES

Tables should be used to enhance the text and are particularly useful for arranging small amounts of information. They should be simple to follow, clearly labelled, and have the sources of information identified. The table should present the numbers in a concise, organised fashion in support of the analysis.

SPREADSHEETS

Spreadsheets are a useful tool for arranging large amounts of information. They can be used in the collation process and to develop complex charts at a later stage in the analysis.

Spreadsheets are particularly effective when used to develop CCA. For more information on crime and incident series identification, see **5.2.1 Crime Pattern Analysis.**

Spreadsheets offer a range of functions which are particularly useful for developing analysis. These include cross-tabulation, pivot tables and graphs.

Cross-Tabulation (Cross-Tabs)

A cross-tabulation displays two or more variables in a matrix format. **Figure 34** shows a cross-tabulation of stolen property and crime types to show the different types of property that have been stolen in the three types of offences.

Figure 34 Example of a Cross-Tabulation

	Audio Equipment	Electrical Equipment	Cash
Burglary	15%	75%	29%
Vehicle Crime	80%	25%	1%
Robbery	5%	0%	70%

Pivot Tables

A pivot table is a powerful data summarisation tool. It can automatically sort, count and add up data stored in a spreadsheet. The use of pivot tables is broad and depends on the situation or information available. Analysts should, therefore, be clear about what they are looking for or trying to understand. Pivot tables are often used to identify the most frequent calls made by a specific phone number or to count different crime types.

Graphs and Charts

Graphs and charts are often used to view large quantities of information and help identify the relationship between different parts of the information. Graphs must be meaningful and care should be taken to choose the most appropriate graph to represent the information. This is best achieved by letting the data determine the type of graph.

Figure 35 shows the most commonly used methods for presenting graphs and the type of information they are best used to present. **Note:** The graphs and charts are for illustrative purpose only and are not based on actual data.

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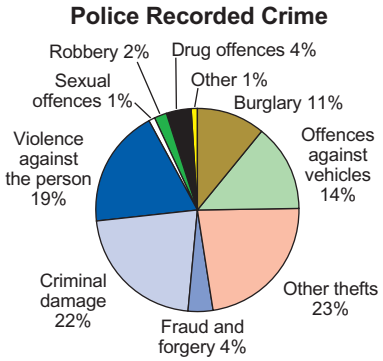
Figure 35 Commonly Used Graphs

Graph Type	Description	Advantages	Disadvantages	Best Used For
Pie Chart	A circular chart divided into sectors to illustrate proportions of total elements. Sectors are proportionate to the quantity they represent.	Easily understood and simple representation of basic data.	Difficult to compare size of items; Difficult to compare across different pie charts; Difficult to compare different sections in a pie chart.	Pie charts are best used if the intent is to compare a given category (a slice of the pie) with the total (the whole pie).

Example



Graph Type	Description	Advantages	Disadvantages	Best Used For
Bar Graph or Bar Chart	Graph formed of rectangular bars with a length proportionate to the frequency or magnitude of what they represent.	Easy way of understanding large quantities of data. The graph is more easily read than the raw data.	Important to keep data sets within the graph to a minimum otherwise graph becomes too difficult to understand. Graphs need to be kept simple.	Comparing two or more values and representing simple, descriptive comparisons.

Example

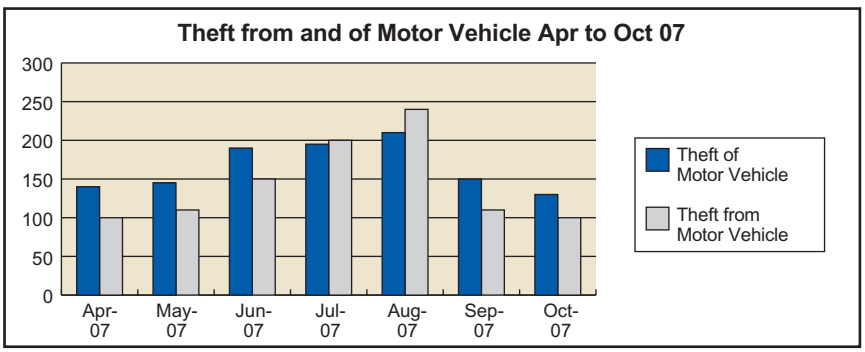


Figure 35 Commonly Used Graphs (continued)

Graph Type	Description	Advantages	Disadvantages	Best Used For
Scatter Graph	Graph using X and Y coordinates to display values for two variables.	Information displayed as a collection of points each having one coordinate on the horizontal axis and one on the vertical. Useful for displaying larger volume of data.	Represents associations between variables but not causation.	Understanding correlation between variables. A pattern of dots sloping from bottom left to upper right suggests a positive (rising) correlation. A pattern of dots sloping from upper left to bottom right suggests a negative (falling) correlation. Using the linear regression method a line of best fit can be drawn to correlate between variables.

