Review of Police Crime Data

Statistics New Zealand
16 February 2015

Executive Summary

This is a report of the results of a review of the quality of police crime data undertaken by Statistics NZ at the request of the NZ Police.

The purpose of the review was to determine if the right infrastructure and systems were in place to assure the data quality and to recommend measures that might be needed to bring them up to a standard needed to support the production of Tier 1 crime statistics.

The review assessment has employed a framework developed by the United Kingdom Statistics Authority (UKSA) to assess the quality of administrative data used in the production of official statistics.

A small review team interviewed NZ Police staff involved in the collection, processing and management of crime data, obtained documentation pertaining to those processes, and visited national and regional centres to observe front line data collection and processing.

The review team acknowledges the cooperation and assistance of NZ Police staff in discussing issues and responding to requests for documentation and information.

Key findings & recommendations

The statistical infrastructure, systems and processes that NZ Police has in place appear suitable to assure the quality of Tier 1 statistics. However, relevant documentation is not published.

Recommendation 1: Complete and publish documentation describing the data collection and management systems, processes and standards, to demonstrate transparency and engender public confidence. (p10)

Some crimes, like burglary, are hard to code accurately and consistently, because of difficulties in translating the relevant law into suitable operational coding definitions.

Recommendation 2: To improve the accuracy of offence type coding consider:

a) ***Integrating the National Recording Standard into an appropriate coding tool to automate the process as much as possible, and better manage the exercise of coder judgement.***

b) ***Reviewing the process around 'hard-to-code' examples like burglary to determine that sufficient criteria data are available to determine an accurate and consistent decision, and minimise the exercise of subjective coder judgement. (p14)***

The Police have in place suitable strategies, frameworks, plans and practices to monitor and assure the quality of the data throughout the data lifecycle. While there is regular auditing of the system used to record and classify crimes (NRS), there is no regular reporting mechanism in place on other aspects of the data lifecycle.

Recommendation 3: Institute regular comprehensive monitoring and reporting across the data lifecycle. (p14)

Statistical quality audit arrangements need development. Of note, there is little analysis undertaken to assess statistical quality and no established program to compare Police crime statistics with other statistical sources.

Recommendation 4: Institute a program of statistical analysis that adds value to the existing crime statistics, as well as building understanding of the properties and quality of the data. (p14)

Recommendation 5: Make better use of the NZ Crime and Safety Survey to compare and benchmark Police crime statistics. (p15)

There is little evidence in New Zealand to suggest any endemic issues associated with the initial collection and recording of crime data that would cast doubt on the general quality of Police crime statistics. A recent highly publicised incident of re-coding of burglary statistics in an area in the Counties Manukau district, while regrettable, does not indicate an underlying endemic issue.

Next Steps

The report has made five recommendations which, if implemented, will help the Police to achieve a maturity level of quality assurance commensurate with the importance of the statistics in decision-making and in the level of interest that the public attach to them.

All of the recommendations need to be championed by the Police, and most can be implemented directly by them.

Implementation of recommendations 4 and 5 will require the support of the wider Justice Sector and the input of researchers and analysts.

Statistics New Zealand could provide further advice and assistance in implementing recommendations 1, 2, 4, and 5. As well as providing direct technical statistical advice, Statistics NZ might also usefully work with Police to establish a Community of Practice with other agencies that produce official statistics from administrative data, and which experience similar issues and risks.

Statistics NZ might usefully consider this in the broader context of its Official Statistics System leadership program, where it has already established fora and programs to address Tier 1 compliance.

Introduction

Police crime statistics are based on information that is reported to the Police and investigated by them. For this reason, such statistics are generally referred to as 'reported crime', acknowledging that some crimes will not be reported to the Police, for various reasons.

This report is concerned with those crimes that are reported to the Police. The focus of the report is on understanding how crimes are counted and classified for statistical purposes, and the systems that are in place to ensure that this is done accurately and consistently.

Crime statistics are of high public interest and those relating to offences, offenders and victims are designated as *Tier 1 Official Statistics*, "the most important national statistics, essential to understanding how well New Zealand is performing." (Statistics NZ, 2012, p1) The level of public trust and confidence required of these statistics means that they need to meet high standards of accuracy and integrity.

Reviews of subject matter statistics are undertaken by the Government Statistician from time to time to ensure that the right information is being produced (relevance) and that the statistics are fit for use (quality).

The suitability of Police crime statistics for Tier 1 status was initially assessed in 2006 (Statistics NZ, 2006) and a wider review of crime and justice statistics was completed in 2009 (Statistics NZ, 2009). Both reviews pointed to the need to improve the manner in which the source data are collected and prepared for statistical processing. Consequently, there has been investment by NZ Police to improve the statistical infrastructure (classifications and data standards) and the systems that support the collection and processing of the data.

Recently there has been some public debate about the quality of the data used to produce the statistics. Such debate inevitably raises questions about the level of trust and confidence that the public can have in the statistics. Police are also proposing to introduce over the next 12 months an improved set of statistics built around victims and offenders, underpinned by improved statistical infrastructure and systems.

Consequently, it is an opportune time to review Police's statistical infrastructure, in particular the suitability of the organisation, infrastructure and systems to support the compilation of Tier 1 official crime statistics.

A terms of reference for the review is contained in appendix 1.

What level of quality assurance is needed for Police crime data?

Like all administrative data, the prime purpose of Police data is to assist them to carry out their functions. Consequently, Police data primarily reflect the nature of policing in New Zealand. This means that the incidence of crime, as viewed through the lens of Police data, will to a large extent be affected by the resources that the Police have at their disposal and the manner in which those

resources are deployed. Furthermore, crime incidence is also affected by the propensity of citizens to report crimes.

The use of Police data to monitor societal levels and trends in crime is a function of how well Police reports of crime alone are able to serve the Tier 1 monitoring purposes.

This report aims to ascertain the adequacy of the data systems, infrastructure and quality assurance measures to produce official crime statistics.

In considering the adequacy of the data, the other relevant question is how good do the data have to be to meet the Tier 1 needs?

Official statistics need to be 'fit for use.' However, Tier 1 official statistics require a higher level of quality assurance than other official statistics because of the degree of public interest they attract and their use in informing important decisions.

The quality standards required of Tier 1 statistics are documented in the *Principles and Protocols for Producers of Tier 1 Statistics.* Protocol 1 on quality requires that "official statistics are produced using sound statistical methodology and relevant and reliable data sources, and are appropriate for purpose." The eight elements of the quality protocol address: professionalism, good management practice, continuous improvement, relevance, accuracy, timeliness, consistency and interpretability. The elements most relevant to the objectives of this review are: professionalism, good management practice, continuous improvement, accuracy and consistency (Statistics NZ, 2007, pp 15-23).

The UK Statistics Authority also provides useful guidance to address this question. To ascertain the appropriate level of quality assurance required for official statistics derived from administrative data, three levels of 'QA maturity' are proposed, associated with different mixes of levels of public interest in the statistics and public concern in data quality (UK Statistics Authority, 2014, pp24-31).

Police crime statistics in New Zealand, as in the UK and most other countries, attract relatively high levels of public interest and concern about the data quality. This indicates that the highest level of QA maturity (M3) should apply, requiring that the "Statistical producer investigates the administrative data QA arrangements and results of independent audit, and publishes detailed information about the assurance and audit." (UK Statistics Authority, 2014, p30).

In general, areas of practice relating to quality assurance and audit are:

1. Operational context and administrative data collection
2. Communication with data suppliers
3. Suppliers QA principles standards and checks
4. Producers QA investigations and documentation

NZ Police is the data supplier as well as the statistical producer, so all four elements are pertinent. The key QA elements can be summarised as:

1. The transparency of the data collection and processing systems

2. Evidence of QA measures built in to the system

3. Evidence of independent audit undertaken to assure the quality

A small review team from Statistics New Zealand interviewed NZ Police staff involved in the collection, processing and management of crime data, and obtained documentation pertaining to the associated infrastructure, systems and processes.

To observe front line data collection and processing, the team spent two days visiting one of three national communications centres in Wellington, the Counties Manukau district communication centre and the Otahuhu police station.

An overview of the assessment is presented in the table below, which was adapted from the framework used by the UK Statistics Authority. The table is followed by a summary assessment statement.

The 'Areas of practice' column lists the relevant assessment criteria.

The 'Rating' column summarises the review team's assessment of the NZ Police practice against the assessment criteria. The terms 'Meets' and 'Development needed ' have been employed to indicate where action is needed. The rating system is still under development, but what has been used here serves the purposes of this review.

The 'Assessment' column provides a summarised explanation of the ratings. Subsequent sections of the report provide more detail about the assessments.

The subsequent sections of the report address the areas of: the operational context, the crime recording process, and quality assurance and audit.

