METHODOLOGICAL ISSUES IN FORECASTING PRISONER NUMBERS

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The importance of the question of how to best estimate future prisoner numbers needs little justification. Gaols are expensive to build and to operate. It is understandable that all correctional administrators desire the best available information on the future cell accommodation requirements so that they can determine, for example, when a new gaol may need to be built or whether an apparent drop in prisoner numbers will be sustained enabling an older gaol to be decommissioned. Because determining a potential gaol site, obtaining relevant approvals, as well as the actual construction of a new gaol can take years, predictions are required for several years into the future.

As a researcher in a state government correctional department, I am familiar with correctional administrators asking two types of forecasting questions:

i.) what will be the size of the prisoner population in x years, given that current trends continue?

ii.) what will be the effect of a new or proposed piece of legislation on future prisoner numbers?

In each case administrators tend to be interested in both the effect on daily average prisoner numbers and the effect on the peak population or maximum numbers.

My paper this morning is going to focus on the difficulties in answering each of these two questions. I shall rely on examples pertaining to the NSW prison system.

A variety of forecasting techniques are available. All rely on, in some way, identifying past trends and then projecting these past trends into the future. The techniques vary in the extent and nature of the information required as well as their actual methodologies.

Techniques include:

i.) simple **extrapolation** of past patterns in numbers such as daily average numbers of prisoners, imprisonment rates, etc into the future;

ii.) **models** and **simulations** which require some representation of the processes involved and estimations of the interactions between the processes (e.g., Blumstein, Cohen and Miller, 1980);

iii.) **judgmental** techniques based on the intuitive judgments of experts (e.g., Delphi technique, brainstorming, scenario writing, (Hogwood and Gunn, 1984, pp. 135-140).
1. Hogwood and Gunn (1984) offer a word of warning about forecasting. They have suggested that the topic of forecasting should be approached with humility. They argued that:

"When we consider the problems involved in understanding the past and the present ... it may seem the utmost temerity to try to understand the future" (p.128).

1. The Context: Trends in the NSW prison population

I am going to begin by examining some graphs illustrating how the size of the NSW prison population has changed over time, in order to provide a context for my discussion of forecasting prisoner numbers. While examining these graphs I would like you to consider the problem of how one locates and identifies past trends: Where does one pattern start and finish? Where does the next begin? How can one judge whether fluctuations are occurring around a single long-term trend or where one pattern has been broken and a different one starts?

Figure 1 depicts the daily average prison population in NSW from 1900 to financial year ending 30th June 1992. From this graph it can be seen that, historically, the average prisoner numbers in NSW fluctuated between about 1000 to 2000 from 1900 to 1950. From 1938 there was an increasing trend until 1973 when there was a sudden decrease. A further increase began in the mid-1980's, with the rate of growth accelerating from 1989. Porritt (1988) has attempted to explain some of the fluctuations which occurred between 1967 and 1987.

It should be noted that graphs such as these vastly oversimplify what is happening to prisoner numbers. Because there is only one point plotted for each year, there is no consideration of the fluctuation in prisoner numbers within any year.

Figure 2 shows the highest and lowest prisoner populations within a given financial year, as well as the daily average. In some years the fluctuations in numbers are huge, for example, in 1983-84 the highest weekly state differed from the lowest weekly state by...
903 prisoners, in 1984-85 the highest weekly state differed from the lowest weekly state by 828 prisoners. Again, in 1989-90, the highest weekly state differed from the lowest by 735 prisoners. To put the size of such fluctuations in perspective it is interesting to consider that such differences in prisoner numbers within a given year are almost the size of the entire South Australian prison population. Another way of looking at them, is that these differences in numbers within a given year are also larger than the combined prison populations of the Northern Territory, Tasmania and the ACT.

