

Crime Analysis Readiness Assessment (CARA) Tool Methodology, Instrument, and Sample Results

To assess the readiness of law enforcement agencies to engage in crime analysis (CA) at the regional (or local) level, a systematic assessment of organizational resources and support is vital. The purpose of this document is to provide guidance on assessing readiness to implement crime analysis. This instrument was partly adapted from a Crime Mapping Readiness Self-Assessment developed by Wartell, Groff, and Thomas (1999). A review of the literature did not reveal any other readiness assessments developed for crime analysis, and the instrument developed by Wartell and colleagues was focused solely on crime mapping, which is only one important tool in the crime analysts' toolbox. As such, many of the items developed by Wartell et al. were modified to suit the focus of crime analysis more generally. Note that the items on this assessment have not been tested for validity or reliability but provide guidance for this process. That is, this methodology is presented as one possible starting point that has been field-tested and found to be informative to a regional initiative during the formative and evaluative stages.

This assessment is carried out through a structured interview and takes approximately one hour to administer face to face. It also has been successfully administered via an online survey system. Face-to-face administration is recommended to facilitate a dialogue that cannot be fully replicated with an online approach; however, online administration of the assessment is sometimes necessary because of time and resource constraints. In addition to its utility as a formative tool, the Crime Analysis Readiness Assessment (CARA) also can be used at multiple time points to measure changes resulting from initiatives to promote regional crime analysis implementation. The items focus broadly on three areas that are critical to effective implementation of crime analysis in an agency. These areas are as follows:

1. Support for crime analysis (e.g., administrative and organizational)

Support is most critical. In order for an agency to adopt a new practice such as crime analysis, support from all levels of the organization is vital. However, support from the agency head (or other top manager) level is most critical, since the agency head is typically the final decision maker in terms of changing organizational philosophy, structure, processes, and the allocation of resources. In addition, it is critical that the potential producers and end users of crime analysis products have substantial buy-in. Without an informed consumer (ranging from a street officer to a manager), the utility of crime analysis will be lost. Even more important, effective crime analysis requires two-way communication between users and analysts to ensure that crime analysis products are useful to the end user and to communicate the importance of quality data collection to street officers.

2. Data (e.g., accuracy, completeness, history of use, partner agency capacity)

Data is also of critical importance. Crime analysis products can only be as complete, accurate, and informative as the data being analyzed. A thorough empirical analysis of each agency's data completeness and accuracy should be considered a routine self-

assessment procedure for all police agencies. Regional analyses can compound the difficulty of acquiring and merging data. Records management and other data systems can vary dramatically across law enforcement agencies, and gaining a clear understanding of data definitions, collection protocols, etc. is vital to conducting meaningful cross-agency analyses.

3. Resources (e.g., staff, information technology such as crime analysis software, IT/IS capacity, and partnerships with other agencies)

Resources that facilitate effective crime analysis—such as staff, software, and hardware—are assessed. Resources, of course, are critical to implementing crime analysis but are less important than support and data. Resources can be allocated, and regional partnerships can leverage existing resources, but without support from within the organization and useful data, crime analysis resources are useless. The full CARA instrument and the ordinal scoring protocol are provided in Appendix A.

Thus, the purpose of the readiness assessment is to gauge an agency's readiness to perform crime analysis, which is often confused with more specific analytic practices such as intelligence analysis or crime mapping.

To clarify, and for the purpose of this document, we adopt the International Association of Crime Analysts' definition of crime analysis (2014b, p. 2):

A profession and process in which a set of quantitative and qualitative techniques are used to analyze data valuable to police agencies and their communities. It includes the analysis of crime and criminals, crime victims, disorder, quality of life issues, traffic issues, and internal police operations, and its results support criminal investigation and prosecution, patrol activities, crime prevention and reduction strategies, problem solving, and the evaluation of police efforts.

