



# research into practice brief

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## Research into Practice Brief 6: Developing a quality cannabis-themed intelligence product

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### Introduction

Police intelligence comes in a range of forms and is designed to address different functional needs, including supporting an agency’s tactical, operational and/or strategic objectives. Intelligence is a collection of different data that has been analysed and interpreted to enhance understanding of a particular issue (in this case cannabis supply and/or demand issues) and that provides suggestions for police managers about effective actions. Precisely what is included in a police intelligence product depends on what issue or problem is identified, the questions that need to be answered, who the target audience is and the availability of data.

Tactical intelligence is the form of intelligence that is most familiar to police and is used to inform specific cases or investigations and so is typically short-term in scope. It is this type of intelligence that usually directly leads to an offender’s arrest and so is frequently viewed by frontline police as the most meaningful and useful type of intelligence (Ratcliffe 2008, 2009b). Operational and strategic intelligence have longer-term foci. While operational intelligence supports police managers in planning local crime reduction interventions and in resource decision-making (often supporting long-term investigations into multiple, similar targets), strategic intelligence evolves over time and is designed to support long-term agency strategies and policies (Peterson 2005, Ratcliffe 2009b). It is strategic intelligence that is the most important for supporting long-term decision-making, planning, crime prevention and reduction objectives.

The research literature indicates that police sometimes struggle to develop good quality intelligence products, particularly for informing operational or strategic decision-making (Goldstein 2003, Ratcliffe 2008, Read & Tilley 2000). There are a range of reasons why this is the case, although common challenges include:

- poor quality of available data;
- insufficiently experienced or skilled analytical staff;
- lack of understanding of the purpose of different types of intelligence, particularly strategic intelligence;
- lack of understanding of police management requirements; and
- inadequate involvement of critical partners (other police and third parties) in the problem solving process.



In this brief the intention is to provide police and analysts with some guidance on what is required to develop a sound operational or strategic cannabis-themed intelligence product, although the general principles can be applied to the development of other intelligence products. The guidance points outlined in this brief are not exhaustive; rather they are what are considered by the author, based on examination of key research literature (Clarke & Eck 2003, Department of the Army Headquarters 2010, Read & Tilley 2000, Tilley & Laycock 2002, Ratcliffe 2008) and experience working collaboratively with law enforcement over several years, to be the basic requirements for generating a meaningful and useful intelligence product.

## What is a quality intelligence product?

The purpose of an intelligence product is to help managers make informed and timely decisions. To do this, it must tell a story that addresses management needs and provide some possible answers and some suggested actions. More specifically, it should include a range of data that has undergone detailed analysis and interpretation that addresses or answers critical questions about a crime problem and provides management with evidence-based guidance for police action. These themes are explored in brief below.

## Sources of data

Quality police intelligence is derived from different data sources. These include quantitative (numerical) and qualitative (non-numerical) sources, including (for example):

- police administrative data (for instance cannabis arrests, data on the size and nature of hydroponic cannabis houses, public complaints about the numbers of visitors to certain residential properties);
- third party data (such as from health, welfare and education agencies, and local government, that may suggest new, or confirm existing, problem areas or groups of people with cannabis-related issues);
- informants and other human sources (who may provide police with useful insights into local-level cannabis supply networks. Such sources could include those involved in cannabis supply, or those who are impacted by cannabis markets, including property owners);
- research (that can be used as the basis for understanding the likely effect of a particular police response to cannabis problems, and/or assisting in providing justification for police management implementation of a given intervention); and
- police experience in dealing with cannabis-related issues.

In the same way that police would rarely use a single piece of evidence to prosecute a case in court, a quality intelligence product is not based on any single type of data either. Rather, it includes a range of data from different sources. This is because no single data source is perfect; each has its own particular strengths and limitations. For example, police administrative data (such as counts of cannabis cautions, arrests or seizures) are easy to quantify and report, although they are easily influenced by changes in law enforcement policy, which may cause difficulty in their interpretation over time. Even if the policy environment is relatively stable, these types of data are inadequate for answering the more complex issues of *why* something is occurring.