<table>
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<tr>
<th>Daily Average Number of Prisoners in N.S.W. Gaols (excludes P.D.C.)</th>
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<td>January 1988 to June 1992</td>
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Figure 3

Figure 3 shows the daily average prison population for each month from January 1988 to June 1992. It, like the previous graphs, illustrates that the size of the NSW prison population has increased at an unprecedented rate in recent years.

To put this rate of increase in perspective, consider the John Morony Correctional Centre at Windsor, the most recently built gaol in NSW. The John Morony Correctional Centre was designed to hold 250 prisoners. The distance between each of the pairs of horizontal lines on this graph is 250 prisoners, that is, the design capacity of John Morony.

We can see from this graph, that even though the rate of growth has slowed in recent months, that in four and a half years the daily average prisoner population in NSW has increased by 2216 prisoners, the equivalent of 9 times the design capacity of John Morony Correctional Centre.

Some of this increase, particularly some of that in 1990, can be attributed to the effects of the Sentencing Act. The rest cannot.

2. Predicting the size of the prisoner population, given that current trends continue

Having now illustrated how the size of the NSW prison population has changed over the years, I would like to return to the question of predicting future prisoner numbers, starting with the question of making a prediction under the assumption that current trends will continue.

One of the first methods the Research and Statistics Division of the NSW Department of Corrective Services used to attempt to forecast future prison numbers was a statistical technique called "time series analysis". This forecasting technique is an extrapolative method which endeavours to model past prisoner numbers and then uses this model to predict or extrapolate numbers into the future. That is, its accuracy and usefulness relies on past patterns continuing in the same way into the future. It also relies on the predictor choosing a suitable model.

In 1988 Marie-Therese Nguyen Da Huong and I used time series analysis in order to construct separate projections of various components of the NSW prison population. For example, we made separate projections for the numbers of male prisoners, numbers of female prisoners, numbers of unsentenced prisoners, and numbers of sentenced prisoners (Gorta and Nguyen Da Huong, 1988a; Nguyen Da Huong and Gorta, 1988a, 1988b).

When doing time series analysis one needs to decide how much past data to include. This is determined both by the availability (or lack of availability of the data) as well as assumptions one might have about whether one pattern has finished and a different pattern has commenced.
For example, looking at the time series projections for male prisoners, the initial analysis was based on patterns in the male daily average prison population from 1955 - 1988. From the information shown in this pattern of daily averages (refer to Figure 4), in 1988 we could not tell whether the logarithmic-type increase beginning in 1985 was going to continue; or whether, perhaps there was to be a sudden decrease as there had been in 1973; or whether perhaps the prisoner numbers were going to level off as they did in between 1980 and 1985, or even whether perhaps something else might happen.

Figure 5 shows the predictions of the future numbers of male prisoners based on the time series analysis, as well as the probable upper and lower bounds on these estimates (95% confidence interval). The width of the confidence interval indicates the lack of precision in the estimates for the future. While one might argue that this model was not a good model because of the size of the confidence interval, it was superior to several other potential models which were considered at that time. The size of the confidence interval is not surprising given the lack of clear patterns in the past.

Given that these time series analyses were conducted in 1988 we are now able to view the accuracy of the estimates for the first four years of the predictions.
As can be seen from Figure 6, the actual figure exceeds the upper confidence limit by the second year of the prediction. Such a poor prediction is likely to be largely a reflection of when we conducted the time series analysis. If we had made the prediction a couple of years earlier we would have been unlikely to have erred so greatly. However we made the prediction 14 months before the Sentencing Act (cf. Gorta and Byland, 1990) commenced, that is, before the Sentencing Act was even contemplated.

The one conclusion which we can come to from such analyses is that there is no pattern in daily average numbers of prisoners in NSW which has been operating in the past which is continuing into the future. That is, there is no way of accurately predicting future years’ average prison populations by simply knowing how many we held in the past.