Example

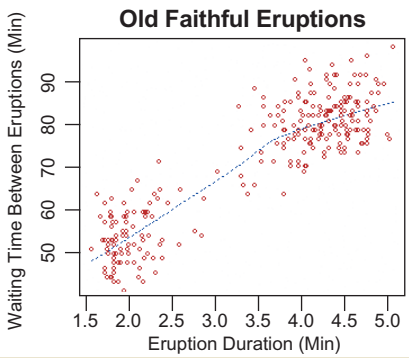


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Figure 35 Commonly Used Graphs (continued)

Graph Type	Description	Advantages	Disadvantages	Best Used For
Histo-gram	Is a graph displaying tabulated frequencies. The area of the bar denotes the value represented. This differs from a bar chart where the height denotes the value.	Easy way of understanding large quantities of data. The graph is more easily read than the raw data.	It is important to keep data sets within the graph to a minimum or it may become difficult to understand. Keep the graphics simple.	Showing the proportion of cases in each specified category.

Example

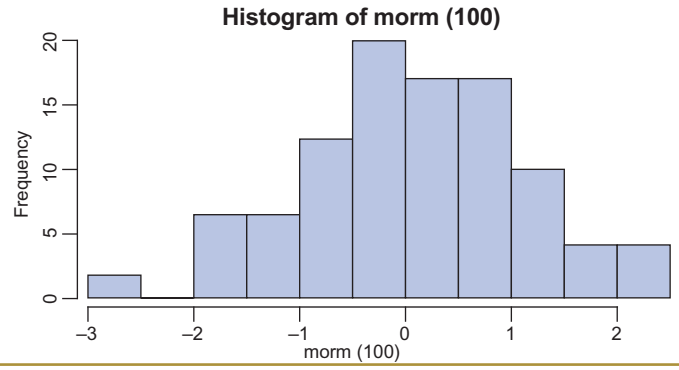

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Figure 35 Commonly Used Graphs (continued)

Graph Type	Description	Advantages	Disadvantages	Best Used For
Pareto Graph	Is a special type of bar graph where the values plotted are arranged in descending order. The left vertical axis represents the frequency of occurrence. The right vertical axis shows the cumulative percentage of the total of the particular unit of measure.	Easy way of understanding large quantities of data. The graph is more easily read than the raw data.	Important to keep data sets within the graph to a minimum otherwise graph becomes too difficult to understand. Easy to get carried away with functionality within charting software packages – keep graphs simple.	Highlighting the most important among a typically large set of factors. Linked to the 80 – 20 rule – where 80% of the problems stem from 20% of the causes.

Example

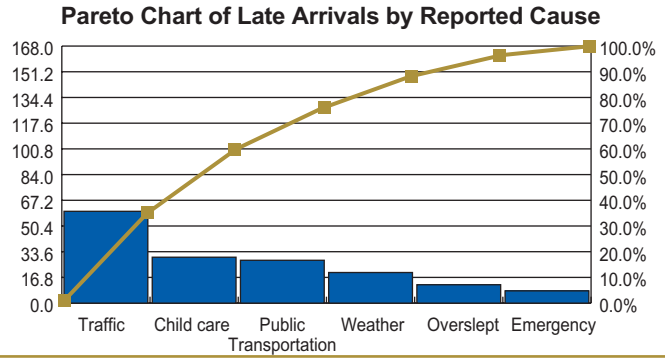

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Figure 35 Commonly Used Graphs (continued)

Graph Type	Description	Advantages	Disadvantages	Best Used For
Control Chart	Display observed data in a time sequence. Time is represented on the X axis. The commodity is represented on the Y axis. The mean or median is shown by a horizontal reference line. Upper and lower warning limits are drawn two standard deviations above and below the mean or median. Upper and lower control limits are drawn three standard deviations above and below the mean or median.	Determines if statistical control is being achieved. Used to monitor performance levels. Variations in performance are easily detected and can be corrected.	Requires an understanding of statistics and calculating standard deviations.	Monitoring variations in performance through statistical process control. Observations outside each limit signal a special case which requires interpretation.

Example

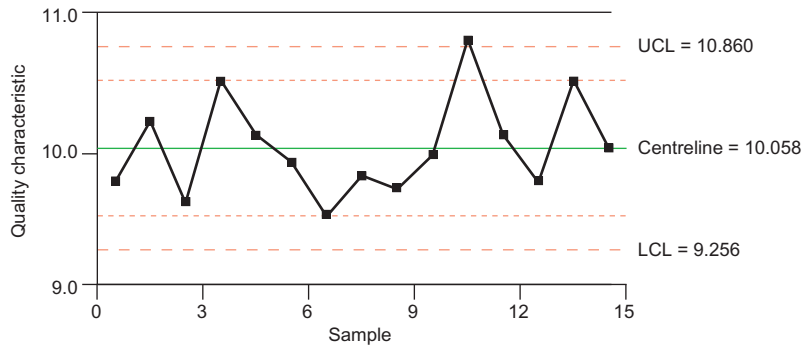
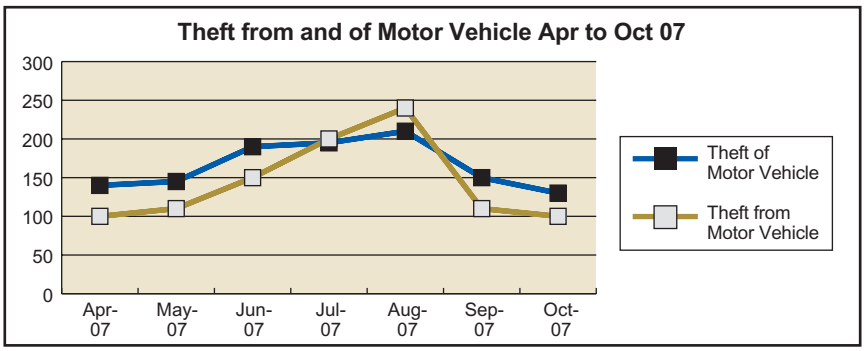