Population survey data (for instance, from the Drug Use Monitoring in Australia Program or the Illicit Drug Reporting System) can help to fill this knowledge gap, although the drawback with these types of data is that they reflect specific sub-populations and may not be representative of the general population. Police observation and experience can also go some way towards understanding the complexities of a problem, although an over-reliance



on this type of ‘data’ not only potentially limits police understanding of crime and disorder issues, but results in an inability of police to adequately explain or justify responses to these problems.

The collection of data from multiple sources is important as it helps to validate findings and overcomes the limitations of any single data source. This is known as data triangulation. For the reasons already outlined, reliance on only one or two types of data is likely to produce findings that are biased and of limited reliability, leading to poorly informed decision-making.

## Analysis

At its heart, analysis assists police to identify patterns and relationships in data, to understand what these mean, and to draw conclusions. It also helps police to identify information gaps and, where necessary, make recommendations for additional data collection to fill these gaps.

## Analytical models

There are a number of analytical models that police could use to develop a quality cannabis-themed intelligence product. These include the intelligence cycle (Ratcliffe 2009a) and the 3-i model (Ratcliffe 2008), among others. However, the model that most police would recognise is ‘SARA’, which is a four-step model designed to systematise the way police collect, analyse and evaluate data for effective problem-solving. The four SARA steps are:

- **Scanning** – determining the nature of the problem through identification of patterns and relationships in the data.
- **Analysis** – using all available data to determine the cause of the problem, including who is responsible, who are the victims, where the problem is located and when it most frequently occurs.
- **Response** – determining what should be done about the problem based on the analysis findings and examining what strategies have worked elsewhere.
- **Assessment** – evaluating the impact of the responses on the problem, including an examination of relevant data before and after the responses are implemented (Goldstein & Scott 2001).

## Analytical techniques

Data analysis, whichever form it takes, underpins the response and assessment stages of SARA as it provides the basis for informed decision-making and before and after assessments of police responses. There are a multitude of analytical techniques and tools available to police to enhance the rigour of intelligence products. Four of the best known and useful techniques are frequency analysis, trend analysis, pattern analysis and geospatial analysis. These analytical techniques are designed to establish trends, patterns and associations and can be used separately or in tandem to develop an intelligence product. A brief overview of each analytical technique is provided below, including some suggestions for effectively communicating the results of these analyses in an intelligence product.

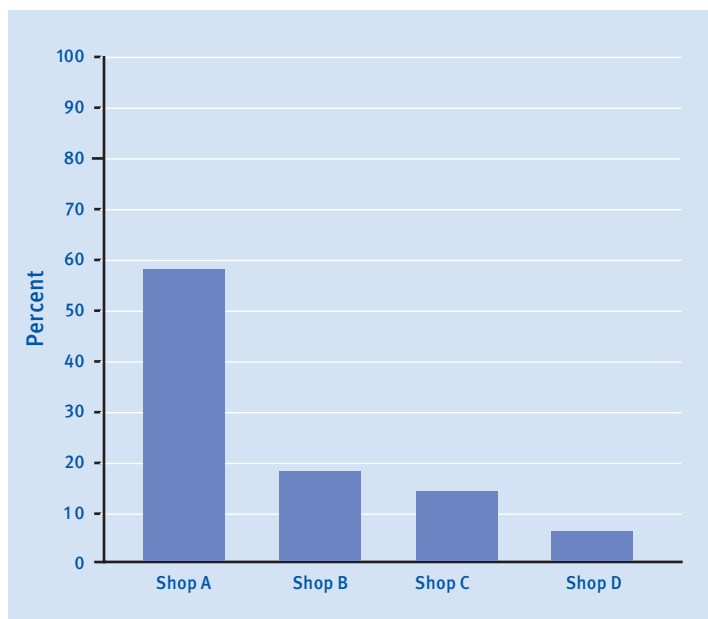
### *Frequency analysis*

Frequency analysis is used to understand how often something happens and thus can assist police to develop interventions that target the problem that most frequently occurs. For example, police in a local area may have systematically collected data through human sources that allows them to quantify where regular cannabis users most often obtain

smoking paraphernalia. Figure 1 is an example of a frequency graph that identifies the proportion of users who obtained cannabis smoking equipment from different locations. It is immediately clear from this graph that ‘Shop A’ is the place where most users purchase smoking equipment, and that far fewer users purchase smoking equipment from other locations. This may indicate that police would get better value in investing resources in addressing any problems arising from Shop A than any of the other three locations. Frequency data are usually best represented using two-dimensional bar graphs.