In addition to making projections on the basis of time series analyses of past daily averages, Marie-Therese Nguyen Da Huong and I also attempted projections based on imprisonment rates, that is on the ratio of the daily average prison population to the number (of various specified age groups) in the NSW general population.
Another proposition that I have heard from time to time is that our prison population will decrease in coming years as the population in the community ages. This proposition has some intuitive appeal because we know that the majority of our prison population is comprised of relatively young males. On 30th June 1991, for example, 72.4% of male prisoners in NSW were aged between 18 and 34 years.

![Graph showing Male Imprisonment Rates](image)

When we look more closely, however, we find that there is little to support this proposition. Although the size of the NSW prison population is in some way related to the number of young males in the community (r = 0.636 for correlation between daily average number of male prisoners and numbers of males aged 18-34 years in the community between 1955 and 1991), examining the prison population as a ratio of the number of young males in the community does not make identification of trends any easier (see Figure 8).

The size of the prison population is related to many factors. The effect of legislative and policy changes can totally swamp other factors such as the demographic composition of the potential offender population. Simply trying to extrapolate from past patterns in the daily average number of prisoners held or past patterns in imprisonment rate does not produce reliable predictions because there is not one pattern which is continuing in an unmodified way from the past into the future. Nor is it easy to divide the past patterns into a set of component trends whose sum resembles the observed changes in prisoner numbers over the years.

Time series analysis is not the only method of forecasting future prisoner numbers under the assumption that current trends will continue. Barbara Thompson (another member of the Research and Statistics Division of the NSW Department of Corrective Services), for example, is developing a model of the NSW prison population based on knowing the offence and sentence distribution of prisoners held on a given day and then adding information about those received and those discharged. Predictions can then be made either on the assumption that recent reception rates and sentencing patterns will continue or data can be included to simulate the effect of, say, a particular offence group having their time in custody doubled.

Using the time series analyses conducted in 1988 as an example of forecasting techniques has, however, allowed me to illustrate the two points I wish to make. Returning to the first question of interest to correctional administrators:

"What will be the size of the prison population in x years, given current trends continue?",

for the case of NSW at least, we can answer, that while it is possible to make such predictions, our experience shows us that firstly, past and current trends are difficult to identify and secondly that it is unlikely that "current trends will continue".

3. **Predicting effect of new or proposed legislation**

Turning now to the second question which is often raised by correctional administrators:

"What will be the effect of new or proposed legislation on future prisoner numbers?"
3a. *Summary of Major Sentencing Legislation in NSW*

Before discussing the problems involved in estimating the effect of a new or proposed piece of legislation, I am going to provide a brief summary of the major sentencing legislation in NSW (refer to Figure 9).

There have been three key statutes which have had a major impact on sentencing in NSW over the last twenty-five years. These have been:

- the Parole of Prisoners Act, 1966. Under this Act, approximately one-third remission was deducted from the head sentence, but no remission was deducted from the non-parole period. (If, for example, an offender was sentenced to 9 years head sentence and 3 years non-parole period, he would serve 3 years in custody if his parole were granted at the earliest opportunity or, six years if released to remission);

- the Probation and Parole Act, 1983. Under this Act, approximately one-third remission was deducted from both the head sentence and the non-parole period. (Given the same example as before of an offender sentenced to 9 years on top and 3 years on the bottom, he would serve 2 years in custody if his parole were granted at the earliest opportunity or six years, if released to remission);

- the Sentencing Act, 1989. Under this Act there is no remission deducted either from the head sentence or from the non-parole period. The Sentencing Act introduced other changes.

The Act was described as turning "the sentencing process on its head" (Hansard, 10.5.89, p. 7906). The language of sentencing changed under the new Act which no longer used the terms "head sentence", "non-parole period" and "non-probation period" but rather introduced the terms "minimum term", "additional term" and "fixed term". The "minimum term" is that period which must be served in custody. The "additional term" is that part of the sentence during which the person may be released on parole. The sum of the minimum term and the additional term would be equivalent to that which used to be termed "head sentence". The "fixed term" is similar to the minimum term in that it is the period which must be served in custody, however unlike the minimum term, has no additional term specified. Sentences of six months or less are required, under the Act, to be fixed terms.
Described as "revolutionary" (Hansard, 11.5.89, p. 8143) the Sentencing Act abolished all forms of remission, established a 1:3 ratio of the additional term to the minimum term and removed the presumption in favour of parole for certain prisoners.