Figure 1: Quality Assurance Framework & Assessment for Maturity Level 3

***Comprehensive assurance and audit**: Statistical producer investigates the data QA arrangements and the results of independent audit; and publishes detailed documentation about the assurance and audit.*

Areas of Practice	Rating	Assessment
Operational Context & data collection		
Detailed description of administrative system & operational context	Meets	The infrastructure, systems and processes in place are adequate to assure the quality of Tier 1 statistics.
Detailed description of the implications for accuracy & quality of the data	Development needed	Associated documentation exists and is designed for Police internal purposes. However it is not in a form suitable for public use, nor is it published.
Identify and explain safeguards used to minimise risks to data quality	Meets	There are strategies and plans in place to improve and maintain the quality of statistical information.
Communication with data suppliers		
Establish/maintain cooperative relationship	Meets	NZ Police is both the supplier of the data and producer of the statistics.
Written agreement specifying roles, processes, schedules, specifications, etc.	Meets	Data collection, processing and information management is well managed and integrated within NZ Police.
Establish change management process	Meets	There are good lines of communication between data suppliers (front-line information collection) and those engaged in subsequent processing and information management.
Communicate regularly	Meets	
QA principles, standards & checks		
Describe principles, standards & quality checks	Meets	Statistical information management is informed by a suitable data quality framework.
Identify & review quality reports for the data	Development needed	Data quality is assured through built-in validation and reconciliation checks throughout the system lifecycle. However, there is no clear associated reporting process evident.
Identify & document the findings of investigations and audits conducted on the data & associated targets	Meets	The system used to record and classify crimes (NRS) is subject to regular quality audit, which includes a feedback loop to remedy issues and implement improvements.
Undertake comparisons with other relevant data sources	Development needed	Statistical quality audit arrangements are limited. There is limited analysis undertaken to assess the statistical quality of the data and no established program of comparison of Police statistics against other statistical sources, such as the NZ Crime and Safety Survey
Identify possible distortive effects of targets	Development needed	
Identify strengths & limitations of the data any constraints on use for producing statistics	Development needed	
Explain likely degree of risk to quality of data provided by the operational context & collection approach.	Meets	There is no evidence of any endemic issues arising from the initial collection and recording of Police crime data.

Summary Assessment Statement

The statistical infrastructure, systems and processes that NZ Police has in place appear adequate to assure the quality of Tier 1 statistics. However, relevant documentation is not published.

The Police have in place suitable strategies, frameworks, plans and practices to monitor and assure the quality of the data throughout the data lifecycle. While there is regular auditing of the system used to record and classify crimes (NRS), there is no regular reporting mechanism in place on other aspects of the data lifecycle.

Statistical quality audit arrangements need development. Of note, there is little analysis undertaken to assess statistical quality and no established program to compare Police crime statistics against other statistical sources.

There is no evidence of any endemic issues arising from the initial collection recording practices that would cast doubt on the quality of Police crime data.

Operational Context

The policing of crime in New Zealand is managed by a single organisation, the NZ Police, which carries out its functions under the Policing Act 2008. Several other agencies have statutory responsibility for some specific offences, but the overwhelming bulk of offences commonly understood as 'crime' fall within the responsibility of the NZ Police.

NZ Police collect information about crimes primarily to assist them to carry out their day-to-day operational activities (i.e. case management). The Police also use the information to produce statistics to assist them in managing their operations and reporting on their performance.

These statistical data are also used to produce official statistics about patterns and trends in crime. It is this latter use that this report is primarily concerned with.

NZ Police is one of New Zealand's major operational departments. Management of day-to-day policing is decentralised to 12 districts, which exercise a significant degree of autonomy in determining how they deploy their resources to address the specific mix of issues in their regions.

The relative large size of the department means that the level of resourcing it can attract and the scale on which it operates, provide it a capability to invest in and maintain modern information management systems and technology.

Current strategic direction is driven by *Prevention First* and *Policing Excellence* strategies which place priority on crime prevention, enhancing public safety, effected through a professional approach to policing.

A consequence of the *Policing Excellence* strategy is a focus on performance management, using statistical information to compile district balanced scorecards and support commander assessments.

In the front line of policing, effective management of information is critical in determining operational priorities and deploying resources. Data collection and processing is supported by a modern nationally integrated infrastructure employing electronic data processing technology

designed to support rapid decision making and resource deployment at both district and national levels.

Addressing the vision and objectives of the *Policing Excellence* strategy, the *New Zealand Police Statistics Strategic Plan 2006-2010* established a coherent path for the development of police statistics built around four principles: standardise, simplify, design, and assure.

Seven key initiatives were implemented to support changes in Police direction, IT capability and performance management. The seven initiatives relate to:

1. recording and counting
2. standard reporting
3. common repository and access
4. integration of statistics into operational business design
5. rationalise coding
6. automate statistical production
7. audit

All seven have considerable potential to deliver improvements to statistical data quality.

The operational context of policing poses a number of challenges for producing statistical information. The organisation culture of police is 'action' orientated. Police are focussed on preventing, detecting and investigating crime and need to operate rapidly and decisively. Information, particularly in the form of data, may be viewed as instrumental and possibly 'after the fact' in situations where action is paramount.

NZ Police are progressively addressing this issue by freeing up officers to focus on active policing and employing professional technical staff to manage information and data. In addition, officers are increasingly employing personal mobile electronic devices to communicate and receive operational data in real time, improving their front line operational efficiency as well as enhancing the quality of data collection.

Crime recording process

There are two crucially important elements to recording crime data for statistical use. One is determining which incidents involve a crime, which affects the count of crimes. The other is determining the type of crime, which describes the nature of crime.

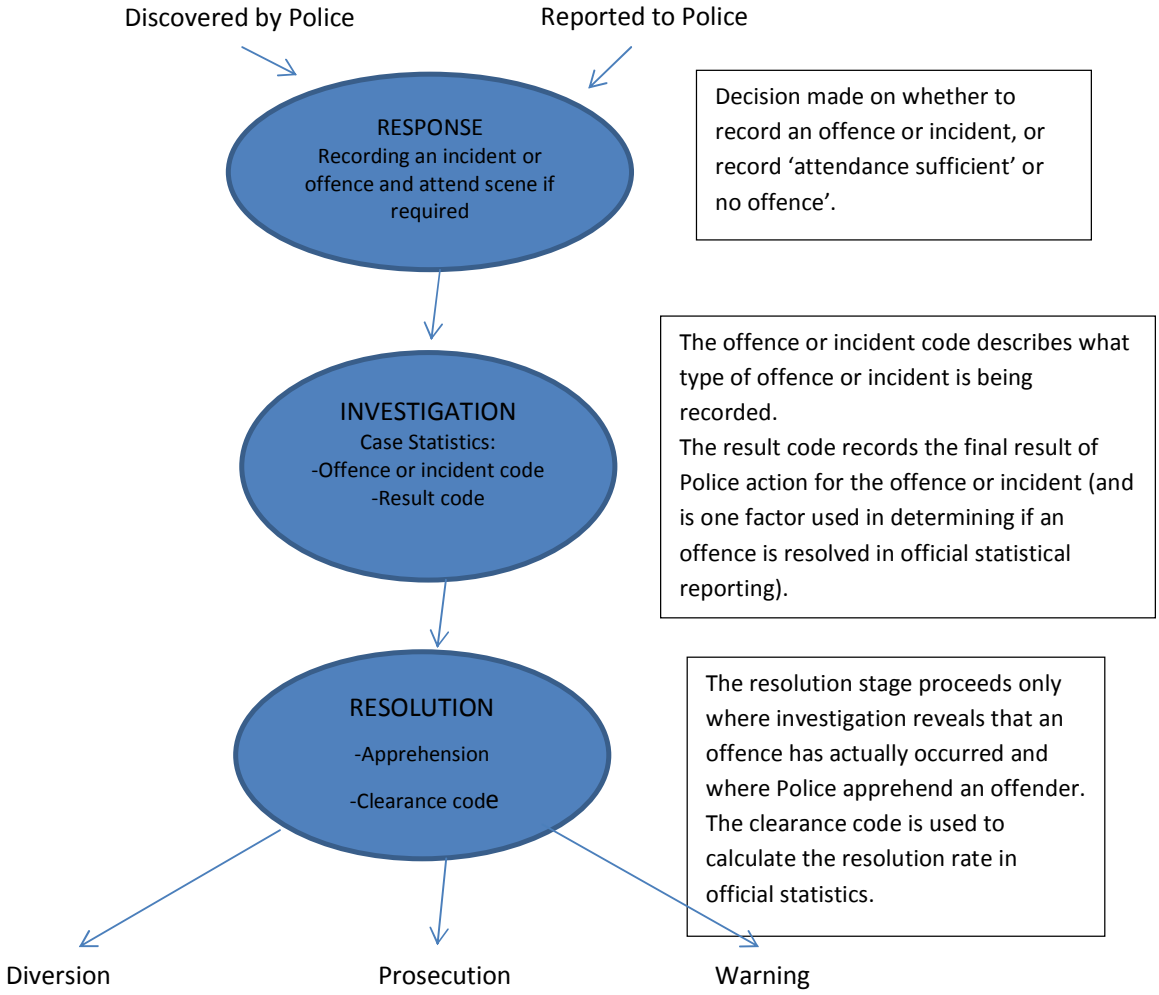
Police crime statistics are derived from the Police *National Intelligence Application* (NIA). The NIA is an IT system application deployed nationally across all Police districts which manages transactional data relating to Police cases, supporting case management. Crime statistics are based on data taken from this system.