Several primary decisions will need to be made about the methods to be used to collect an agency's readiness data. First, who will be collecting the data? This assessment can be conducted either by members of the police agency itself or by a third party. While it may be optimal for a research partner to collect, analyze, and report the data for a police agency, it is possible for agencies to use this tool on their own. However, agencies that choose to use it on their own need to be aware that bias will be introduced. The most likely hazard of collecting the data within an agency is that subordinates may not answer honestly; rather, they will try to answer in a manner that they believe is desirable to their superiors. The use of web-based surveys may overcome this issue, but only to a limited extent.

The readiness assessment can be administered in either a face-to-face or an online format. It is important to note, however, that only through a face-to-face interview will an interviewer be able to probe deeper about certain questions. For example, the issue of changing RMS systems may emerge during the interview process, and further questioning will elicit a great deal more information about the nature of that new RMS than would be discovered with the online version of the same survey instrument. However, when a large number of readiness

assessments are conducted across a large region and across multiple points in time, the online format is much more efficient and provides automatic data entry. In other words, both methods have their benefits and drawbacks, and regional efforts should carefully choose the method that best suits their purposes.

The nature of the questions in the assessment range from very general (e.g., organizational culture) to very specific (e.g., software licensing agreements). It is unlikely that a single individual will know the answers to all the questions, so it is recommended that a range of people be contacted to complete all of the information. IT personnel, for example, will have the answers to many of the hardware and software questions, but they may know little about an organization's culture of interagency information sharing. Focus group discussions might be used as a means of collecting data, but be wary that they may stifle discussion because of the hierarchical nature of police organizations.

Using the Instrument

The instrument can be used to inform a regional effort to improve the CA capabilities of all agencies in a particular regional effort. As such, individual agency responses and scores can be calculated and presented in comparison with those of other agencies. This allows for individualized planning, technical assistance, resource allocation, and training as well as a regional perspective. Individual items can be examined to assess individual agencies' strengths and weaknesses across each domain. This is critical to prioritize resources within the regional effort. In addition to looking at the individual item scores of individual or groups of agencies, index scores can be compiled to provide composite measures for comparison purposes. Note that index scores can be calculated only for the ordered responses.

Appendix A

Crime Analysis Readiness Assessment Instrument

Instructions: The following list of questions is designed to provide a preliminary evaluation of your agency's readiness to implement crime analysis (CA). The assessment is meant to help agencies evaluate their current technical resources, staff capabilities, data availability, and organizational capacity to support a crime analysis function. Please keep in mind that the participating agencies range broadly in their use of crime analysis, so some questions may not seem applicable to your agency but are important to ask to gain a baseline understanding of your agency's current readiness. If you do not feel that you are able to answer all of the questions, please ask for input from others in your agency who have knowledge about the other topics.

What is the name of your agency?

Does your agency use quantitative data to guide decision making?

- No (1)
- Yes, but only rarely (2)
- Yes, regularly for some parts of the organization (3)
- Yes, quantitative data is routinely used at all levels of the organization (4)

Is your agency using data for strategic purposes (e.g., to support decision making to police officers in the most effective and efficient manner, such as to optimize resource allocation or to support problem solving and crime reduction)?

- Never (1)
- Rarely (2)
- Sometimes (3)
- Often (4)
- All of the time (5)

Is your agency using data for tactical purpose (e.g., to identify crime trends, clusters, and patterns to assist operational personnel)?

- Never (1)
- Rarely (2)
- Sometimes (3)
- Often (4)
- All of the time (5)

Is your agency using data for administrative purposes (e.g., to support the financial, organizational, legal, and political decision making of the police organization)?

- Never (1)
- Rarely (2)
- Sometimes (3)
- Often (4)
- All of the time (5)

Does your agency have a computerized records management system (RMS)?

- No (1)
- Yes, but cannot export data (2)
- Yes, can export data to text file (3)
- Yes, integrates directly with crime analysis system (4)
- Yes, directly integrates with GIS (5)

Does your agency use a CAD system?

- No (1)
- Yes, but cannot export data (2)
- Yes, can export data to text file (3)
- Yes, integrates directly with crime analysis system (4)
- Yes, directly integrates with GIS (5)

Are your data management systems primarily managed in-house or by an external agency?

- External agency (1)
- Managed in-house (2)

Is your IT department able to provide data in a timely manner?