Figure 35 Commonly Used Graphs (continued)

Graph Type	Description	Advantages	Disadvantages	Best Used For
Line Graph	Compares two variables which are plotted along an axis. A line graph has a vertical and horizontal axis.	Useful for showing specific values of data. Shows trends in data clearly. Enables the viewer to make predictions about the results of data not yet recorded.	Using consistent scales on the axes ensures that comparisons are easier and not misleading.	Displaying the effects of one variable over another as it increases or decreases.

Example



Hints and Tips – Graphs and Charts

- Consider how the graphs will be printed when deciding whether to use solid colour or patterns for line styles and fills.
- Only add data values if they do not interfere with the visual impact of the graph.
- Legend, title and axis labels should always be represented on the chart or graph.
- Start the Y axis scale at zero.
- Use only one unit of measurement per graph.
- Make all text on the graph easy to understand by:
  – not using abbreviations;
  – avoiding acronyms;
  – writing labels from left to right.

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MAPS

The collation of material onto maps requires the analyst to be familiar with, and have access to, a mapping system. Analysts should be properly trained to use the available software so that the most can be made of the software functionality.

The most common type of statistical map is a thematic map, which shows contrasts by using different shades of a colour (usually a darker colour indicates a larger statistical value), and is best used for ratio data, eg, population density and crime levels.

The material used in mapping must be geographically referenced by an address, postcode or geographic reference number such as easting and northing. When maps are being produced, copyright regulations should be adhered to. All maps should show a scale and legend that adequately explains the statistical units, the data used and the geographic area. The source of the statistical data should also be clearly shown along with an arrow showing north.

Maps can be used to:

- Demonstrate links between geography and time in a series or trend of crimes or incidents;
- Demonstrate differences and similarities across geographical areas;
- Highlight routes taken by subjects and vehicles;
- Pinpoint locations where phones have been used;
- Demonstrate the proximity of key locations or events;
- Provide standard layouts for search teams and house-to-house enquiries;
- Prompt officers when interviewing or taking statements.

It is possible to combine maps with other collation techniques, such as network charts or frequency charts. This will assist in the description of information and improve the final analysis.

CHARTING TOOLS

Charting tools can be used to identify networks, hierarchy, links and sequences of events. Charts support the analysis by graphically presenting the information so that inferences can be more easily developed, intelligence gaps identified and intervention and disruption recommendations made.

Charts can be produced using a range of software applications. Analysts should have graphical software available to use to create charts. Analysts should by fully trained in the software applications they use, and in charting principles so that the charts provide a strong basis for analysis and can be produced in evidence.

Forces and agencies should encourage a corporate style for charting. This will promote the standard use of icons, attributes, links and legends. This will improve electronic manipulation and general interpretation and make it easier to share charts within and between forces and partners.

An example of a charting protocol can be found in **Appendix 3.**

Figure 36 describes the stages of creating a chart and some tips to remember at each stage.

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Figure 36 Stages of Chart Creation

Stages	Hints and Tips
Assemble all information	Use a wide range of information to create the chart, including intelligence reports, analytical reports, performance data, intelligence products, ANPR, communications and financial data.
Determine the focus of the chart (particularly important for network charts)	Should the chart focus on: • A person? • An organisation? • An address? • An organised crime group?
Read through the information	Highlight the detail that will be included on the chart.
Draw a preliminary chart	This will be a rough draft and may include crossed lines.
Clarify chart	Develop a final version following charting protocols and avoiding crossed lines wherever possible. The chart should assist in identifying intelligence gaps and intervention opportunities, and provide a graphical representation of the intelligence.