In a given year the Police receive around a million incident reports. Over 90 percent are received directly from the public. Just over one third end up as reports involving a crime.

The manner in which information is collected and recorded is governed by a *National Recording Standard* (NRS). This determines *what* information is collected *when*, primarily relating to *offences*, *incidents* and *tasks*.

Figure 2 below illustrates the process by which the data are collected and processed.

Figure 2: Crime-recording process



The crime recording process used by the Police can be divided into five stages:

1. Reporting of event to Police.
2. Preparation of a detailed offence/incident report, if it is decided that further investigation should occur
3. Closing/resolving investigation

4. Recording apprehension of offender(s) (if appropriate)

5. Closing the file.

Determination of which events constitute a crime occurs throughout the process, with records being updated based as new information is gained as the case progresses.

The *Australian and New Zealand Standard Offence Classification* (ANZSOC) is used to classify the type of crime. This classification provides for uniform crime reporting between Australia and New Zealand. The classification is deployed within the NRS.

The overwhelming bulk of initial incidents reported to the Police are received by telephone and are routed to communications centres and immediately prioritised. High priority incidents involving a serious offence are managed nationally, and the others at district level.

The review team visited the Wellington National Communications Centre, the Counties Manukau District Communications Centre and the Otahuhu Police Station to observe the processes and systems in action.

The initial reception of telephone incident reports are managed through the CARD system. This system is used to initially record the incident and to manage the initial response and resource deployment. The incident records are then copied to the NIA, where police officers can access the information and add to it as their investigations proceed.

The NIA includes audit trails to show who has accessed records and what changes they have made. In the course of investigating and developing a case there are quality gateways involving review by staff of increasing seniority as the case proceeds to prosecution. This assists in determining what, if any charges to lay, and ultimately, if there is sufficient evidence to support a prosecution.

The review team's brief view of the processes and systems (over two separate days) was that they were very well managed and capable of producing good quality data.

We were provided a selection of hardcopy documentation describing aspects of the processes and systems, some of which appear in this report (appendix 4). Our view is that the Police have adequate documentation for their internal purposes. However, we note that very little of this appears to be published and we believe that the documentation we received is not yet in publishable form.

Recommendation 1: Complete and publish documentation describing the data collection and management systems, processes and standards, to demonstrate transparency and engender public confidence.

More details of the crime recording process are contained in appendix 3.

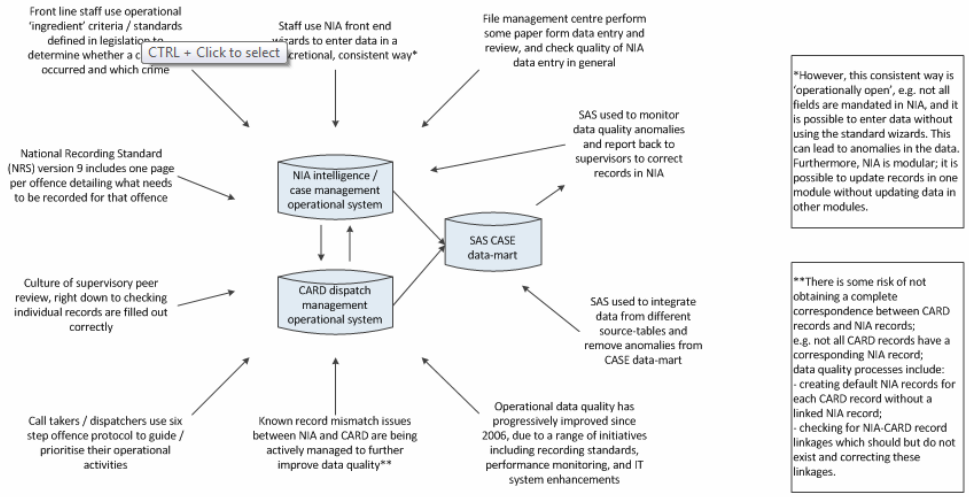
Quality Assurance and Audit

Internal Police quality assurance and audits

As part of their operational processes, NZ Police run a number of in-built reconciliation and validation checks throughout the data system life cycle. These include ensuring that the copy of data

between environments is correct, identification of anomalies or outliers, validation against basic business rules, and reconciliation between NIA and PD SAS. Record mismatches between CARD and NIA are identified and investigated. See the diagram below for more details.

Model 5: NZ Police operational business consistency and assurance processes



Running alongside of the operational system, NZ Police also have a programme of regular monitoring and project work for quality assurance. One aspect of this work relates to the National Recording Standard, where continuous improvement is undertaken, resulting in six monthly updates.

Data quality monitoring

NZ Police have implemented a National Recording Standard (NRS) quality assurance framework that has six dimensions, namely: timeliness, completeness, correctness, consistency, relevance and accuracy.

These dimensions align well with those included in the Principles and Protocols for Tier 1 statistics.

Associated with these dimensions are a set of quantitative or qualitative indicators that provide information about both the performance of the data management system and the quality of the data.

For example for *timeliness,* most incidents are required to be entered within 72 hours of receipt of a report.

Completeness measures the proportion of records or data items within records that are completed and c*orrectness,* the extent to which what is recorded is permitted.

Under *Correctness*, the use of 'result' codes is monitored, particularly K1 (Police attendance sufficient) and K3 (No offence). This is important for assuring the count of crimes in Police statistics.

Consistency measures monitor logical relationships between data (such as incident date and the date it was recorded in the system), providing information on the operation of the data recording process as well as identifying possible recording errors.

Accuracy focuses on the extent to which what has been recorded reflects what should have been recorded, i.e. what actually happened. Audits are undertaken to check the information recorded through the system (NIA) and to check compliance with the NRS. More information about this is contained in the next section.

Data quality governance

A Data Quality Steering Group (DQSG) determines priorities for and governs projects designed to improve data quality. It is informed by a Police's Performance Monitoring Unit (PMU).

Much of the work of the DQSG has an ICT component and includes:

- changes/enhancements to NIA and how it is structured
- training
- changes to the NRS
- reviewing classifications/standards.

Current priorities include:

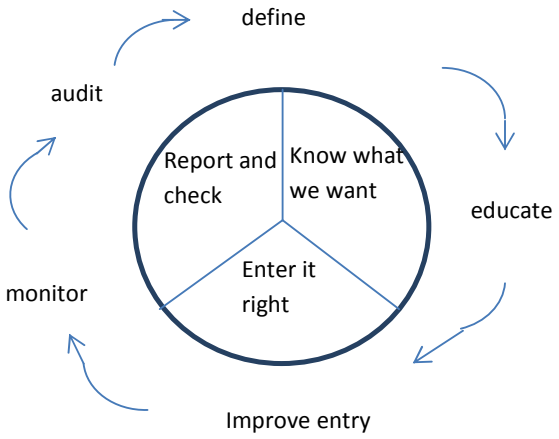
- The development of a more 'form' driven workflow for officers, which limits the options for them to code data incorrectly
- A proposal to establish 'crime registrars' (national and district) to validate data accuracy and oversee improvements
- The introduction of an increased level of internal audit; and
- The enhancement of the scope for external audit.

Performance Monitoring Unit

The PMU monitors processes and compliance with the National Recording Standard (NRS). It also contributes to audits of the data. The NIA Data Quality Co-ordinator role sits in this unit.

The following diagram outlines the continual quality improvement approach undertaken by the PMU.

Figure 1: Continual Quality Improvement



Continual quality improvement and the NRS

Police is currently focussing on the *define* stage of this cycle. That is, they are focussing on recording the information accurately at the start of the process, since this is a critical step in the process.

The NRS provides data management staff with 'definitions' or coding heuristics. For example, rules and guidance on how and under what circumstances to classify an offence as an 'assault', 'theft' or 'burglary', and how many offences to record. Offences can be difficult to code because due to the complexity of criminal law and the variability of the information available to the Police in different calls for service. To help ensure consistent and meaningful information, Police continually monitors the effectiveness of the NRS, and conducts internal audits. A recent audit revealed variability in burglary coding and identified opportunities to drive greater consistency in recording practices.

Program priorities for NRS updating are informed by feedback from File Management Centre operators and other staff. The feedback and implementation process is encouraged and facilitated by selected staff in these areas designated as Data Quality Leads and Data Quality Champions.

Data Quality Leads are NRS experts and Data quality Champions are experienced practitioners. Data Quality Champions meet monthly via video conference, providing an opportunity to discuss definitions and suggest improvements. A shared email address exists where issues can be raised. Police are utilising different avenues and channels to gather information to improve the NRS and understand the importance of two-way communication channels.

Continual improvement and clarification in definitions outlined and documented in the NRS is an appropriate and beneficial goal. However, the procedural operationalization of these updates may need to be improved. That is, procedures that are easy to implement and communicate with staff at the data entry level, efficient, and accurate, need to be established. Changes and the possible impact on the data also need to be clearly communicated with users of the data.

There may also be some value in investigating if coding difficulties are related to the absence of auxiliary data needed to support implementation of the definitions. If this is an issue, then remedy may entail making the data available or completing implementation when it becomes available.

