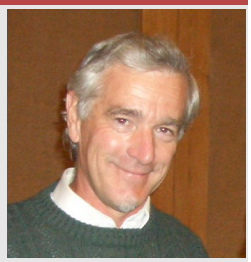
Developing a Human Resource Allocation Model for Police



We Can Help You...

- **Identify the drivers of demand for policing**
- **Identify the optimal levels and distribution of police staffing**
- **Monitor police performance against targets**

Measuring the demand for police services

The development of a well validated Human Resource Allocation Model (HRAM) is critical to ensure that Police have sufficient staff to meet their objectives and to deliver agreed projects and outcomes. This model should ideally provide a mechanism for the Police to identify their total global requirements for police numbers, how they should be distributed at a regional, divisional, district and station level and what the respective skill levels of such a distributed workforce should be. This brochure describes, in plain language, how a Human Resource Allocation Model (HRAM) can be developed, how it works, and how it can be used.

John Walker Crime Trends Analysis has developed a methodology for determining optimal police numbers and allocating them across police districts. The model has been described by Police Commissioner Christine Nixon as "the Holy Grail of Policing" and by the Victorian Police Association as "one of the world's most advanced"[1]. We can show you how to get the best from your police budget.

The development of a Police staffing model:

A simple police staffing formula would suggest that police numbers should be proportional to crime levels. This is not a bad start, but it is complicated by the facts that [a] some types of crime take up much more police resources than others, and [b] that police perform many other types of tasks that are not proportionate to reported crime. These include, for example, road safety patrols, crime prevention activities and public education roles. If there was no district to district variation in the extent to which crimes and these other tasks come to the attention of, and are recorded by, police, the official data on recorded crime and other tasks might be sufficient, on their own, to determine appropriate staffing levels across the State. You would then be able to do some simple calculations to determine how many police you need on an "officers per crime" basis. The resulting formula might be something like:

Staff = .01 times No. of recorded crimes against the person, plus .003 times No. of recorded property crimes, plus .06 times No. of other tasks.

and we would simply get the numbers of recorded crimes and other tasks incidents for each police district, from the recorded crime database, and multiply them by .01, .003 and .06 respectively, to find out how many staff that district should be allocated. This particular formula would suggest that you need one officer for every 100 recorded crimes against the person, plus three for every thousand recorded property crimes, plus 6 for every hundred other tasks.

We know, however, that both reporting rates and recording rates vary from district to district[2], and such a basis for staff allocation would be subject to reporting/ recording bias, or even manipulation. More importantly, we do not want to reward a district that has successfully reduced its crime or other tasks rates by taking staff away on the grounds that they no longer need them. Equally, the Police staffing allocation should not automatically reward districts with poor records, or those that deliberately inflate reporting or recording rates, by increasing their share of resources[3].

We therefore need to use a two stage model. The first step involves identifying the key community characteristics (or “driver variables”) that determine the expected district levels of crime and other tasks, so that staffing can be allocated fairly according to need, and so that future needs can be anticipated by reference to expected changes in those key community characteristics. The second step involves identifying the necessary staffing levels required to respond to given levels of expected crime and other tasks.

We know from extensive research that the geographic, socio-economic and demographic characteristics of a district are the primary determinants of the levels of crime and other tasks in that district, and that the levels of crime and other tasks are the primary determinants of the numbers of police needed to deal with the problems. After examination of a much wider range of possible “driver” variables, the following list of variables might be selected on the basis of their common sense relationships with policing, their statistical explanatory power, their availability at the district level and the frequency with which they can be updated:

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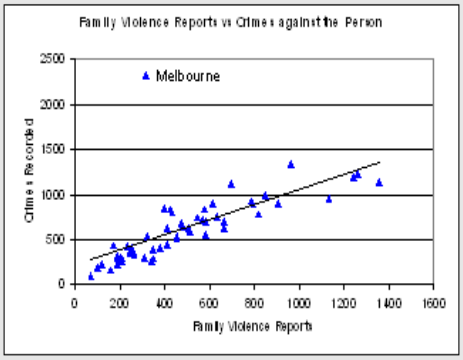
[1] Herald Sun, Melbourne, 17/01/2006

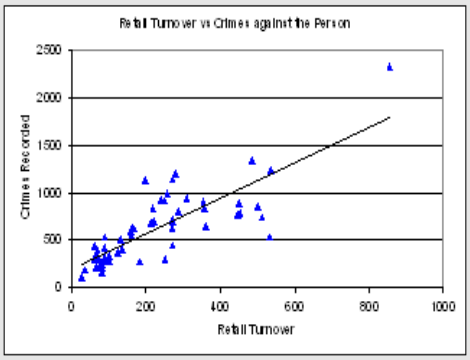
[2] Crime Victimisation and Community Satisfaction Surveys always find regional variation in rates of reporting of crime, related to a range of factors including victim ages and ethnicity, geographic factors such as distance from a police station, and levels of satisfaction with local police. The Australian Bureau of Statistics' assessments of police recording of crime also show regional variation in recording practices.