There are two main types of charts that support the analytical process: flow charts and network charts. Examples of flow and network charts can be found in ***ACPO (2005) Major Incident Analysis Manual.***

Flow Charts

Flow charts are a schematic representation of a process. They can be used to show the method of supply of certain commodities or the working practices of an organised crime group. This is particularly useful when compiling criminal business analysis. For more information on criminal business analysis, see **5.2.5 Criminal Business Analysis.** Flow charts can also depict the chronological progression of events; this type of flow chart is more commonly known as a sequence of events chart. An overview of the main types of flow charts that are used for analysis is given in **Figure 37.**

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Figure 37 Commonly Used Flow Charts

Flow Chart Type	Purpose	Benefits
Commodity flow chart	Understanding the movement of commodities (eg, money, drugs or stolen property) and working practices within an organised crime group.	• Reveals opportunities for intervention and disruption; • Identifies intelligence gaps; • Identifies and corroborates involvement of key individuals; • Improves organisational knowledge of criminal techniques for future use.
Sequence of events chart – timeline	Providing a clear picture of what is happening by showing a sequence of events that highlight the times events occur and relationships between events.	Enables comparisons to be made with: • Witness statements; • CCTV footage; • Communications data; • Possible linked offences.
Activity flow chart	Outlining a process or sequence of activities directed towards an objective, where one activity depends on another (eg, the theft of a vehicle, later used as a get-away car, prior to an armed robbery).	• Reveals opportunities for intervention and disruption; • Identifies MO; • Identifies criminal business involved in any activity.

Network Charts

Network charts can assist in the identification of criminal association between people, objects and organisations.

The most common form of network chart is a link chart. The content of a link chart is based upon evaluated intelligence and should provide clarity about relationships which are difficult to identify in a narrative. Interpretation of the chart adds value to the analysis and identifies intelligence gaps, as part of inference development.

When developing a link chart, analysts should, where possible, identify the hierarchy within the network. This allows intervention strategies to be developed, which may involve directing activity towards less important and influential people within the network.

Link charts can often be used retrospectively to show what has taken place, known as case charting. These are usually produced by analysts for evidential purposes in court cases. The benefits of case charts are:

- They present a visual representation of the progress and status of an enquiry;
- They can be used as a briefing tool;
- Intelligence gaps can be identified more easily.

Case charting is not analysis. It supports investigations and is often requested during major enquiries, but it still requires interpretation and inferences to be a useful piece of analysis. For information on how to analyse network charts, see **5.2.3 Network Analysis.**

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Hints and Tips – Charting

- Gather together all data, information and intelligence prior to compiling a chart and highlight key details to be included within the chart.
- Decide on the focus of the chart.
- Keep it simple and only use differing icons if this will sufficiently enhance the chart.
- Maintain accurate records for all information that includes one piece of information over another or supports a link between two events, objects or people.
- Using charting software, information records can be maintained by the use of cards attached to icons, entities and links.
- A1, A2, B1 and B2 graded information is considered to be confirmed information and links should be shown as a solid line.
- All other intelligence is unconfirmed and links should be shown as a broken line.
- Hypothesis and inference linkages should be shown as a tentative, dotted line.
- Identify the handling codes (5x5x5 grading) of the information used. Dissemination and handling of the chart should be in line with the highest handling code.

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APPENDIX 3
CHARTING PROTOCOL

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CHARTING PROTOCOL

To enable effective sharing and understanding of link charts, data entry must be standard on every chart; regardless of who produced it there must be no room for misinterpretation of the data.

- The key when producing any chart is to keep it as simple as possible.
- If required, use more than one chart to display findings.
- Ensure that the chart remains attached to the report interpreting the chart and highlights, for example, key findings.
- Prior to using any form of charting software, the analyst should understand charting principles and be trained in the technology.

Icons – Standard Format

Nominal Details
1st line – Free text: Forename (space) SURNAME
2nd line – Attribute: Date of Birth
3rd line – Attribute: All other information, ie, Nickname, Warnings etc

Forename SURNAME
DOB: XX/XX/XXXX
All other information deemed relevant

Forename SURNAME
DOB: XX/XX/XXXX
All other information deemed relevant

Vehicle Details
1st line – Free text: VRM (no spaces)
2nd line – Free text: Make (space) Model
3rd line – Attribute: All other information, ie colour of vehicle etc

A123ABC
Make Model
All other information

Location Details
1st line – Free text: First line of address
2nd line – Free text: Town
3rd line – Free text: City
4th line – Free text: Postcode

23 Grove Road
Durven
Cambs
CB12 5XM

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Icons – Standard Format – continued

Telecom Details
1st line – Free text: Full number (no space in between dialling code)
2nd line – Attribute: All other information, ie, subscriber name

01234567890
All other information
eg, subscriber

Event Details
1st Line – Free text: Event type (ie, crime, incident)
2nd line – Free text: Reference number (ie crime reference/incident reference)
3rd line – Attribute: Location
4th line – Attribute: All other information, ie, day/time (using attributes)

Type of Event: CRIME
Ref. Number, eg crime/incident ref.
Location (optional)
All other information, ie, day/time

Financial Details
1st line – Free text: Account number
2nd line – Free text: Financial provider, ie, bank/building society
3rd line – Attribute: All other information, ie, what it is – credit card etc

Account number
Financial provider

- To enable common understanding of what disseminated charts represent, icons must not leave any room for misinterpretation.
- Do not use icons where a value judgement is made, ie, displaying a drug dealer by the use of a syringe.
- All icons within a chart must be the same size.
- All text within the chart should be the same font and size.
- When producing a chart for dissemination, all text on the icons should be in the same colour. (The exception to this rule would be if telephone billing is overlaid on the chart, and colour is used to identify the different billings.)
- All information displayed (with the exception of inferences) must be sourced from either an open or closed data source. Information not recorded in writing should not be displayed on the chart.
- Always maintain a schedule that details how many copies of charts have been produced, what the appropriate version number is, who the chart was given to and when. Ideally, the charting software should be used.
- All charts are subject to disclosure so always assume that the chart may be produced in court.