The potential effect of the Sentencing Act on the size of the NSW prison population was of concern. In the Act's Second Reading Speech the then Minister for Corrective Services, the Hon. Michael Yabsley, emphasised that "the Government is not seeking to make sentences longer". This was echoed by the guide to the Sentencing Act which was published by the Department of Corrective Services in which it was stated that it was "not the Government's intention that, as a consequence of the Sentencing Act, longer sentences be served".

The 1:3 ratio of the additional term to the minimum term meant that total sentences of 9 years with a minimum term of 3 years, and hence an additional term of six years was not a preferred sentencing ratio.

3b. Estimating the effect of a new or proposed piece of legislation

Prior to its implementation

The largest difficulty in estimating the effect of a new or proposed piece of legislation is to estimate how judicial officers will use the legislation, that is in what ways they might adjust their sentencing patterns. I shall examine two examples: the introduction of the Probation and Parole Act, 1983 and the introduction of the Sentencing Act, 1989.

With the change from the Parole of Prisoners Act 1966 to the Probation and Parole Act 1983, that is, the introduction of remission being deducted from the non-parole periods, it was possible to examine the sentences which had previously been awarded and to calculate the effect of remission being deducted from the time to serve for those with parole periods and to subsequently calculate what effect this would have on the size of the prison population. Obviously if the judicial officers maintained their previous sentencing patterns the size of the prison population would decrease because a large number of prisoners would be serving shorter times in custody.

Prior to the introduction of the legislation, Porritt (1982) discussed the difficulty of predicting the effect of the Probation and Parole Act (1983). He stated:

"The changes proposed for the parole system and for the remission system are intended to reduce, and certainly to not increase, the prison population. ...The effect is to be gained by reducing the time spent in prison for a given sentence. Whether the proposals will have this effect is not certain. The courts will be well aware of the changes and might choose to compensate. This could well increase the prison population if the 'adjustments' overcompensate." (p.4).

Following the introduction of the Probation and Parole Act, the NSW Bureau of Crime Statistics and Research (1985) found, in fact, that judges did tend to set longer non-parole periods to compensate for the deduction of remission.

My second example is the introduction of the Sentencing Act, 1989. It was not possible to calculate a single estimate of the likely effect of this legislation. Instead it was necessary to identify a number of possible scenarios and calculate different estimates for each scenario. Because the Sentencing Act simultaneously changed so many of the parameters concerning custodial sentencing in New South Wales, it was not possible for all aspects of custodial sentencing to remain unchanged after the introduction of the new legislation. That is, it was not possible for new total sentences to follow the same pattern as old head sentences and for the periods in custody, and for the time on post-prison community supervision to each remain the same under the Sentencing Act 1989 as under the Probation and Parole Act 1983. Before the introduction of the Sentencing Act no one was sure what its impact would be.

When asked to predict the possible impacts, we suggested four scenarios (refer to Figure 10):

i.) if the head sentence had previously been the most important part of the sentence to the sentencers, and the sentencers wished to keep the total sentence the same before and after the legislation then the old head sentence (e.g., 9 years) would become the new sentence. The new minimum term (time to serve in custody) would be three-quarters of the length of the old head sentence (i.e., three-quarters of nine years which is equivalent to 6 years 9 months). This would have the effect of keeping the head sentence or total sentence constant but vastly increasing the time spent in custody (6 years 9 months vs 2 years).

ii.) secondly, if the non-parole (or non-probation) period (e.g., 3 years) had been the most important aspect of sentencing to the sentencers, the new minimum terms would approximate the old non-parole periods. This would have the effect of increasing the time spent in custody (3 years versus 2 years) by the length of the remission which previously would have been deducted. Additional terms would...
be one-third the length of the old non-parole period. Hence the new total sentence (e.g., 4 years) would, on average, be much shorter than the old head sentence (e.g., 9 years).