### Figure 1 Example of a frequency graph

The proportion of cannabis users who obtained smoking equipment by location, January 2011



Source: Hypothetical police dataset [computer file 2011]

#### Top Tips

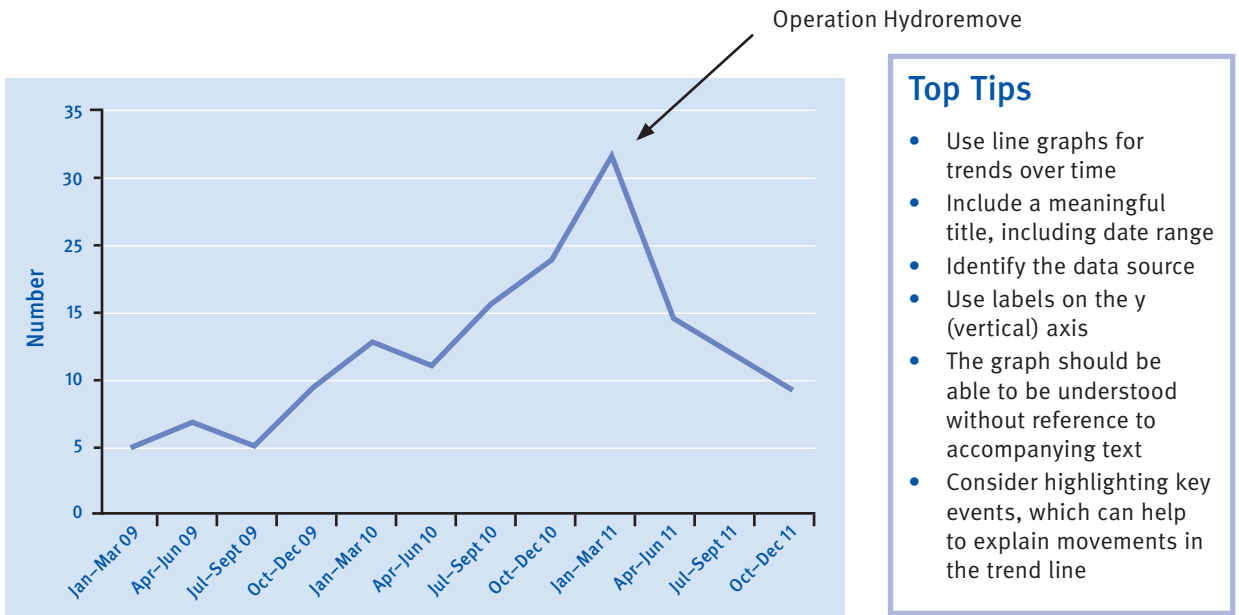
- Use bar graphs for categories. A smaller number of categories (2-6) works best. If there are a large number of categories then consider splitting the data into two or more separate graphs
- Include a meaningful title
- Identify the data source
- Use labels on the y (vertical) axis
- When using percentages, make sure the minimum and maximum values on the vertical axis are set at 0 and 100 percent, respectively. This will ensure that there is no distortion or room for confusion
- The graph should be able to be understood without reference to accompanying text
- Take the view that ‘less is more’. Do not use 3-D or other special effects. These will distract from the findings and message