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Links

All links on charts should be in keeping with charting evaluation conventions.

Links	
Confirmed _____	Links between entities should be a solid line (confirmed) only when the information is graded as A1, A2, B1, or B2.
Unconfirmed ----------	Intelligence that is evaluated at any other level should be shown as a broken line (unconfirmed).
Tentative	Any hypotheses made by the analyst should be shown as a dotted line (tentative).

- Avoid crossover of links wherever possible.
- Avoid unnecessary use of colour on links within the charts. Limited colours should be used to display specific links, ie, associate, owner.
- Directional arrows should be used to illustrate commodity flows only.

Chart Legends

It is important that every chart has a title and the appropriate GPMS security marking clearly visible. Every chart also requires a legend with the following information as a minimum standard:

- The meaning of every icon used within the chart;
- Author's details;
- Details of officer requesting chart;
- Version number;
- Copy number;
- Date chart was produced;
- File name (ie, where saved).

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Operation CHART PROTOCOL

Chart produced by A. N. ANALYST for D.S. SMITH
Version 1 Copy 1 of 5
Produced 02.02.2005 15:00hrs
This chart should not be disseminated without prior consent from the OIC

C:\Operationchartprotocol\example

Telecoms

Male nominal

Anonymous/
Unknown nominal

Female nominal

Financial

Car

Location

AaBbYyZz
Font Style

Confirmed Link

Unconfirmed Link

Tentative Link

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APPENDIX 4 STATISTICS FOR ANALYSIS

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STATISTICS FOR ANALYSIS

The start of any piece of analysis may involve basic statistics, even if only to express a rise or reduction in a specific type of crime and disorder within a defined time period.

This section gives an overview of the basic statistics required and details the resources needed for developing analytical skills further. Analysis is not a statistical function, but the ability to be able to interpret statistics and understand how they can support analysis is necessary. The basic techniques within this section describe:

- How to work out how much a specific crime or disorder has risen or decreased between two time periods;
- Calculating upper and lower control limits;
- Correlation coefficient (Pearson Method);
- Using averages.

These techniques will allow the analyst to effectively describe data and make basic inferences.

DESCRIBING INCREASES AND DECREASES

It is usual to start pieces of analysis with an overview of any increases or decreases over a given period of time. Crime statistics can be influenced by a vast array of factors with some increases and decreases being a matter of pure chance or coincidence. Understanding what has influenced the levels of recorded crime, and if these factors are due to random factors or special events is not always easy. Statistical methods look for significant differences (statistically significant) rather than random effects. It is important that any interpretation of data is carried out objectively in order to avoid making assumptions gained by experiences and influences. Statistically significant findings need to be interpreted and analysed to identify interest and relevance.

The period of time used for comparison should be carefully considered and clearly defined within the terms of reference. If the time period is too long, then recent patterns may be diluted by longer-term trends. Yet, if the time period is too short, seasonal trends may not be taken into account. For example, if bicycle thefts always rise in September, and data is only collected from April to September, then it may seem like an unusual increase and resources may be focused on a short-term fix, rather than a longer-term crime reduction initiative.

A reduction or increase in incidents is usually described in terms of a percentage; bicycle thefts rose by 25 per cent from August to September 2006. If the number of offences is few, it is better to describe an increase or decrease with real numbers because low numbers create large percentages. A rise from one bicycle theft last week to two this week is an increase of 100 per cent; it can create a very emotive start to analysis if the report describes a 100 per cent recent increase in bicycle thefts. Always use actual numbers when describing a change, followed by the percentage change identified.

The increase or decrease can be worked out using a simple calculation which requires two time periods: the earliest time period and the most recent time period:

$$\text{Percentage Change} = \frac{\text{After} - \text{Before}}{\text{Before}} \times 100$$

A plus or minus sign is used to identify an increase or decrease. Percentages of increase can be any number, but a decrease cannot be more than 100 per cent.

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Incidents can also be described per household or per resident within the geographical area being covered in the analysis. Increases and decreases per household or per resident can be calculated with the same equation.

AVERAGES

Averages are used to describe the central tendency of a set of numbers. The types of averages that can be used are the mean, mode and median, and tend to be used in slightly different circumstances.

The mean is calculated by adding a set of numbers together and dividing this sum by the number of items in the set. The mean is the most commonly used average yet it is adversely affected by an extreme number in the set.