The review team has identified some areas within the system that may need more attention, for example more automated tools for coding to improve accuracy, and consistent national recoding practices.

Recommendation 2: To improve the accuracy of offence type coding consider:

a) ***Integrating the National Recording Standard into an appropriate coding tool to automate the process as much as possible, and better manage the exercise of coder judgement.***

b) ***Reviewing the process around 'hard-to-code' examples like burglary to determine that sufficient criteria data are available to determine an accurate and consistent decision, and minimise the exercise of subjective coder judgement.***

Reporting on data quality

An internal quarterly data quality reporting regime (DQM) was established in 2009. However, it was modified in 2013 to focus data quality improvement activity on a smaller manageable number of high priority opportunities. Police is considering whether they will re-establish a DQM reporting regime in the near future, and if so, what format it might take.

Recommendation 3: Institute regular comprehensive monitoring and reporting across the data lifecycle.

Statistical Quality Audit

The review team found little evidence of arrangements by Police for auditing the statistical quality of the data.

Statistical quality audit may have a number of aspects. On one hand it may be 'top down', viewing quality from the perspective of the product (i.e. statistical information) and use of the product (i.e. customer).

On the other hand it may reflect an 'outside-in' perspective, where external information or expertise is employed to provide an independent perspective. (This review is an example).

Viewing quality from the perspective of the product and user can be achieved through customer surveys and through undertaking and reviewing statistical analyses of the data.

Statistical analysis is a very useful tool and has the advantage that it can add value to the basic statistical product (e.g. standard reports of official statistics) as well as build understanding of the data properties and quality. Statistical analysis also assists in establishing quality assurance priorities, ensuring that QA investment and effort is directed to issues of statistical materiality. For example, analysis of crime trends that examines detailed offence patterns by geography may indicate issues about geographic variation in recording practices.

Recommendation 4: Institute a program of statistical analysis that adds value to the existing crime statistics, as well as building understanding of the properties and quality of the data.

In addition to undertaking more analysis of the Police statistics, analysis is also needed that compares Police statistics with other suitable sources of crime statistics, and helps to address the question posed at the start of this report (pp 3&4), about how well Police crime statistics measure societal trends in crime.

A common means of doing this is to compare Police crime statistics with suitable crime survey statistics. This type of benchmarking needs to be undertaken regularly so that a suitable knowledge base can be built up about differences in both patterns and trends in the respective data sources. The patterns help understand bias in the Police data and the trends draw attention to possible changes in the quality of the data or data systems over time.

Crime victim surveys have been conducted in New Zealand over several decades. In its current form, the New Zealand Crime and Safety Survey (NZCASS) was conducted in 2006 and 2009. A third is currently underway, with results due in 2015. Surveys of this type canvass a representative sample of the population and elicit information from respondents about crimes they consider that they have experienced, regardless of whether or they have been reported to the Police.

Crime surveys can provide an effective means of measuring levels of crimes that are not well-reported (e.g. family violence), as well as providing contextual information not available from Police reports.

To date, there has been little work undertaken in New Zealand to benchmark Police crime statistics against the survey data. This is in part due to the narrow focus of surveys and the limitations in the concordance of the data, making it difficult to identify common offence types between the two sources.

Other countries, such as the UK, achieve a more comprehensive and detailed level of benchmarking than has been the case in New Zealand. This is a shortcoming for New Zealand and in future there should be more investment in doing this to assist in verifying the fitness-for-use of the Police statistics and improving the quality of the Police data.

To achieve this end, benchmarking of Police data will need to be given considerably more priority in the survey objectives, so that it can be adequately catered for in the design of the survey.

Recommendation 5: Make better use of the NZ Crime and Safety Survey to compare and benchmark Police crime statistics.

Risk to quality resulting from the operational context

The use of data to inform performance management poses another problem in regard to assuring quality. In particular, where the data are used to assess performance against statistical targets, there may be perverse incentives to report the data in a manner that enhances achievement of targets.

This review has not investigated this issue in detail. However, the course of undertaking the review, the review team visited national and regional operating centres to view the frontline process of data collection. Our observations indicated a highly motivated and professional organisation well supported by modern data collection systems and infrastructure.

That is not to say that there are not issues affecting data quality, the most obvious and important of which are addressed in this report. There was also a highly publicised incident of mis-coding of burglary statistics in an area in the Counties Manukau District. However, there is no reason to suggest that the Police do not have in place the infrastructure, systems and processes needed to produce and assure fit-for-use crime data.

Moreover, there is little evidence in New Zealand to suggest any endemic issues associated with the initial collection and recording of crime data that would cast doubt on the general quality of Police crime statistics.

Conclusions

Key findings & recommendations

The statistical infrastructure, systems and processes that NZ Police has in place appear suitable to assure the quality of Tier 1 statistics. However, relevant documentation is not published.

Recommendation 1: Complete and publish documentation describing the data collection and management systems, processes and standards, to demonstrate transparency and engender public confidence. (p10)

Some crimes, like burglary, are hard to code accurately and consistently, because of difficulties in translating the relevant law into suitable operational coding definitions.

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Statistical quality audit arrangements need development. Of note, there is little analysis undertaken to assess statistical quality and no established program of police crime statistics against other statistical sources.

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There is no evidence of any endemic issues arising from the initial collection recording practices that would cast doubt on the quality of Police crime data.

Next Steps

The report has made five recommendations which, if implemented, will help the Police to achieve a maturity level of quality assurance commensurate with the importance of the statistics in decision-making and in the level of interest that the public attach to them.

All of the recommendations need to be championed by the Police, and most can be implemented directly by them.

Implementation of recommendations 4 and 5 will require the support of the wider Justice Sector and the input of researchers and analysts.

Statistics New Zealand could provide further advice and assistance in implementing the recommendations. As well as providing direct technical statistical advice, Statistics NZ might also usefully work with NZ Policed to establish a Community of Practice with other agencies that produce official statistics from administrative data, and which experience similar issues and risks.

Statistics NZ might usefully consider this in the broader context of its Official Statistics System leadership program, where it has already established fora and programs to address Tier 1 compliance.

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Appendix 1: Terms of Reference of a Review of the Statistical Infrastructure and Systems Used to Produce NZ Police Crime Statistics.

8 September 2014

Background

Reviews of subject matter statistics are undertaken by the Government Statistician from time to time to ensure that the right information is being produced (relevance) and that the statistics are fit for use (quality).

The suitability of Police crime statistics for Tier 1 status was assessed in 2006 and a wider review of crime and justice statistics was completed in 2009. Both reviews pointed to the need to improve the manner in which the source data are collected and prepared for statistical processing. Consequently, there has been investment to improve the statistical infrastructure (classifications and data standards) and the systems that support the collection and processing of the data.

Recently there has been some public debate about the quality of the data used to produce the statistics. Such debate inevitably raises questions about the level of trust and confidence that the public can have in the statistics. Police are also proposing to introduce over the next 12 months an improved set of statistics built around victims and offences, underpinned by improved statistical infrastructure and systems.

Consequently, it is an opportune time to review Police's statistical infrastructure, in particular the suitability of the organisation, infrastructure and systems to support the compilation of Tier 1 official crime statistics.

Scope

- The review will be based on a work process map approach.
- It will focus on describing the organisation, statistical infrastructure, systems and processes and other elements employed by the NZ Police to obtain and process the data used to produce crime statistics and to assure their quality.
- The review will consider Police's current statistical infrastructure as well as continuous improvement initiatives underway.
- It will provide a useful picture of where the right systems and capabilities are already in place, and where there might be need for further investment or remedial action, in order (in particular) to provide additional public trust and confidence.
- 'Statistical infrastructure' refers to the classifications, standards, rules and protocols governing the recording and processing of the data to assure and prepare it for subsequent statistical production.

Scope exclusions

- It will not assess the effectiveness of the systems, nor the actual quality of the data and statistics.

- It does not purport to be a quality audit and will not provide certification of the quality of the Police data and the resultant statistics.[1]

Membership

The review will be conducted by a small team from Statistics NZ, comprising:

- Principal Statistician -Paul Brown (team leader)
- Senior Advisor Strategy, Policy and Performance - Neil McInnes
- Subject Matter Project Manager- Vannessa Turner
- Statistical Methodologist – Julia Hall

The key Police contacts for the Statistics NZ team to liaise with in order to conduct the review are:

- 2IC Strategy and Executive Director of ITS - Stephen Crombie
- Acting National Manager: Planning and Performance – Kris Pervan
- Manager: Statistics – Gavin Knight
- Acting Principal Advisor: Strategy – Saskia Righarts

The team will engage with Police Managers responsible for the management of Police crime data and statistical production, and be given appropriate access to relevant documentation.

Compliance burden will be minimised at both ends. It is envisaged that the review should not take up more than four or five person-days of NZ Police time.