- No (1)
- Yes, moderate response time (2)
- Yes, very responsive (3)

Does your IT department have the capacity to create custom applications (e.g., routine query tools, data mining)?

- No (1)
- Yes, some capacity (2)
- Yes, high capacity (3)

Are other agencies in your jurisdiction capable of sharing data with you (e.g., probation, other law enforcement agencies, DMV)?

- No (1)
- Yes, but they cannot export electronic data (2)
- Yes, they can export data to an electronic file (3)
- Yes, their data integrates directly with our crime analysis system (4)

Is your agency collecting and using NIBRS data?

- No, not collecting NIBRS (1)
- Yes, but not regularly or completely (2)
- Yes, reporting regularly to FBI (3)
- Yes, regularly reporting NIBRS and using NIBRS data for crime analysis (4)

Does your agency maintain an electronic database of intelligence data?

- No intelligence data is gathered (1)
- Intel data is stored only in paper format (2)
- Some intel data is stored electronically by investigators (3)
- Comprehensive intel data is stored electronically (4)

Does your agency perform routine evaluations of police operations?

- No (1)
- Yes, supervisor evaluates operations (2)
- Yes, evaluations of police interventions are performed occasionally using quantitative data (3)
- Yes, evaluations of police interventions are performed regularly using objective methods and quantitative data (4)

Does your agency have an initial project planned to demonstrate the value of crime analysis?

- No (1)
- Yes (2)

Does another city or county agency with which you routinely partner already use crime analysis?

- No (1)
- Yes, but with little experience (2)
- Yes, multiple departments with moderate levels of experience (3)
- Yes, we have experienced departmental partners, and an experienced crime analyst is available (4)

Do you presently own crime analysis software in your agency?

- No (1)
- Yes, but it is not used (2)
- Yes, it is used infrequently (3)
- Yes, used regularly (4)

What are the name(s) and purposes of the crime analysis software products your agency owns (e.g., ArcView for GIS, Excel for summary statistics, proprietary software for data storage)?

What is (are) the license agreements for the CA software you own?

- PD owns/maintains all licenses (1)
- Licenses owned/maintained by other agency (e.g., county planning) (2)
- PD owns software, but not maintained (i.e., upgrades not purchased) (3)
- Other (4)
- Unknown (5)

What type of hardware does your agency use?

- Outdated PCs (1)
- Up-to-date stand-alone PCs (2)
- Networked PCs (3)
- Combination of networked systems and laptops in patrol cars (4)

Do you have staff members designated for crime analysis?

- No (1)
- Yes, part-time, no formal crime analysis training (2)
- Yes, part-time, with formal crime analysis training (3)
- Yes, full-time, no formal crime analysis training (4)
- Yes, full-time, with formal crime analysis training (5)
- Other

How many staff members (FTEs) are dedicated to CA?

If you have CAs, what are their levels of experience?

- No experience in CA (1)
- Minimal experience (2)
- Some experience (3)
- Extensive experience (4)

Are your crime analysts . . .

- Civilian (1)
- Sworn (2)
- Combination of civilian and sworn (3)

Is there ongoing, permanent funding dedicated to crime analysis?

- No (1)
- Yes, for purchase of hardware and software only (2)
- Yes, for hardware/software and personnel (3)
- Yes, for purchase of hardware/software, personnel, and training (4)

What is the level of your organizational support for crime analysis (check all that apply)?

- None, my personal interest (1)
- My immediate supervisor (2)
- Management (3)
- Grassroots (community, politicians, officers, etc.) (4)
- Support of chief (5)

How do you hope CA will benefit your agency? How will it be used, and what are the expected outputs?

What specific trainings have your analyst(s) received to conduct crime analysis?

What level of training do officers in your agency typically receive on the following topics?

	No training (1)	Minimal level of training (2)	Moderate level of training (3)	Advanced level of training (4)
Community policing (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Crime/intelligence analysis (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Evidence-based policing (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Handling classified information (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intelligence-led policing (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Problem-oriented policing (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The SARA method (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What are the primary obstacles you see to implementing or improving crime analysis in your agency?