The mean can be used to describe the typical number of night-time burglaries in the local area. If there is little variety in the number of burglaries each night, then the mean is a reasonable way of describing them. However, if one night exhibits a distinctly higher number of offences, then analysts should be cautious about using the mean score. Highlighting the number of burglaries each night is a useful next step; this could be described easily by using a line chart, which would make the abnormal increase easily visible.

The median is the middle number in a set of ranked numbers. The median is not significantly affected by extreme numbers in the set. If the set of numbers is an even number, then the mean average of the two middle numbers is used as the median.

The mode is the most frequently exhibited number in the set. In a very large set of numbers it is possible that there is more than one mode in the set. The mode is also not affected by extreme numbers.

UPPER AND LOWER CONTROL LIMITS

Upper and lower control limits are calculated to identify typical variations in crime and disorder levels in order to understand when crime increases or decreases are atypical of usual seasonal trends.

Upper and lower control limits, and appropriate charts, are an easy tool for assessing the risk of crime and disorder increases, and for communicating this to managers.

Upper and lower control limits are based on standard deviations from the mean average of the data. The standard deviation is a measure of the average distance of a set of numbers from the average.

Two or three years of data are used to calculate control limits and can be most effectively communicated on a line chart which covers calendar years. A line chart makes it easy to see seasonal trends and how much variety there is in the number of offences. Any data falling outside the control limit is displaying a figure outside the expected variation and is, therefore, statistically significant. The extent of this significance will depend on the upper and lower limits used; these are, typically, two standard deviations from the mean, giving a confidence value of 95 per cent.

Z scores are used to show how many standard deviations above or below the mean, performance levels lie. Z scores are calculated as follows:

$$\frac{\text{Performance} - \text{mean}}{\text{Standard Deviation}} = \text{Z score}$$

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CORRELATION COEFFICIENT (PEARSON METHOD)

The correlation coefficient measures similarity between trends. The measure will lie between -1 and 1, depending on how strong or weak the relationship is between the trends. The coefficient can be calculated using MS Excel (Correl in the statistical function category) and the data should be displayed in a scattergram or scatterplot graph. The correlation coefficient has two properties: Strength and Direction. These properties describe different aspects of the relationship between the variables.

Strength

The closer to 1 the coefficient is (whether – or +) the stronger is the relationship. A coefficient of 1 is described as a perfect correlation which has no exceptions. A coefficient of 0 indicates that no correlation exists between the trends.

Direction

This describes how the variables change in relation to each other over the same period of time and is indicated by whether the correlation coefficient is plus or minus. A positive correlation exists when as one of the variables rises, the other one also tends to rise. A negative correlation is seen when one variable rises and the other tends to fall.

Interpreting the correlation coefficient can be done by squaring it; this is called the coefficient of determination which, when multiplied by 100, converts it into a percentage. This is called the percentage of variance.

DESCRIPTION OF INFORMATION

When considering the inclusion of statistical information (whether tabular or graphical) within analytical products, the added value that they give should be assessed. Only graphs and tables that contribute to the communication of the analysis should be included, and perhaps only as an appendix. If included, they must be clearly labelled with a legend, and their interpretation included in the text.

The use of colour to highlight key figures and distinguish between categories should be limited and considered carefully. Scales should be used consistently within reports, unless this is clearly explained.

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Calculating Standard Deviation

1. Calculate the mean

Year	Month	Value	Value – Mean	(Value – Mean) Squared
1994	Jul	69	6	36
	Aug	71	8	64
	Sept	67	4	16
	Oct	92	29	841
	Nov	78	15	75
	Dec	49	–14	196
1995	Jan	63	0	0
	Feb	78	15	225
	Mar	59	– 4	16
	Apr	66	3	9
	Apr	66	3	9
	Total	**692**		1487 / 11 = 135.2 = variance
	Mean	63		Standard deviation = 12

2. Subtract the mean from each figure

3. Square each result

4. Add up all the results

5. Divide by the sample size

6. Find the square root – the result is the standard deviation

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APPENDIX 5
CASE STUDY – OPERATION FLOOD

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CASE STUDY – OPERATION FLOOD

The following case study is a student burglary reduction initiative, developed following the production of a problem profile which revealed a distinct seasonal pattern of victimisation of the university student community.

AIMS AND OBJECTIVES

Crime pattern analysis identified Withington in south Manchester as a vulnerable area for burglaries from dwellings between the months of September and December. A high proportion of this problem was linked to accommodation used by the student population.

The aims and objectives of Operation Flood were to:

- Address this seasonal burglary dwelling problem;
- Combat the anticipated rise in burglary offences, particularly of student accommodation;
- Disrupt criminal activity;
- Reduce or remove targets and opportunities;
- Target persistent offenders.

Operation Flood managed the deployment of extra resources to the target area for a seven-month period (1 September 2006 to 31 March 2007) and employed a combination of policing and partnership approaches for maximum effect.

The approaches included:

- Conventional policing methods;
- General deterrence, such as increasing local public awareness that the risks of offending were high;
- Homewatch and community safety coordinators speaking to members of the local community;
- Proactive recruitment of student crime coordinators;
- Target hardening;
- Specific deterrence, such as attempting to communicate a perception of high risk and penalty to offenders;
- Incapacitation, by removing offenders from society, thereby preventing crimes.