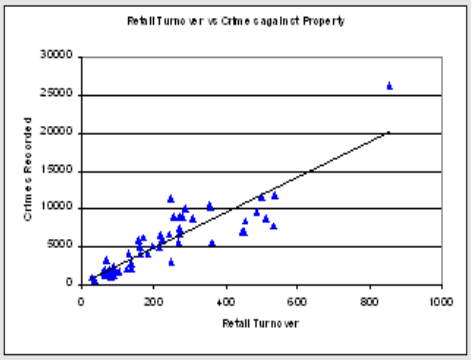
[3] This is not to say that such practices occur presently in Australia, but these tactics have been noted in other forces (see for example, HMIC analyses of Crime Statistics in England and Wales).

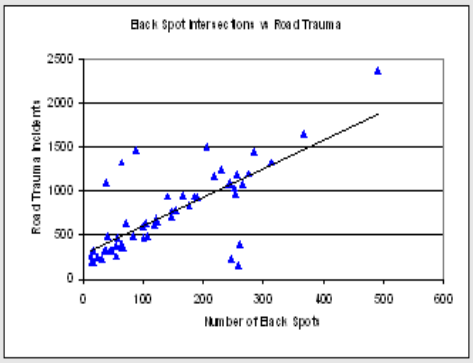
- Total population
- Numbers of people in high-crime sub-groups
- Retail turnover
- Family violence reports
- Numbers of Liquor Licenses
- Numbers of Black Spot road intersections,
- Numbers of Major Events – sport, public processions etc,
- Numbers of Stations with Police Cells, and
- Point of Presence Service considerations (how many stations needed to cover the district).

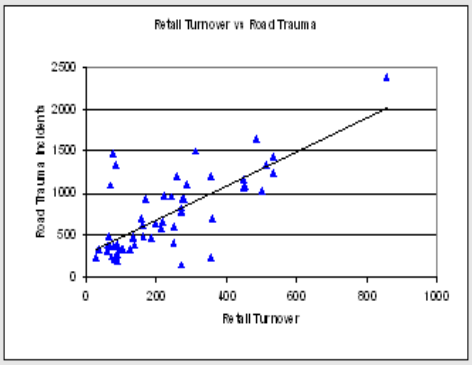
We can check to see how strong the relationships are between these "driver" variables and the various tasks performed by police, including crime control and road trauma assistance. The graphs here show that, while most of the 50 or so police districts conform to similar relationships between these variables and their levels of crime and road trauma, the variables themselves are not always perfect predictors of those levels of crime and road trauma. In particular, some "driver" variables only apply to certain police districts, and need to be treated as "special issues" - for example, the major events that occur only in the major cities, and the stations with cells, which are located near the main law courts. Nevertheless, there is sufficient strength in the statistical relationships to give confidence in the formulas.