Responsibilities

The Statistics NZ team will:

1. Review relevant documentation and interview key personnel where information is not documented relating to the Police organisation, systems and infrastructure; and similar reviews conducted in New Zealand and internationally.
2. Assess this information against the requirements of the NZ *Principles and Protocols for Official Tier 1 Statistics* and other international best practice frameworks.
3. Analyse and draw conclusions about the design and capability of the organisation, infrastructure and systems to sustainably deliver and assure data of sufficient quality.
4. Make recommendations about any investment or remedial actions that may be needed to remedy any major shortcomings.
5. Keep NZ Police informed about the structure and progress of the review.
6. Make reasonable requests of Police staff.

The Police managers will:

1. Provide all existing relevant documentation.

[1] Note: Police have a separate 'Data Quality Improvement' project that will focus on addressing these issues.

2. Where the requested documentation does not exist or is not adequate for the needs of the review, provide free and frank description and explanation.

Governance

Inter-agency governance will be overseen by Colin Lynch, Deputy Government Statistician (Statistics NZ) and Mark Evans, Deputy Chief Executive: Strategy (Police).

Deliverables

A concise draft report completed by 30 September 2014

A final concise report completed, if required, by the end of the 2014 calendar year.

Police and Statistics NZ will jointly work on a communications strategy to support publication of report(s) arising from this review.

Appendix 2: The NRS and the crime-recording process

1. Incident reporting and recording

Before a crime/offence can be recorded in the National Intelligence Application, the matter needs to come to the attention of Police. Research indicates that some crimes are never reported to Police in the first instance. Crimes most likely to be reported include those that involve insurance claims and those where injuries require medical treatment.

A range of other factors are known to affect whether a crime is reported to Police. These include:

- the type of crime
- age, sex, race, and ethnicity of the victim
- relationship between the victim and offender
- perceived seriousness of the crime, and
- a perception of how Police would deal with the matter.

There are a number of ways in which incidents can be reported to the Police:

- victims, witnesses or other third parties can telephone incidents to police communication centres;
- victims, witnesses or other third parties can tell a Police officer, or member of staff either on the street or at the front counter of a police station;
- victims, witnesses or other third parties may report an incident online;
- Police might discover the crime themselves; or other agencies such as social services may refer them.

Incidents reported to Police about events happening in the community cover a variety of situations. For example, in the year ended 30 June 2014, NZ Police recorded about 1.1 million calls for service to Police communications centres. Of these calls:

- 38% were recorded as *offence* incidents. Of these offences, 11% related to public order offences.

- 62% were recorded as *non-offence* incidents. Of these non-offence incidents:
    - 9% related to public safety and welfare,
    - 22% related to traffic, and
    - 16% related to investigating suspicious circumstances where Police found no evidence of a crime.

The total incidents reported (1.1 million calls/events) show:

- 6% are calls made by Police officers in the field, and
- 94% are made by members of the public or other organisations.

Police communication centres in Auckland, Wellington, and Christchurch are the main avenue to capture reported incidents/events requiring Police attention. Police Communicators log calls into the Police Communications and Resource Deployment System (CARD). CARD is the application used by New Zealand Police to manage initial Police response to calls for service. Police Communicators use a "six step" protocol to prioritise how Police respond to any calls for service.

The six step process that Police Communicators follow to capture, assess, and prioritise Police response to calls for service is:

1. **Capture "headline"** – this is a 4 to 7 word summary of what has happened and should include use of weapon(s)
2. **Time delay** – is the event happening now or in the past? – when did it happen? Note: between step 2 and 3 the event is accepted
3. **Still there/direction of travel** – are they still there, if not, what direction are they traveling in?
4. **On foot/in a vehicle** – how did they leave?
5. **Description** – of person / vehicle (a description guide exists)
6. **All other relevant information** e.g. Alcohol, drugs, more details about weapon(s), children, dogs, what was taken etc.

This is an iterative process as Police Communicators revisit questions to gather further information and seek clarification.

Communicators prioritise an event using a number of priority codes (1 to 7). Code "one" is the highest priority e.g. threat to life and/or property. If immediate police attendance is required, police dispatchers can view what a communicator is inputting, get notification of updates to an incident/event, and dispatch police support accordingly.

2. Deciding if a crime should be recorded

All reports of incidents, whether from victims, witnesses, third parties, or discovered by Police, and whether crime-related or not, will result in the registration of an incident report by Police. The incident will be recorded as one or more offences where there is prima facie evidence that on the balance of probability the circumstances of the matter reported amounted to:

- a crime defined by NZ law,

- the matter falls within the jurisdiction of Police, and
- there is no credible evidence to the contrary

or if

- an incident was not reported as an offence, but upon investigation police determine that an offence is likely to have been committed.

Unless the matter is minor (e.g. where Police attendance is sufficient), where Police believe an offence is likely to have been committed, it is counted as a recorded offence. Recorded offences are the number of probable breaches of the New Zealand law recorded by Police. This includes offences specified in the Crimes Act and other legislations such as the Summary Offences Act, Local Government Act, etc.

3. Closing/resolving incident records

A *Result classification* records the outcome of the Police response to initial incidents/offences.

Offences and incidents can be 'resulted' as:

- police attendance sufficient (K1)
- No Offence (K3)
- An Offence (K6 – reported offence)

K6 incidents are the building blocks of Police crime statistics. These, and only these, incidents are counted in Police crime statistics.

Examples of where *Police attendance sufficient* can be used are:

- Minor offences (maximum imprisonment is 2 years)
- there was no identified victim, or where a victim was identified, they do not wish to proceed/do not want Police to take any further action
- the Offence did not involve Family Violence (Note: this also applies to non-Offence incidents involving Family Violence).

If an event is initially reported as an offence, it can only be resulted K3 if there is subsequent credible evidence that no offence occurred. Evidence supporting the decision to use the K3 code must also be documented.

For example, a report stating that "people were seen breaking into a house" may be given an opening code of 'Burglary'. But, if subsequent enquiries determined that the people breaking in live in the house, then the result code would be K3- *no offence*". If there are doubts as to the validity of the report, there is an assumption that the original report is correct, unless there is evidence that it is not.

Result codes are important as they allow supervisors to check that all necessary actions have been carried out and they are auditable.

4. Recording a crime

Crimes are coded according the *Australia and New Zealand Standard Offence Classification* (ANZSOC).

Based on an international framework for classifying crimes, the ANZSOC links crime categories back to specific offences contained in the current and past legislative instruments in the respective countries (e.g. Crimes Act). This temporal consistency provides a basis for producing coherent crime trends over time.

Initial coding of an offence may occur at a relatively high level, but as subsequent investigation proceeds, the offence may be coded to a more detailed level.

In addition to determining the type of crime, the number of offences is also ascertained.

The number of offences to record depends on the type of offence, the number of victims, the intent of the offender, and the property or people targeted by the offender. For example:

- where wilful damage and theft occur as part of a burglary, only record the burglary
- where a shoplifter smashes a window in anger after leaving a shop, record both theft ex shop and wilful damage

Police are required to record crime at the earliest opportunity, and at the most within 72 hours of the time the reporting officer decides that a crime should be recorded. There are however some exceptions to this rule e.g. a missing person should be recorded within 4 hours.

5. Closing crime records

A recorded offence is counted as resolved when Police apprehend an offender and decide how to deal with him/her (e.g. warn, caution, diversion, prosecute). The corresponding NIA record is then updated with a *clearance code* (in custody, proceedings impeded, warning, prosecution, or diversion). The clearance code is used to calculate the resolution rate in official statistics.

If, after an investigation, an offender is not apprehended for an offence, the file status is marked "filed". Status *Filed* denotes a completed and closed file. This does not necessarily mean that the offence/incident has been resolved.

Counting rules for current statistics

A recorded offence is counted as a *resolved offence* when an offender is identified and dealt with (e.g. prosecuted, warned, etc.).

Although most offences are recorded within a short period of the offence occurring, some offences require long investigations. For example, many serial crimes, burglaries, and homicides.

The resolution of an offence is counted against the date the offence occurred. Likewise, an apprehension is counted against the date the offence occurred.

Counting rules for new statistics (victim and offender)

NZ Police are developing new victim and offender statistics. Two manuals, *New Zealand Recorded Crime Victim Statistics* (NZ RCVS) and *New Zealand Crime Offender Statistics* (NZ RCOS) outline the classifications and counting rules used to determine what and how many offences to count for these new statistics. The manuals will be used alongside the NRS. The counting rules are based on the Australian Recorded Crime Victim Statistics (RCVS) and Recorded Crime Offender Statistics (RCOS) rules and will enable improved comparability of the new statistics with Australia.

More details are of these rules are contained in appendix 3.

Appendix 3: Counting rules for new statistics (victim and offender)

NZ Police are developing new victim and offender statistics. These new statistics will eventually replace the existing NZ Police-produced offence and apprehension statistics that are currently disseminated on Statistics New Zealand's website.

Two manuals - New Zealand Recorded Crime Victim Statistics (NZ RCVS) and New Zealand Recorded Crime Offender Statistics (NZ RCOS) are being prepared by the NZ Police Statistical Services Unit (SSU) to support the introduction and understanding of these new statistics. These manuals outline the classifications used and the counting rules followed to determine what and how many offences to count. These manuals will be used alongside the NRS.