METHOD

In order for comprehensive analysis to take place before, during and after implementation it was imperative to have a solid data collection plan in place prior to the commencement of the operation. The majority of the data used was obtained from existing police systems and specially designed forms that were used throughout the operation.

Pre-Operation Analysis

An analytical document was produced prior to the start of the operation to assist in the operational planning, targeting of hot spot areas, and to provide overall guidance in the deployment of resources (Patrol and Divisional Support Unit) throughout the operation.

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Crime pattern analysis identified that the seasonal trend in burglary in this area could coincide with a similar seasonal trend in robbery offences, both influenced by the high student population in the area. Identifying the potential impact of Operation Flood on robbery figures in the target area at an early stage made it possible to monitor the effect of the operation on this crime type.

Hot spot maps were valuable in showing the areas with the most concentrated burglary problems, but point offence maps revealed that there had been many other burglaries in the target area that did not occur in the hot spot areas. This assisted in identifying zones within the area and was considered when deploying resources.

Zones were prioritised into three categories: red, orange and yellow. This was on the basis of analysis of burglary offences that occurred in the target months in previous years (September and October), and in conjunction with knowledge obtained from the Burglary Analyst and the Burglary Project Officer. Ten zones were identified to maximise the potential for active patrolling. Patrols were deployed to the red zones as a matter of priority, followed by the orange zones and finally the yellow zones.

Specific analysis was conducted for each of the zones, resulting in packages which were to be used throughout the operation. These packages included the following information:

- Zone boundaries – streets that border the zone;
- Vulnerable properties – repeat victimisation theory suggested a list of addresses of properties burgled in the previous September and October;
- Common entry points for burglars;
- Peak time and day for burglaries in the zone during the previous September and October;
- Victim profile and hot products in each zone;
- Prevention point – a map locating a point where a high-profile police vehicle could be parked to act as a deterrent;
- Patrol requirement – specific tasks for patrols to consider;
- Offender descriptions and known addresses in relation to each zone.

RESOURCE DEPLOYMENT MATRIX

Dedicated resources were allocated to Operation Flood, which allowed a range of resource options to be considered throughout the operation. The options involved four staffing levels – the minimum being four officers, with the next three levels adding the Divisional Support Unit, the Volume Crime Task Force and rest day staff. In addition to these resources, PCSOs and Special Constables were included with those allocated to the operation.

To assist in the deployment of the allocated resources, analysis of the times and dates of previous offences was used to formulate a resource deployment matrix. This matrix took into account the prime day and time risk periods identified for each zone, the category of prioritisation for each zone and the level of resources available. It also provided direction throughout the operation and ensured resilience in policing the red zones.

Academic theory was further used to support the identification of criteria for data collection. The interim and final results analysis addressed issues such as:

- Displacement;
- Diffusion;
- Personal Activity Space of Offenders;
- Key characteristics of the area (crime generators, crime attractors and crime enablers) ***Brantingham, P. and Brantingham, P. (1995) Criminality of Place: Crime Generators and Crime Attractors.***

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These theories assisted in developing an understanding of the problems identified within the target area, and further explaining the background, development and growth of this particular hot spot, all of which helped in planning a targeted operation.

Other considerations were:

- Complementary effect from other operations – any effect from simultaneous operations in neighbouring areas;
- Displacement to neighbouring divisions – the effect of the operation on neighbouring divisions and possible displacement of crime;
- Potential impact of the operation on other crimes types.

FOUR-WEEK EVALUATION

To monitor the operational response an evaluation was conducted four weeks into the operation. This assessed the impact of Operation Flood for further deployment consideration, and monitored the effects the operation had on burglary dwelling offences within the operational area.

This report examined the following questions:

- Has there been change?
- Where has there been change?
- Is the operation responsible for the changes, or would they have happened anyway?
- Has there been any displacement?
- What is the forecast?

This report allowed an early evaluation of the operation to ensure effectiveness, and also to identify issues that could be addressed throughout the remainder of the operation. For example, minor displacement of crime was recorded in some surrounding areas.

As a result of the early success identified, a funding application was submitted to extend the operation through to March 2007. This enabled further action during and after the Christmas holiday period, when the area was at further risk from burglary.

ROLE AND RESPONSIBILITY – DEDICATED ANALYST

- Provide a weekly update to Command Team.
- Weekly crime pattern analysis relating to zone burglaries.
- Monitor potential displacement activity.
- Identify repeat victims.
- Locate high-risk zones for effective patrol deployment.
- Data collection throughout the operation.

OPERATIONAL MONITORING, PROGRESS AND EVALUATION

Operation Flood clearly recognised the importance of a prompt relay of information and effective communication between the Burglary Unit based in south Manchester, the analyst and the deployed officers. For this reason a structured operational monitoring, progress and evaluation system was put in place to run throughout the duration of the operation.