What organizational changes will be necessary to implement crime analysis in your agency?

How committed is your agency to implementing crime analysis in your department and regionally?

_____ Percent committed to developing CA capabilities in our organization (1)

_____ Percent committed to participating in the development of a regional CA capacity (2)

_____ Percent commitment to sharing crime data with regional partners (3)

Sample Agency Results

What follows are the results of assessments of two police agencies with vastly different levels of readiness to implement crime analysis. Reports for each agency were divided into the following areas: support, data, resources, and some potential recommendations. Data presented here are for illustration purposes only and do not necessarily represent a specific police department.

CITY A – Crime Analysis Readiness Assessment

The City A PD is a leading agency with regard to crime analysis capability and has an active crime analysis unit with personnel who are involved with national crime analysis organizations. A combined total of 2.5 FTEs are dedicated to crime analysis with others in the office being assigned to performing other analytic tasks for the department. City A has around 200,000 residents with 1,900 violent crimes known to police (i.e., 950 violent crimes per 100,000 persons) which is about double of the national violent crime rate (at the time).

Support: The four questions presented in Table 1 measure the City A PD’s culture of support for empirical analyses. In essence, these items measure the agency’s typical practices in using data to guide decision making. While the PD scored higher on the Support Index than the mean score on these individual items, it is clear that data is only occasionally used and only in some parts of the organization. The second block of questions measure the agency’s use of evaluation research to support police operations and to demonstrate the utility of crime analysis. The results indicate that the PD does not perform routine evaluations of police operations, but they do have plans to demonstrate the value of CA and that the majority of the support was at the grass-roots and managerial levels.

Table 1. Support for Crime Analysis – City A

<i>Question</i>	<i>Response</i>	<i>Index value</i>
Agency uses quantitative data to guide decision making	Yes, regularly for some parts of organization	2
Agency uses data for strategic purposes	Sometimes	2
Agency uses data for tactical purposes	Sometimes	2
Agency uses data for admin purposes	Sometimes	2
	Support index total	8 (M=5.75)
Agency performs routine evals of operations	No	0
Project planned to demonstrate value of CA	Yes	1
	Evaluation index total	1 (M=1.13)
Organizational support for CA	Grass-roots, management	

Note: M indicates the mean (average) index score for all eight agencies.

Data: Table 2 reveals that the PD has very good data availability for CA. In fact, many of the PD systems already integrate directly with their CA and mapping systems. In addition, the PD has strong capacity in that it manages its own data systems and has some capacity to develop custom applications to support CA. City A PD scores high on the data availability index. Data availability is a substantial strength for the PD crime analysis unit.

Table 2. Data availability- City A

<i>Question</i>	<i>Response</i>	<i>Index value</i>
RMS data availability	Yes, integrates with GIS	3
CAD data availability	Yes, integrates with GIS	4
Data management in-house	Yes	1
IT department is responsive	Very responsive	2
IT can create custom applications	Yes, some capacity	1
Data available from other agencies	Yes, can export to data file	2
Collect NIBRS data	Yes, regular reporting and using for	3
Intel data stored electronically	Stored electronically by investigators	2
	Data index total	18 (M=12.38)

Note: M indicates the mean (average) index score for all eight agencies.

Resources: The PD scored very high with regard to existing CA resources as well, with a resource index of 20 compared to a regional agency mean of 9.03 (Table 3). The only potential weakness in this category is the agency is not contiguous to other agencies which are capable of partnering in CA and data sharing. Compared to other cities, City A has a substantial strength in having permanent funds dedicated for the CA unit. Resources are also a substantial strength.

Table 3. Crime Analysis Resources – City A

<i>Question</i>	<i>Response</i>	<i>Index value</i>
Partner agency uses CA	No	0
Agency owns CA software	Yes, used regularly	3
Agency hardware profile	Networked and patrol cars	4
Staff designated for CA	Yes, full time with training	4
# of FTEs dedicated to CA		2.5
Civilian or sworn analysts	Civilian	1
Permanent funds dedicated for CA	Yes, for hardware, software, and personnel	2
	Resource index total	16.5 (M=9.03)

Note: M indicates the mean (average) index score for all eight agencies.