The National Offence Index, or NOI, is a seriousness ranking of the Australian New Zealand Standard Offence Classification (ANZSOC) codes that is used to determine a principal offence where a person is proceeded against for more than one offence type. Offences are allocated a ranking and the highest ranking offence (i.e. ranking closest to 1) is selected as the principal offence.

RCVS statistics

The victim statistics are completely new and their development meets one of the 49 recommendations from the *Review of Crime and Criminal Justice Statistics Report 2009.* They also align to the Police emphasis on "Prevention First – victims at the heart of what we do".

The new victim statistics are:

- A Dataset on victims of crime from July 2014
- Show the relationship of victim to offender

They are not:

- Comparable with existing crime statistics because they are completely new
- A count of offences
- A count of all family violence
- A dataset on total crime

Summary table of key differences between the existing and new statistics

The following table summarises key differences between the existing and new crime statistics:

Existing crime statistics	New crime statistics
Counts: • Offences • Apprehensions	Counts: • Instances of victimisation • Unique victims within a 12 month period

Existing crime statistics	New crime statistics
	(classified by most serious offence) • Unique offenders within a 12 month period • Instances of Police proceeding against an offender
Does not include information about victims	Includes age, gender, and ethnicity of victims
Not capable of providing meaningful statistics about family violence	Includes relationship between victim and offender, which is the preferred method for producing meaningful family violence statistics. This will enable identification of specific contexts, such as intimate partner assault, child sexual assault, elder abuse by caregivers, etc.
Proactively published at Police District and Area level Statistics available on request for most Police Stations (where data quality is adequate)	Available at Police District, Area and Station level, and at Territorial Authority, Area Unit level (enabling integration with data from other agencies, such as local government, DHBs), and mesh block.
Accuracy at Police Station level is somewhat poor and declining, due to newer deployment models	Accuracy at all levels will be much better
Publication occurs twice annually, three months after the end of the relevant 12 month period; and is manual-intensive to be able to generate	Publication is semi-automated and occurs every month within one month of the end of the relevant period
	Comparable with the Australian RCVS and RCOS collections.
	RCOS and RCVS - data collection starts 1 July 2014.

System enhancements between current and new statistics

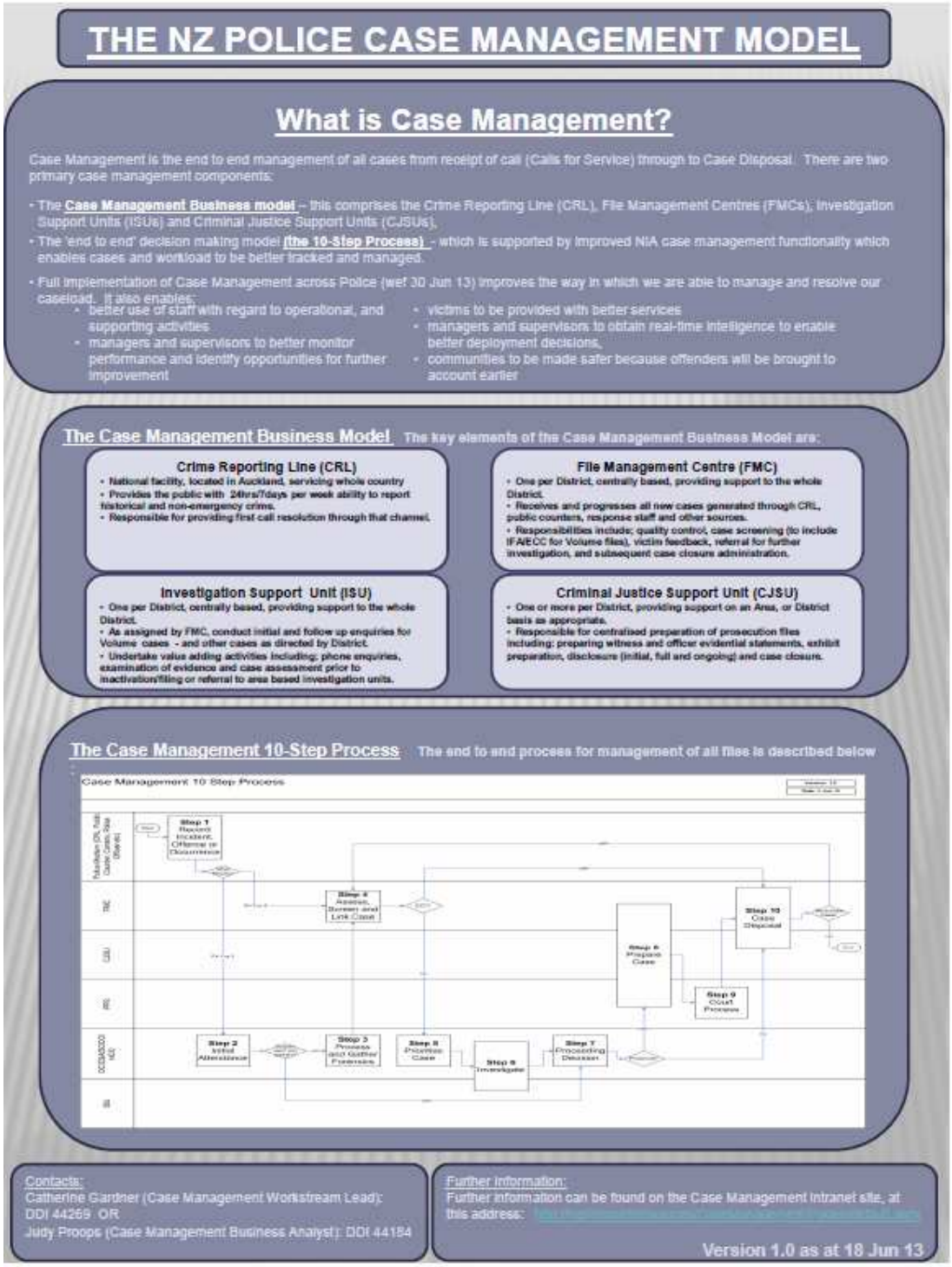
Current statistics

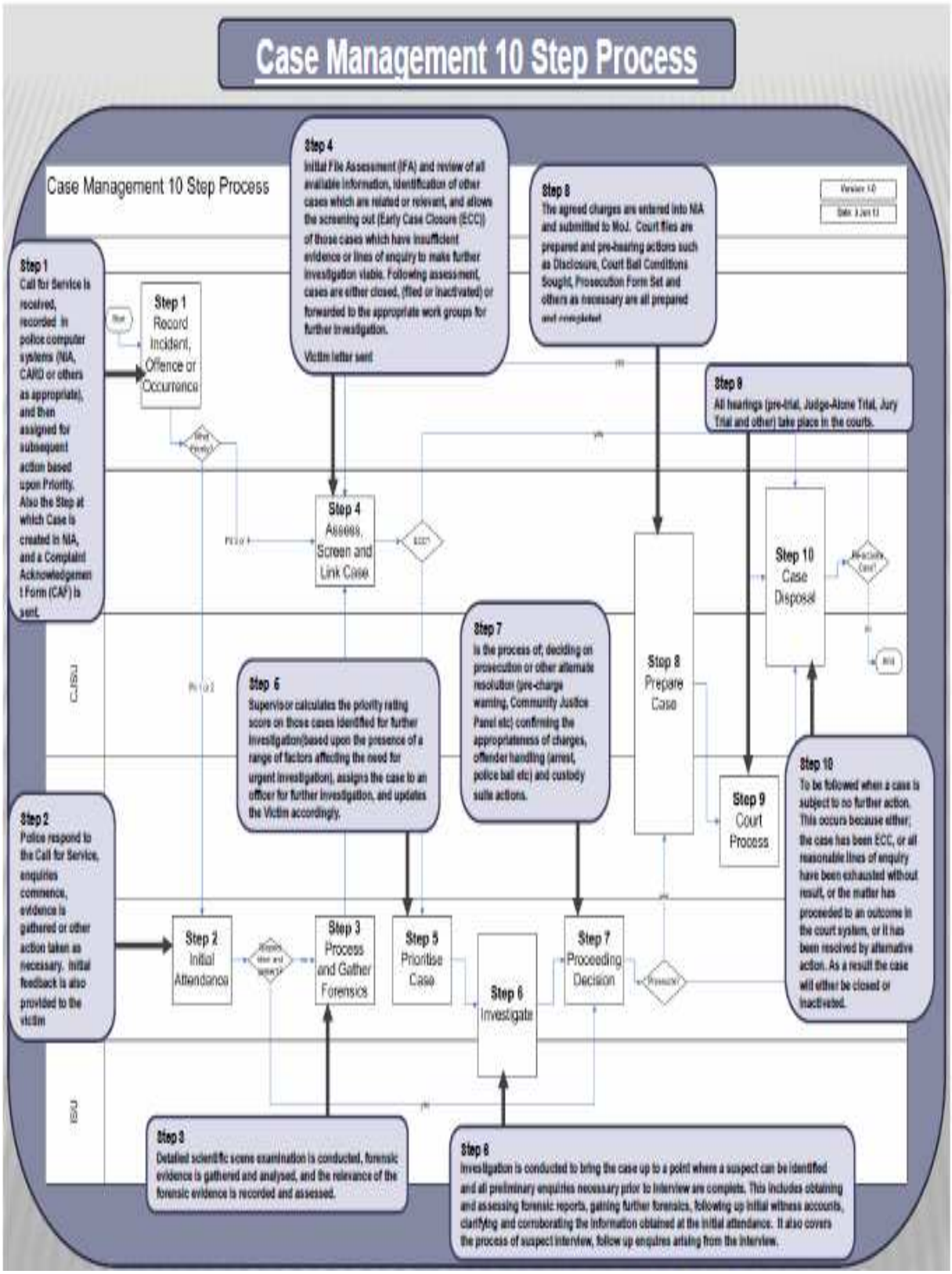
Only data entered directly into NIA (not CARD) and extracted into the Police Data SAS (PDSI) warehouse appear in the current offences and apprehension statistics published via NZ.Stat. The Police ICT group technically reconciles / tests the replication and extraction of data following documented processes. The Statistical Services Unit performs user acceptance testing on PDSI data before extracting the data for NZ.Stat. This process is also documented.