### Trend analysis

Trend analysis involves the collation and plotting of historical data. While it can be used in the analysis of quantitative or qualitative data, it particularly lends itself to the analysis of quantitative data. Trend data can be collected from police reports, administrative data sources and other historical data sources and are used by police to indicate past crimes and trends. They also form the basis of modelling and predictive analytical techniques. Trend data are critical in the assessment stage of SARA as they permit before and after assessments of police responses. Quantitative trend data are usually best represented with simple line graphs. Figure 2 below is an example of a trend graph, in this case depicting the number of hydroponic cannabis crops detected in a hypothetical residential setting. The trend line indicates that over time the number of hydroponic cannabis crops detected by police in a given city steadily grew over time, something which would have prompted the operation, and then fell away sharply following implementation of a targeted police operation. These data suggest that the fall in the number of hydroponic cannabis crops immediately following the police operation was largely a result of that intensive operation.

**Figure 2 Example of a trend graph**

The number of residential hydroponic cannabis crops in Blogsville, June 2009 – Dec 2011



Source: Hypothetical police dataset [computer file 2011]

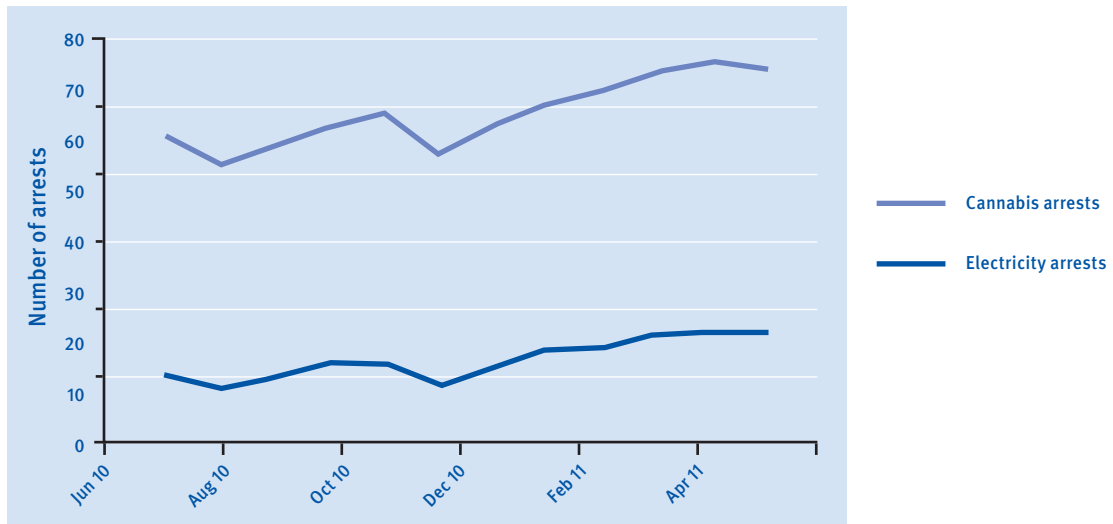
*Pattern analysis*

Pattern analysis is used to establish links between crimes and other incidents that may not, on the face of it, appear connected. For instance, it could be used to establish and quantify the relationship between a courier company operated by a known ‘problem’ group (such as an outlaw motorcycle gang), an irrigation supplies business, and cannabis production and distribution within a certain area. The premise of pattern analysis is that activities undertaken by individuals or groups tend to be repeated. As such, pattern analysis can be used to predict and prevent likely future criminal activities. In policing, pattern analysis is often undertaken in criminal intelligence units using qualitative information obtained through covert operations and human sources.

Pattern analysis can also be used to identify or confirm/reject suspected relationships between two or more quantitative variables. Figure 3 below is an example of pattern analysis using trend data. This figure compares two different offence variables (cannabis supplier arrests and electricity theft arrests). While the absolute values for each trend line are very different, the graph still suggests a close relationship between the offence types because the two trend lines are similar in shape and slope during the same time period. The graph appears to confirm anecdotal evidence that there is a strong relationship between the hydroponic cultivation of cannabis and electricity theft. It would also suggest that to maximise the effectiveness of any action the police would need to target the local cannabis supply issues and electricity theft as a single problem, rather than managing them individually.