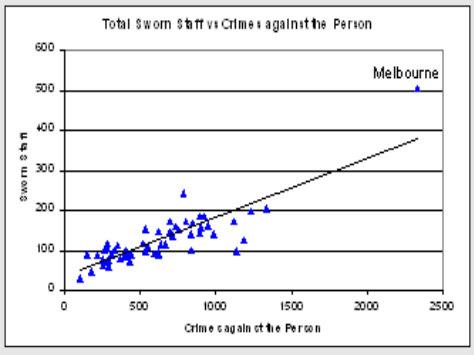


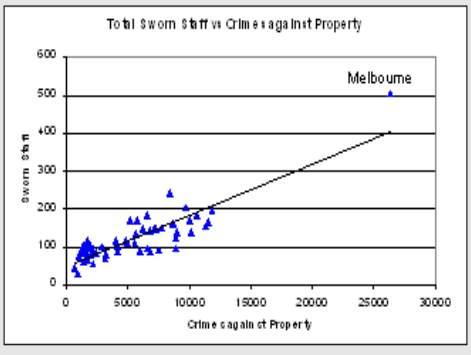


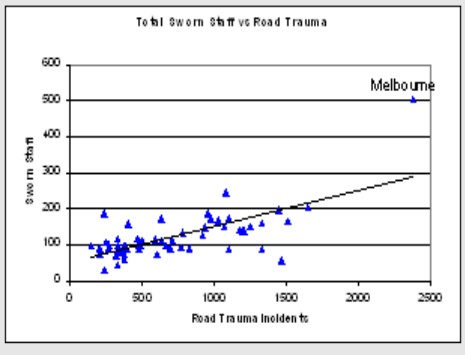




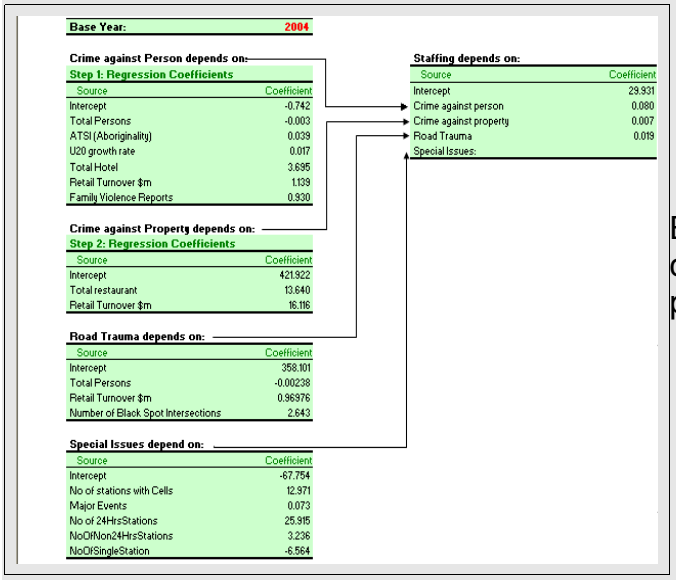
We can also confirm graphically, or using other statistical techniques, that there is a strong relationship between the levels of crime and other tasks and the level of police staffing.







The data can all be brought together in a two-stage formula, as shown in the example below. In this example, after a fixed number of almost 30 staff is allocated to each district to establish the police presence and provide operational support, an additional 80 officers are allocated for every 1000 recorded crimes against the person, seven for every 1000 crimes against property, and 19 for every 1000 road trauma incidents (see "Staffing depends on.." at top right of figure). In turn, the levels of crime against the person, crime against property and road trauma are, themselves, found to be dependent on the driver variables. The resulting staff numbers are finally modified by "special issues" - factors that apply only to specified police districts.



Example of how data on community characteristics can be combined into a rational formula to allocating police staff to districts.

Performance Monitoring

The utility of a HRAM is not confined to simply determining the appropriate levels of staffing for each district. The formulation of the model involves the consideration of community characteristics to determine what levels of crime and other tasks can be expected in each district. These expectations can be compared to actual outcomes to measure district policing performance. Districts achieving levels of crime and other tasks that are lower than expected, given the characteristics of the community they serve, are clearly to be congratulated. Conversely, actual outcomes that are worse than expected should prompt serious analysis of “what’s going wrong”.

Key Performance Indicators (KPIs) can be explicitly incorporated in the HRAM, including those relating to Public Perceptions of Police, so performance can be monitored in all its key aspects, and staffing or other management adjustments can be made on the basis of independent and up-to-date information. Preparation of performance data can begin by comparing actual recorded crime and other tasks numbers with expectations based on the model’s regression equations, together with other data such as clearance rates and Public Satisfaction Indices. From these data, districts can be ranked across a number of different performance criteria, with success areas and problem areas both identified.

Implementation

The use of a HRAM needs to be very carefully implemented. The model will impact upon districts in different ways – some will necessarily lose staff; others will gain staff. “How we do it" will be critical to success in implementing the model. A transition phase must be considered as part of the implementation plan – for example, where the model suggests that some districts should lose a small number of staff in 2005, but return to current staffing levels over the next four or five years as a result of population growth, it would be sensible – both from the perspective of minimising disruption and to maintain staff morale and acceptance of the HR strategies - to maintain staffing numbers in the district until the “demand” catches up with the “supply”. The HRAM can assist by identifying a transitional phase.

The reactions of the communities themselves will also have to be considered in many cases – cutting police numbers is not a popular strategy, and will have to be explained to those communities. In most, if not all, cases where large changes are suggested by the model, reductions in one district are balanced by increases of a similar magnitude in districts nearby. This can be explained as a re-structuring, reflecting relative changes in the demand for policing services, not a reduction.

Changing staffing levels can have profound impacts on the Police buildings management programmes. Increasing staff numbers may require increasing office space; decreasing numbers may make some locations uneconomic. New special purpose buildings take time to design and construct; implementation of the HRAM will need to be accompanied by a strategic buildings replacement or renewal programme.