New Statistics

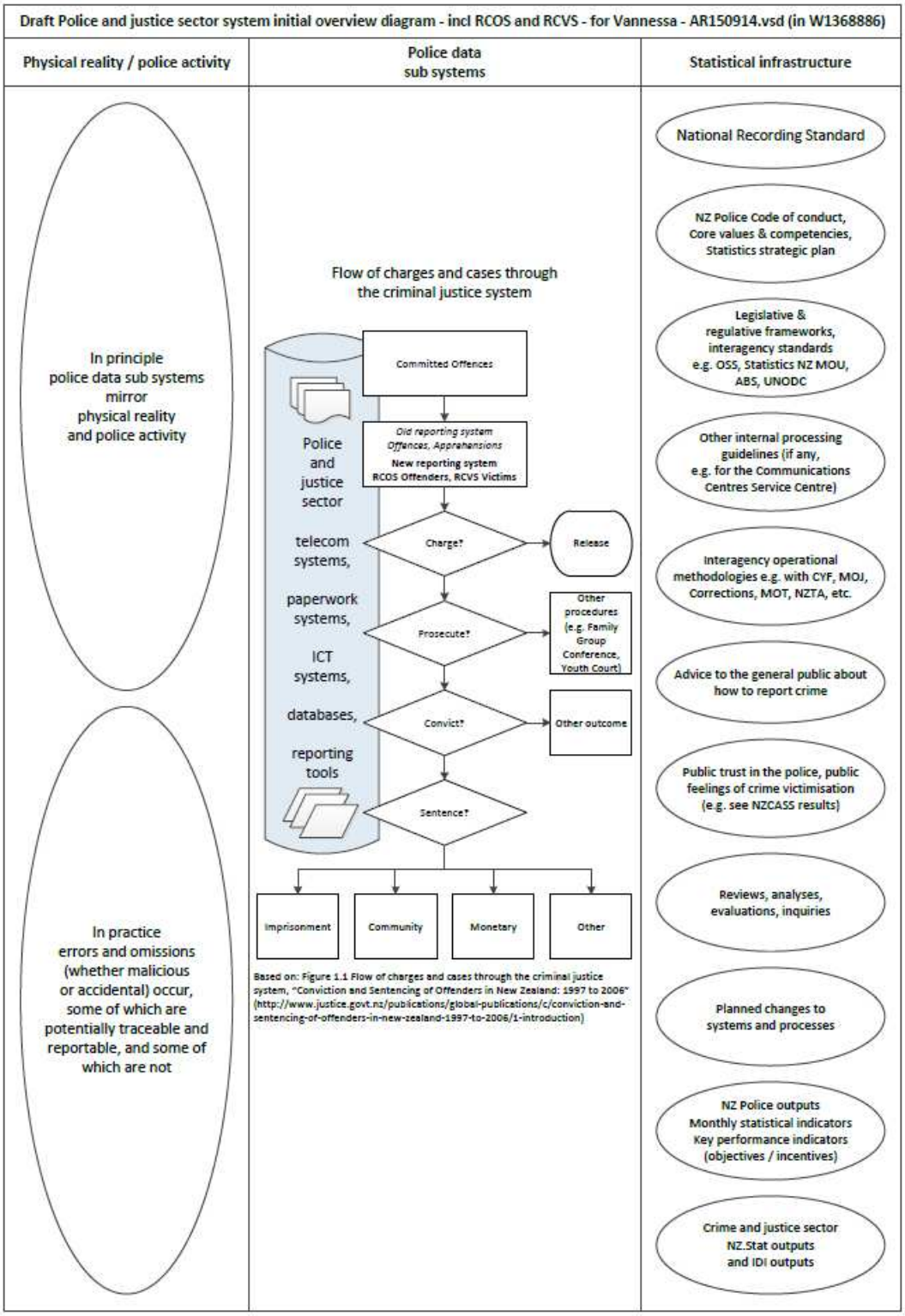
A key difference between how the current and new statistics are output is that the new statistics are extracted from a SAS CASE data-mart into RCVS and RCOS domains. These outputs provide more comprehensive and accurate information as they draw on a wider range of information in CARD, NIA and the Police geospatial master-database. Development within the SAS environment occurs within a statistical development cycle (GSBPM), not an IT development cycle (software development life cycle SDLC). Counting rules outlined in the NZRCVS and NZRCOS manuals are designed to minimise delay in reporting stable, unbiased statistics, and to avoid having to “snapshot” data. This means more timely and stable statistics.

Appendix 4: Police Case Management Model

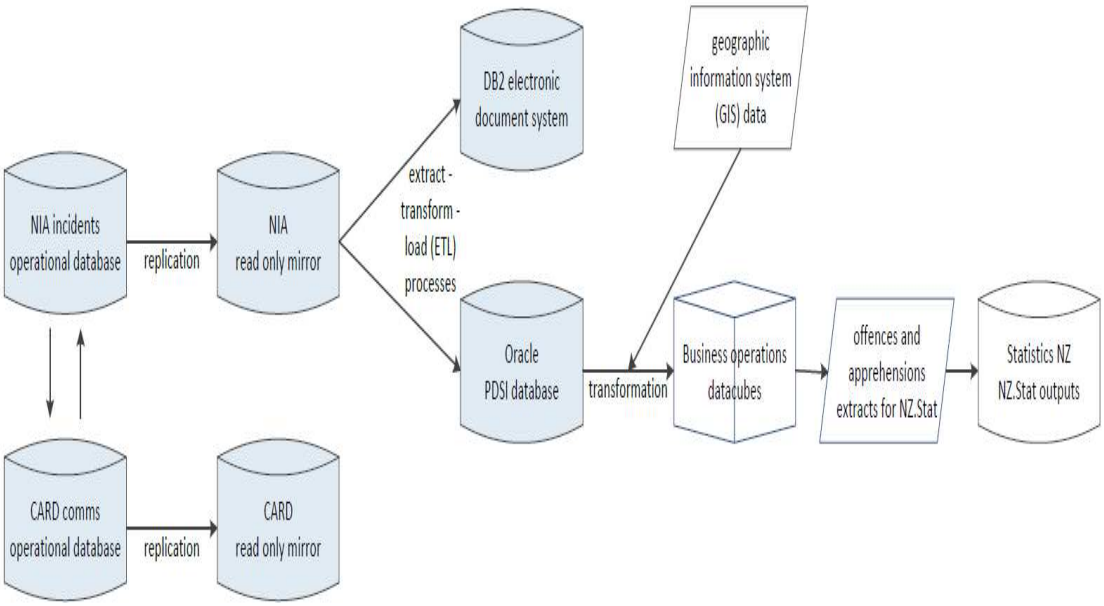



Case Management 10 Step Process
Case Management 10 Step Process
Step 1
Call for Service is received, recorded in police computer systems (NIA, CARD or others as appropriate), and then assigned for subsequent action based upon Priority. Also the Step at which Case is created in NIA, and a Complaint Acknowledgement Form (CAF) is sent.
Step 1 Record Incident, Offence or Occurrence
Step 4
Initial File Assessment (IFA) and review of all available information, identification of other cases which are related or relevant, and allows the screening out (Early Case Closure (ECC)) of those cases which have insufficient evidence or lines of enquiry to make further investigation viable. Following assessment, cases are either closed, (filed or inactivated) or forwarded to the appropriate work groups for further investigation.
Victim letter sent
Step 4 Assessing, Screen and Link Case
Step 8
The agreed charges are entered into NIA and submitted to MoJ. Court files are prepared and pre-hearing actions such as Disclosure, Court Bail Conditions Sought, Prosecution Form Set and others as necessary are all prepared and completed
Step 8
All hearings (pre-trial, Judge-Alone Trial, Jury Trial and other) take place in the courts.
Step 10 Case Disposal
Step 8 Prepare Case
Step 9 Court Process
Step 7
is the process of; deciding on prosecution or other alternate resolution (pre-charge warning, Community Justice Panel etc) confirming the appropriateness of charges, offender handling (arrest, police bail etc) and custody suite actions.
Step 6
Supervisor calculates the priority rating score on those cases identified for further investigation(based upon the presence of a range of factors affecting the need for urgent investigation), assigns the case to an officer for further investigation, and updates the Victim accordingly.
Step 10
To be followed when a case is subject to no further action. This occurs because either; the case has been ECC, or all reasonable lines of enquiry have been exhausted without result, or the matter has proceeded to an outcome in the court system, or it has been resolved by alternative action. As a result the case will either be closed or inactivated.
Step 2
Police respond to the Call for Service, enquiries commence, evidence is gathered or other action taken as necessary. Initial feedback is also provided to the victim
Step 2 Initial Attendance
Step 3 Process and Gather Forensics
Step 5 Prioritise Case
Step 6 Investigate
Step 7 Proceeding Decision
Step 3
Detailed scientific scene examination is conducted, forensic evidence is gathered and analysed, and the relevance of the forensic evidence is recorded and assessed.
Step 6
Investigation is conducted to bring the case up to a point where a suspect can be identified and all preliminary enquiries necessary prior to interview are complete. This includes obtaining and assessing forensic reports, gaining further forensics, following up initial witness accounts, clarifying and corroborating the information obtained at the initial attendance. It also covers the process of suspect interview, follow up enquires arising from the interview.