Potential Recommendations Based on Results: A potential area of improvement for City A PD based on these results is to make the use of crime analysis and data-driven decision making a more routine practice within the organization. This suggestion is supported by the results indicating that “bigger consumer base” and “support at all levels of the organization” are currently limiting the CA capacity of the agency. Other potential recommendations include:

- Develop demonstration projects (e.g., CA briefing book) to market the utility of CA are recommended at all levels of the organization.
- Support the CA unit with specialized software training.

- Given the progress APD has made in developing its CA capacity, it would be beneficial to some the other analyst in the region to “shadow” City A PD analysts.

City L – Crime Analysis Readiness Assessment

The City L PD serves a relatively small city and has limited resources. As such, LPD does not have a history of dedicated CA staff. The City of L has 70,000 residents with 350 violent crimes known to police for a violent crime rate of 500 per 100,000 population, very similar to the national violent crime rate at the time.

Support: The items measuring the agency’s culture of using empirical data for decision making reveal a moderate level of support for CA in Table 1. Quantitative data is rarely used to support strategic, tactical, and administrative purposes, and to guide agency decision making. These responses indicate that the strength of CA to support agency functions has not yet been fully realized. With regard to evaluations, described in the second block of Table 1, it is also found that assessments of police operations have not been used routinely to date. Support for CA is primarily at the Chief and management level.

Table 1. Support for Crime Analysis – City L

<i>Question</i>	<i>Response</i>	<i>Index value</i>
Agency uses quantitative data to guide decision making	Yes, rarely	1
Agency uses data for strategic purposes	Rarely	1
Agency uses data for tactical purposes	Rarely	1
Agency uses data for admin purposes	Rarely	1
	Support index total	4 (M=5.75)
Agency performs routine evals of operations	No	0
Project planned to demonstrate value of CA	No	0
	Evaluation index total	0 (M=1.13)
Organizational support for CA	Chief; mgmt	

Note: M indicates the mean (average) index score for all eight agencies.

Data: The data index measuring data availability to support CA indicates that this agency has weaker data availability than the average agency in the region. However, City L PD does have a very responsive, in-house IT person (Table 2). The biggest limitation with regard to data is the lack of data sharing across agencies and the fact that intelligence data is not stored electronically.

Table 2. Data availability – City L

<i>Question</i>	<i>Response</i>	<i>Index value</i>
RMS data availability	Yes, can export files	2
CAD data availability	Yes, can export files	2
Data management in-house	Yes	1
IT department is responsive	Very responsive	2
IT can create custom applications	No	0
Data available from other agencies	No	0
Collect NIBRS data	Yes, regularly	2
Intel data stored electronically	No	0
	Data index total	9 (M=12.38)

Note: M indicates the mean (average) index score for all eight agencies.

Resources: The range of CA resources measured by the assessment (Table 3) indicate that City LPD has substantial deficiencies that need to be addressed. In particular, funds are needed to support a dedicated, trained analyst and the purchase of software.

Table 3. Crime Analysis Resources – City L

<i>Question</i>	<i>Response</i>	<i>Index value</i>
Partner agency uses CA	No	0
Agency owns CA software	No	0
Agency hardware profile	Networked pcs	3
Staff designated for CA	No	0
# of FTEs dedicated to CA		0
Civilian or sworn analysts	Sworn	0
Permanent funds dedicated for CA	No	0
	Resource index total	3 (M=9.03)

Note: M indicates the mean (average) index score for all eight agencies.

Potential Recommendations Based on Results: Based upon the results of the assessment, the strengths of City L PD include a core group of people with interest in advancing CA, a responsive IT department, and GIS available from the city. In addition, the move to more substantial empirical analyses is supported by the management level of the PD. Primary deficits include limited resources in terms of staffing, software, and dedicated funding. Thus, it is recommended that a commitment to a shared analyst position with the neighboring agency be explored and City L would also benefit by the purchase of CA software such as CrimeView or ArcGIS.