iii.) If the time in custody (the non-parole period less remission) (e.g., 2 years) had previously been the most important aspect of sentencing, then the time in custody would not change before versus after the legislation. The new minimum term would be set as the old non-parole period less remission (i.e., 2 years). The new additional term would be one-third of the minimum term, i.e., 8 months and hence the new total sentence would be much shorter than the head sentence under the previous legislation (2 years, 8 months vs 9 years).

iv.) A fourth scenario we suggested was simply that none of the three scenarios, listed above, would hold.

A fifth scenario (based on the time on post-prison community supervision previously being the most important aspect of sentencing to the sentencer), though a logical possibility, was considered unlikely (Gorta, 1992).

Prior to the introduction of the legislation we provided estimates, based on previous sentencing patterns, of the first three of these scenarios.

Following its implementation

Estimating the effects of new legislation on the prison population after the introduction of the legislation is a task of a completely different nature to predicting its effects prior to its introduction.

In order to determine the effects of the Sentencing Act 1989 on the size of the NSW prison population Simon Eyland and I compared the sentences imposed and the time served for a sample of those sentenced before the change in legislation (specifically, those discharged during the six month period 1st January 1989 to 30th June 1989) with those sentenced after the change in legislation (new sentenced receptions after 1st October 1989 with the initial analysis including those received up to 31st March 1990 (Gorta & Eyland, 1990), a second analysis included those received up to 30th June 1990 (Gorta, 1990) and analysis is currently underway of data for those received up to April 1992).

The details of our analysis are published elsewhere (Gorta & Eyland, 1990). It was found that the average minimum or fixed term for those in the “After” group was 290

<table>
<thead>
<tr>
<th>SCENARIO</th>
<th>PREVIOUS LEGISLATION</th>
<th>SENTENCE UNDER NEW LEGISLATION</th>
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<tbody>
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<td>1.</td>
<td>HEAD SENTENCE</td>
<td>TIME IN CUSTODY</td>
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<td>2.</td>
<td>NPP</td>
<td>TOTAL SENTENCE</td>
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<td>3.</td>
<td>MINIMUM TERM</td>
<td>ADDITIONAL TERM</td>
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<td>4.</td>
<td>TIME ON POST-PRISON</td>
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<tr>
<td>5.</td>
<td>COMMUNITY SUPERVISION</td>
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<tr>
<th>HEAD SENTENCE</th>
<th>TIME IN CUSTODY</th>
<th>TOTAL SENTENCE</th>
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Gorta, 1992
days. This was significantly longer than the average term of 244 days actually served by those in the "Before" Group. This was an overall increase of 46 days of 19 per cent in the average time to be served.

Estimated prison population increase due to change in legislation

![Graph showing estimated prison population increase over time.]

Months since change

Figure 11

By comparing the average time served before and after the change in legislation and by assuming that the reception rate during the period under study was representative of the rate of receptions in subsequent months, it is possible to estimate that the overall increase of 46 (290-244) days (or 19 per cent) in the average time to serve is equivalent to an eventual overall increase in the NSW prison population of approximately 490 additional sentenced prisoners held on any day. By examining differences in the distribution of time spent in custody before and after the legislation change and assuming that the sentencing patterns of prisoners received between October 1989 and June 1990 were representative of the sentencing patterns of prisoners received in future months, it was estimated that the increase in the prison population would be most marked during the period 4-17 months after the introduction of the legislation, that is, February 1990 to March 1991 (see Figure 11).

In summary we found that following the change in legislation:

- prisoners would be serving longer periods in custody;
- fewer were being given sentences including periods of community supervision; and
- those with additional periods were spending much less potential time on community supervision.