Annual updating of the model with the new crime and community data will also need careful management. The new data may indicate the need for further change in some districts. The staffing figures from the model should always be regarded as "targets", "guidelines" or "notional", allowing Police the flexibility to implement transitions and contingencies. Because the world is always changing, and therefore the model needs to change too, it needs to be used as a guide, to set target staffing levels and directions, and not be seen as completely prescriptive, to be implemented to the letter and on the day.

Outcomes from the process

Outcomes from the process include:

- Understanding the community characteristics that “drive” the demand for policing services.
- Understanding the variation in police performance in different communities and over time.
- A sound, and connected, basis for planning and budgeting for the police service.

Implications for your country's justice administration

Management Commitment:
To successfully implement a police staffing formula, the first requirement is management commitment to enable the necessary data to be collected, the necessary research to be conducted, and the necessary 'joined-up' thinking to take place between the different parts of the police service. Conducting strategic-level research is difficult, sometimes costly and often has an uncertain payoff, particularly if it involves whole-of-service collaboration. Daily imperatives leave little time for thinking laterally in a joined up way, so all managers have to be encouraged and taught to think in strategic, whole-of-system ways. **John Walker Crime Trends Analysis** can show you how.

Expertise/Technology Required:
This is merely 'knowing what's happening', 'knowing what works', and 'knowing how to measure it'. The technology and skills required are routinely available, and the staffing models have all been built in standard spreadsheet software such as Microsoft Excel, so that the logic is visible and can be modified as required by competent spreadsheet users. **John Walker Crime Trends Analysis** can show you how.

The processes developed in Australia can readily be adapted to your country's situation, as they do not depend on linguistic, cultural or technological factors and, in fact, use mechanisms already very familiar to most administrators. **John Walker Crime Trends Analysis**, with the resources of the Centre for Transnational Crime Prevention at Wollongong University, have the expertise and capability to assist in the development of a criminal justice system forecast modelling capability for your country.

John Walker Crime Trends Analysis' Clients include:

- United Nations Office on Drugs and Crime, Vienna
- The University of Trento, Italy, and the TransCrime Reseach Institute
- The University of Wollongong, Australia, and the Centre for Transnational Crime Prevention
- The Department of Justice, Victoria
- Corrective Services Departments of Victoria, South Australia, Tasmania, Western Australia, the Australian Capital Territory, New Zealand and Colorado (USA)
- The Victoria Police
- The Australian Transaction Reports and Analysis Centre
- The Commonwealth Department of Aboriginal Affairs
- The Department of the Attorney General of Australia
- The Australian Capital Territory Juvenile Justice Department

John Walker Crime Trends Analysis' Awards and Client Responses include:

- John Walker ranked amongst the 25 most cited criminologists in the world's major international journals since 1985, and in the top three in Australasia[4].
- Modeling approach fundamental to CORE – the Public Correctional Enterprise Victoria - being awarded a Silver Medal for Business Excellence during 2003[5] - the highest level ever awarded to any Australian public service agency.
- Acknowledged by the Victorian Department of Treasury and Finance as best practice in the Victorian public service (see their Management Reform Program Case Study)[6]
- Modelling contributed to the awarding of a prize to the Victorian Community Corrections agency for for "Breaking new ground" at the "Probation 2004" international conference[7]. This award recognised "exemplary community corrections projects which serve to advance the knowledge, effectiveness and the integrity of the criminal justice system".
- "While others generate publicity for wild estimates of the extent of money laundering, John Walker modestly devotes much of his life to the development of complex models to identify risks and to quantify aspects of the money laundering problem"[8].
- "For far too long the illicit drug market as been able to operate and hide in obscurity. It has taken much work and dedication, across the world, to shed light on this pernicious market". ...John Walker's... "collaboration was vital to the development of the model which produced the estimates for the value of the illicit drug market"[9].

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[4] Cohn E.G., Farrington D.P., *Changes in the Most-Cited Scholars in Major International Journals between 1986-90 and 1991-95*, Brit.Jnl of Criminology Vol 38 No 1, 1998.

[5] http://www.businessexcellenceaustralia.com.au/BEA/GROUPS/BEA/NEWS/15-03/NEWS15-03.HTM records that CORE was… "the first corrections jurisdiction in the world to gain recognition in such an awards process." .

[6] http://www.dtf.vic.gov.au/DTF/RWP323.nsf/0/1fa2bf76c60e15caca256bd7001ac58b/$FILE/DOJ%20Envirmnt%20Scanning%202003.pdf

[7] http://www.probation.homeoffice.gov.uk/output/Page163.asp.

[8] http://antimoneylaundering.net/Group_Info/?m=200604

[9] United Nations Office on Drugs and Crime, Vienna, 2005 World Drug Report, Volume 1 – Preface and Acknowledgments.