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An Operation Flood feedback form was designed to be completed by the officer in case at the end of each shift. The feedback allowed the following information to be collected, analysed and used to make resource decisions for the completion of the operation:

- Types of resources deployed;
- Time, location (zone) and day of deployment;
- Details of arrests, stop checks and street warnings;
- Addresses where insecurities were identified and advice given or where rubbish/rubble was awaiting council collection;
- Time of vehicle deployment at the prevention point.

All feedback sheets were saved on a shared network drive to enable access. This ensured effective evaluation opportunities throughout the operation. The crime records, intelligence reports and stop checks assisted crime series identification and the emergence of hot spots for use via the electronic briefing system.

RESPONSES TO THE ANALYSIS AND OUTCOMES FROM RECOMMENDATIONS/SOLUTIONS

Results Analysis

It was crucial that attempts were made to identify successful tactics and strategies that could be repeated or improved. It was also important to identify those actions that were not particularly effective.

To evaluate the impact of Operation Flood, the following were considered in relation to burglary dwelling in the target area:

- A calculation of the gross effect of the operation;
- Displacement – geographic (radius comparison), target, tactical, crime type, temporal;
- Diffusion;
- Hot spot comparisons – hot spot and secondary hot spot analysis;
- Comparison of the repeated cycle in conjunction with predicted trend and forecast;
- Repeat victimisation;
- Progress monitoring;
- Cost benefit evaluation.

Process Evaluation

This seeks to evaluate the process by which the operational aims were achieved.

HINTS AND TIPS

- Through successful planning, coordination and implementation, the police with the CDRPs and other partner agencies developed and delivered a tactical and strategic response that was sustainable, cost-effective and transferable. It could also be easily adapted and applied to tackle the problem of burglaries occurring in student accommodation within other divisional areas.

- Having the right people in key places was essential and the commitment, organisation and endless enthusiasm of the staff involved, overseen by a committed and motivational manager, were also essential to the success of the operation.

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APPENDIX 6 ABBREVIATIONS AND ACRONYMS

ABBREVIATIONS AND ACRONYMS

3PLEM ..... Police and Organisational, Physical, Psychological, Legal, Economic and Moral/Ethical
5x5x5 ..... Intelligence Grading Matrix Model
5WH ..... What, Where, When, Why, Who and How
ACPO..... Association of Chief Police Officers
ANPR ..... Automatic Number Plate Recognition
ATM..... Automated Teller Machine
BCU..... Basic Command Unit
CCA..... Comparative Case Analysis
CCTV..... Closed-Circuit Television
CDA..... Crime and Disorder Act 1998
CDRP..... Crime and Disorder Reduction Partnership
CPA ..... Crime Pattern Analysis
CRAVED ..... Concealable, Removable, Available, Valuable, Enjoyable and Disposable
CSP ..... Communication Service Providers
CSP ..... Community Safety Partnership
DAAT..... Drug and Alcohol Action Team
DOB..... Date of Birth
DPA..... Data Protection Act 1998
DSTA..... Demographic and Social-Trend Analysis
DWP ..... Department for Work and Pensions
ECHR..... European Convention on Human Rights
EU ..... European Union
FOIA ..... Freedom of Information Act 2000
GPMS ..... Government Protective Marking Scheme
HGV..... Heavy Goods Vehicle
HMRC ..... Her Majesty's Revenue and Customs
HO ..... Home Office
HOLMES 2..... Home Office Large Major Enquiry System
HRA..... Human Rights Act 1998
IT..... Information Technology
MIRSAP ..... Major Incident Room Standardised Administrative Procedures
MO..... Modus Operandi
NADC ..... National ANPR Data Centre
NPIA..... National Policing Improvement Agency
NIM..... National Intelligence Model

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NOS ..... National Occupational Standards
OIA ..... Operational Intelligence Assessment
OIC ..... Officer in Charge
PAT ..... Problem Analysis Triangle
PESTELO ..... Political, Economic, Social, Technical, Environmental and Organisational
PNC ..... Police National Computer
POCA ..... Proceeds of Crime Act 2002
PROCTOR ..... Problem, Cause, Tactic/Treatment, Output, Result
RIPA ..... Regulation of Investigatory Powers Act 2000
SARA ..... Scanning, Analysis, Response and Assessment
SIO ..... Senior Investigating Officer
SMART ..... Specific, Measurable, Achievable, Realistic, Timely
SMS ..... Short Messaging Service
SOCA ..... Serious Organised Crime Agency
SPOC ..... Single Point of Contact
SWOT ..... Strengths, Weaknesses, Opportunities and Threats
TIC ..... Taken into Consideration
T&CG ..... Tasking and Co-ordination Group
VLI ..... Vulnerable Localities Index
VRM ..... Vehicle Registration Mark

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APPENDIX 7 REFERENCES AND FURTHER SOURCES

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FURTHER SOURCES

iQuanta help pages provide information on the types of charts used in measuring crime levels and performance, as well as an overview of some statistical methods. Available from **https://iquanta.net/iQuanta/Default.aspx?tabid=71**

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APPENDIX 8
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