### Figure 3 Example of pattern analysis investigating the relationship between two different offence types over time

The number of cannabis supplier arrests and arrests for electricity theft in Blogsville, June 2010 – May 2011



Source: Hypothetical police dataset [computer file 2011]

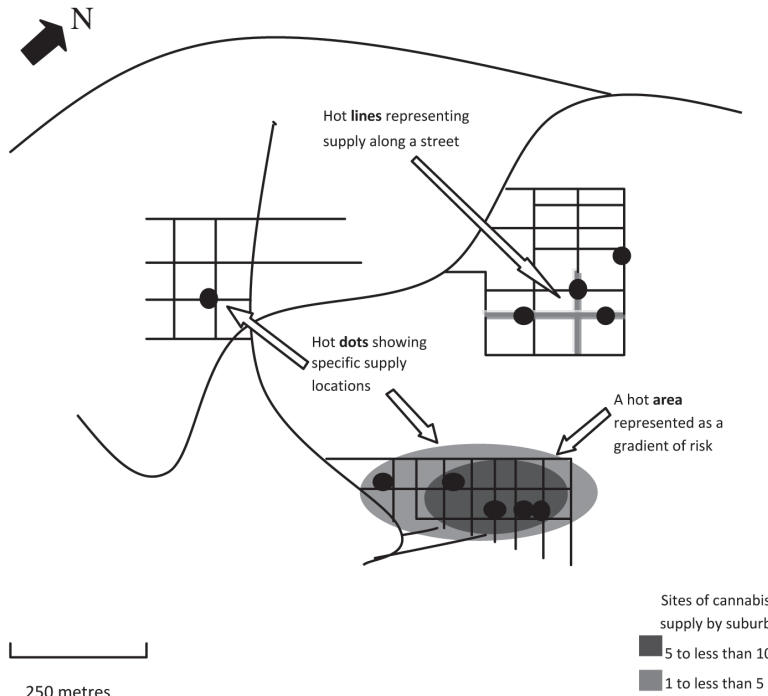
#### *Geospatial analysis*

Geospatial analysis examines entities using their topological, geometric, or geographic properties to describe and understand their relative distribution in space and time. Geospatial analysis can use any data or information where the location of that entity or feature is specified. This may include event-based data like crime incidents, images (for example, photographs of bush cannabis crops), and data that have been amalgamated to particular map units (such as crime events within a police district). However, in policing it is most often used to develop maps of crime ‘hot spots’ and geographical profiling of specific offences or offenders. Figure 4 is an example of a geospatial hot spot crime map. The map indicates that there are specific locations within the hypothetical town that are known by police to be sites of regular cannabis supply (represented by the black spots), but that there are also areas that have a more dispersed supply problem (along a small number of streets in the north of the town and also across a larger area in the south of the town). This suggests the need for a suite of different interventions that may range from highly specific and targeted short term responses, to broader, longer term interventions.

Geospatial analysis can also be used by police to test hypotheses or assumptions about the relationship between different variables; for example, the potential link between cannabis supply in a particular regional location and antisocial behaviour in that same location. As for any other type of analysis, the results generated from geospatial analysis are only as good as the data that are fed into the analysis. At a local police level, high quality geospatial crime analysis requires the specific location (latitude and longitude and street address) and time of the offence to be accurately specified. For most purposes, crime data reported at the suburb or postcode level is insufficient to enable detailed geospatial analysis.

**Figure 4 Example of a geospatial ‘hot spot’ map**

Cannabis supply in Blogsville, January to March 2011



Source: adapted from Clarke & Eck 2003

**Top Tips**

- Keep maps as simple as possible. Include essential information only
- Always include a scale bar and a north arrow
- Include a simple title. The type of crime, the place, and the date range is useful
- Identify the data source
- Use meaningful colour gradations to show intensity of hot spots
- Use the correct dimension of crime concentration: dots for places/victims; lines for concentrations along roads; and areas for dispersions, such as neighbourhoods
- Consider including a legend. A legend is essential if you are using symbols or shading
- The graph should be able to be understood without reference to accompanying text