Appendix 5: Data Process Diagrams Prepared by Stats NZ



Model 2: the police ICT systems, databases and reporting tools model (current NZ.Stat offences and apprehensions outputs)



Presentation notes

This flowchart model portrays the NZ Police ICT systems, databases and reporting tools which produce the current NZ.Stat offences and apprehensions outputs.

NZ Police operations rely on a communications database (CARD), and a incidents, offences, and tasks recording database (NIA), which operationally interact.

The operational data goes through a series of transformations before a subset of it becomes the current NZ.Stat offences and apprehensions outputs.

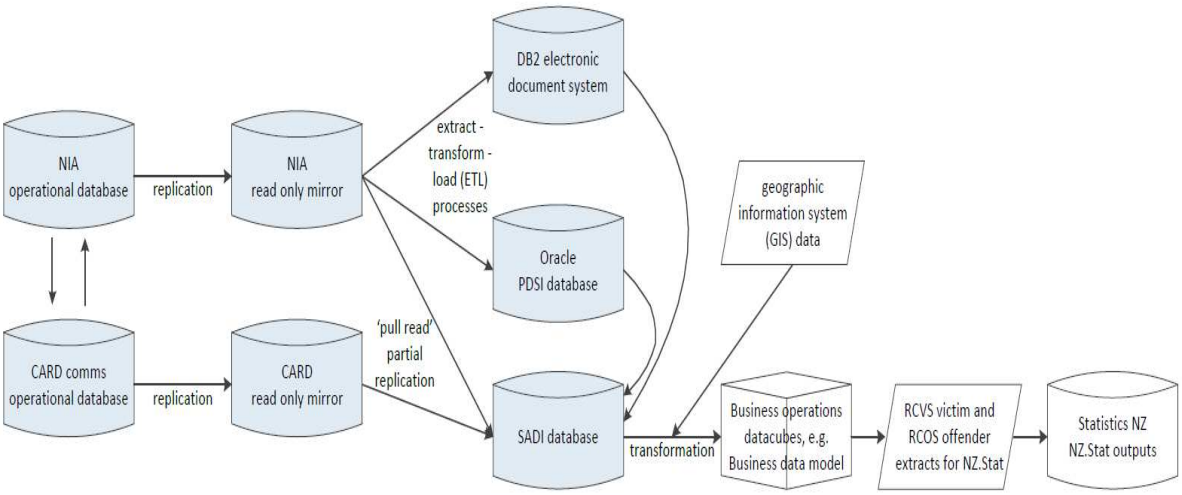
Read only replicas or 'mirrors' of the operational NIA and CARD databases are created on a daily basis.

Extract-transform-load (ETL) processes create subsets of the replica NIA data for police electronic record management, and for police data statistical interface (PSDI) analyses.

A subset of PSDI data, combined with geographical information system (GIS) data (e.g. about police areas and police districts), is used to create business data cubes.

A subset of business data cube data is provided to Statistics NZ to produce the current NZ.Stat offences and apprehensions outputs every six months.

Model 3: the police ICT systems, databases and reporting tools model (new NZ.Stat RCVS victims and RCOS offenders outputs)



Changes / improvements in model 3, compared to model 2

Model 3 is an improvement over model 2 because:

- outputs will be partly based on CARD data
- outputs are based on a 'purer,' less transformed version of NIA data
- outputs will include incidents as well as offences, based on the more complete CARD and NIA data set available

Presentation notes

This flowchart model portrays the NZ Police ICT systems, databases and reporting tools which will produce the new NZ.Stat RCVS victim and RCOS offender outputs.

NZ Police operations rely on a communications database (CARD), and a incidents, offences, and tasks recording database (NIA), which operationally interact.

The operational data goes through a series of transformations before a subset of it becomes the new NZ.Stat RCVS victim and RCOS offender outputs.

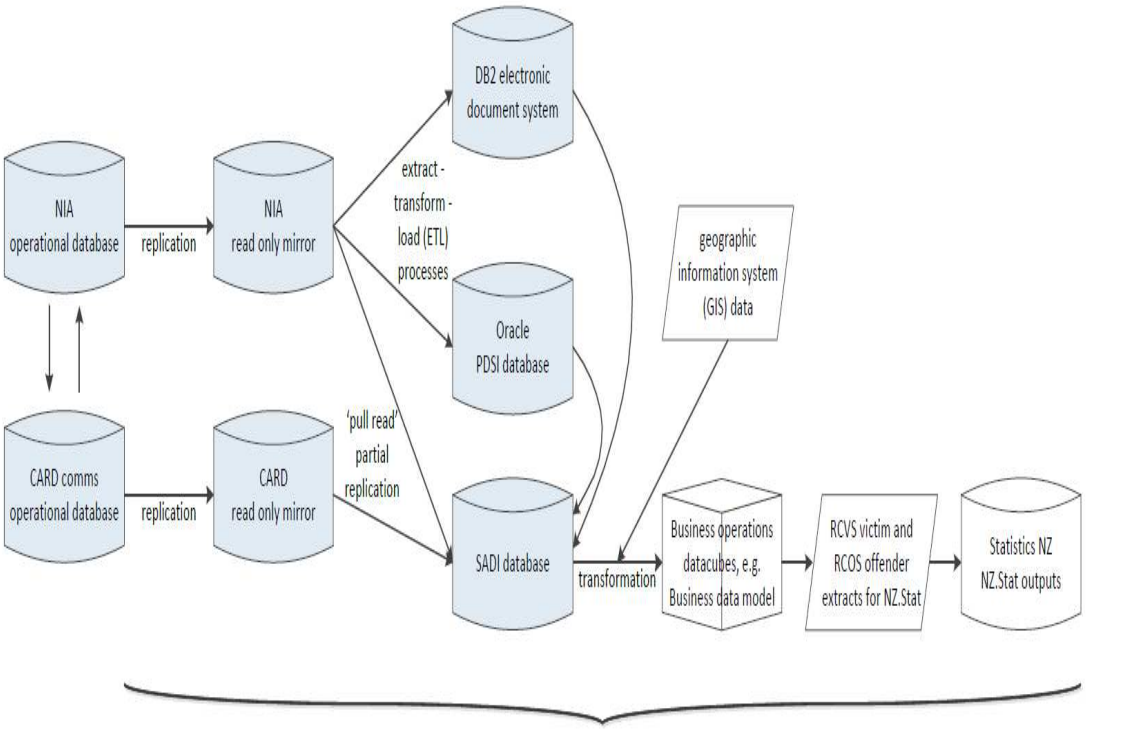
Read only replicas or 'mirrors' of the operational NIA and CARD databases are created on a daily basis.

Further part replication of replica NIA and replica CARD data, informed by electronic document system and police data statistical interface (PSDI) data, creates the statistical analysis database interface (SADI).

A subset of SADI data, combined with geographical information system (GIS) data (e.g. about 2013 census meshblocks, 2013 area units, 2013 territorial authority areas, police stations, police areas, and police districts), is used to create business data cubes, such as the business data model (BDM).

A subset of BDM data is provided to Statistics NZ to produce the new NZ.Stat RCVS victim and RCOS offender outputs every six months.

Model 6: NZ Police statistical processing business consistency and assurance processes



Official Statistics System based security protocols / lockdown of access in place

For each replication / transformation, the ICT group technically reconciles / tests each new data structure against its precursors; documented by process and technical report documents

Statistical analysis team conducts user acceptance testing / analysis on each new data structure; documented by process documents and analysis briefing report documents; e.g.:

To be supplied by NZ Police

- **these peer review processes are framed / conducted within a statistics development cycle (GSBPM), not an IT development cycle (SDLC);**
- old statistics never referenced CARD, so new statistics will have improved data quality;
- new 'pull read' partial replication does not need to do some ETL manipulations which previously reduced data quality
- pass through validity testing;
- counting rules designed to ensure we don't need snapshots;
- time frame to time frame change minimises potential bias;
- small sample testing versus NIA and CARD;
- all documented within a user manual;