**How to bring it all together**

Clarke and Eck (2003) outline a useful problem-solving framework built upon the SARA model that can be used to guide development of a quality intelligence product (Table 1). The framework is not designed to be followed prescriptively, although it covers areas that are considered important to address in some way. Precisely what is included in an intelligence product depends on the complexity of the problem, the amount of time available to develop the product and (most importantly) the needs and concerns of police management. The framework includes a range of issues/questions that are useful to consider and that underpin the following four themes:

- What is the nature of the problem? (scanning)
- What causes the problem? (analysis)
- What should be done about this problem? (response)
- Has the response brought about a reduction in the problem? (assessment)

**Table 1 Problem-solving framework to guide development of a quality intelligence product**

1. What is the nature of the problem?	2. What causes the problem?
<ul style="list-style-type: none"> <li>Overall definition of the problem</li> <li>Systematic description of evidence about the problem:                             <ul style="list-style-type: none"> <li>time trend of crime trends</li> <li>geographic analysis</li> <li>types/nature of harm</li> <li>evidence from other police agencies/ research</li> </ul> </li> <li>Implications, including questions that may need answering and partners who may need to become involved</li> </ul>	<ul style="list-style-type: none"> <li>Systematic description of the problem that answers the following questions:                             <ul style="list-style-type: none"> <li>Is the problem enduring or new?</li> <li>What brings the offenders and targets together at the same places?</li> <li>What behaviours are each engaged in?</li> <li>Why don't others step in to prevent these encounters?</li> </ul> </li> <li>Implications for general responses that address:                             <ul style="list-style-type: none"> <li>Offender access or control</li> <li>Victim/target behaviours or protection</li> <li>Facility/place access or management</li> </ul> </li> </ul>
3. What should be done about this problem?	4. Has the response reduced the problem? (where applicable)
<ul style="list-style-type: none"> <li>Based on conclusions from steps 1 and 2, systematic description of response strategy:                             <ul style="list-style-type: none"> <li>Increasing risk/effort</li> <li>Reducing rewards, provocations or excuses</li> <li>Who will carry out actions, when and where?</li> <li>Additional resources required</li> </ul> </li> <li>Implications and anticipated outcomes:                             <ul style="list-style-type: none"> <li>direct results</li> <li>displacement</li> <li>diffusion</li> <li>other effects</li> <li>how evaluation should be undertaken</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Why the response was expected to be effective</li> <li>Systematic description of assessment:                             <ul style="list-style-type: none"> <li>Was the response implemented as planned?</li> <li>Did the problem change?</li> <li>Why it is likely the response was a direct cause of change</li> <li>The magnitude of displacement, diffusion and side effects</li> </ul> </li> <li>Implications for further action:                             <ul style="list-style-type: none"> <li>Is this problem-solving effort complete?</li> <li>What further actions are necessary?</li> <li>Should further analysis be conducted and the response changed?</li> </ul> </li> </ul>

Source: Adapted from Clarke & Eck 2003

### Some concluding points

Good quality intelligence products do not necessarily need to be long, although this may be necessary in circumstances where the problem is very complex, requiring detailed analysis of a range of data sources and leading to recommendations for multiple intervention strategies. As a general rule it is far better that an intelligence product be succinct (around five or six pages) and summarises the most important issues, rather than being filled with many pages of descriptive information, tables, figures and maps that lead in no particular direction and may be more confusing than helpful. Useful things to include in an intelligence product that aid communication include:

- a clear title about what the intelligence product is about;
- a dot point list of six to eight of the most significant issues or findings highlighted at the front of the document;
- simple and relevant subheadings to aid navigation through the document;
- a brief summary of the major issues under each subheading. Dot point summary paragraphs are useful and are often more easily absorbed than undelineated narrative;

- use of a small mix of appropriate tables, graphs and figures that convey the most critical messages;
- a brief summary of findings. This will include an outline of any previous police intervention that was used to address the problem, that may or may not have worked (including explanation as to why/why not), and the implications of these for management, including issues in need of short, medium and long-term action; and
- a brief summary of issues and findings included in the product and a summary of possible responses.

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