As stated previously, because the Sentencing Act simultaneously changed so many of the parameters concerning custodial sentencing in New South Wales, it was not possible for all aspects of sentencing to remain unchanged. Unlike the first three scenarios postulated prior to the commencement of the legislation, no one aspect of sentencing (that is, head sentence, non-parole period, time in custody) has been directly maintained following the commencement of the Sentencing Act. Rather, judicial officers in general have tended to significantly reduce their total sentence from the average head sentence which would have been handed down under the Probation and Parole Act 1983; largely by reducing the length of post-prison community supervision. Minimum terms tend to be shorter than non-parole periods set under previous legislation. Despite these reductions, however, the average time to be spent in custody is longer under the Sentencing Act than under the Probation and Parole Act, 1983.

The Sentencing Act was structured in such a way that at least some aspects of sentencing would change following the commencement of the Act. However, as we saw with the example of the introduction of the Probation and Parole Act, 1983, sentencing patterns also tend to change after the introduction of other legislation, where such changes would not be considered mandatory.

Returning to the second question of interest to correctional administrators, which I posed at the beginning of this paper:

"What will be the effect of new or proposed legislation on future prisoner numbers?"

we can see that before the change in legislation that sometimes we can provide a single estimate of the likely effect while other times we can only provide a range of scenarios. Our largest difficulty in estimating the effect of a new or proposed piece of legislation is that we cannot know how sentencers will change their sentencing patterns to adjust for changes in legislation.
This brings us to the questions of what factors affect the size of the prisoner population and what information would we like to know to be able to forecast future prisoner numbers.

The size of a prison population is a function of both the numbers received and how long they stay.

The numbers received and how long prisoners stay depend on:

- the rates of reported crime;
- police arrest activity;
- court sitting days;
- convictions gained;
- sentences handed down.

These, in turn, depend on:

- the amount of criminal activity;
- the deployment of police;
- legislation;
- judicial officer attitudes;
- community attitudes.

The relationships between these factors and the size of the prisoner population are not always obvious. Blumstein et al 1980 provide the example of a steadily increasing crime rate in the U.S. in the 1960's which was accompanied by a generally decreasing prisoner population. They explained this apparent contradiction by suggesting that the increasing crime rate was the result of more juvenile crime. That juveniles were not usually sent to adult prisons. Further, when these juveniles reached adulthood they were considered "first-time" adult offenders. They suggested that only when a sizeable proportion of the offenders in the cohort were old enough to have developed adult criminal records would there be any significant increase in prison commitments and prison populations (cf. Blumstein et al, 1980, p.3). Biles (1982) also observed that increasing crime rates have led to decreasing imprisonment rates in Australia (p. 152). He referred to Pontell's "system capacity model" as a possible explanation. An example of this which was given was that during periods of increasing crime there is less police and prosecutorial time available for each case. Biles suggested that this may in turn have the effect of forcing the police to seek convictions for lesser offences which are quickly and easily provable.

Blumstein et al also provided examples where increases in the proportion of convicted offenders was not a reflection of judges becoming "tougher" but simply due to the early diversion of the defendants who would otherwise have been convicted but who would not have received prison sentences.

While obviously important considerations when considering future prison populations each of these are difficult to predict, let alone quantify.

**Predicting Legislative Change**

For example, let us consider how well can we predict changes in legislation?

If we were sitting here in 1980, how many of the changes which have occurred in the following 10 years in NSW would we have been able to predict?

In 1980 the Parole of Prisoners Act, 1966 was still in operation. Remissions came off the head sentence but not off the non-parole periods.

Would we have been able to predict the Release on Licence Scheme operating in 1982/83? Or the Probation and Parole Act, 1983 which introduced remissions to be deducted from non-parole periods and the automatic release of those with head sentences of three years or less to after-care probation? Would we have been able to predict that in just over five and a half years the Probation and Parole Act would have been repealed and replaced by legislation such as the Sentencing Act?

I would suggest that we would have known that remissions coming off the bottom was a possibility, because that was already happening in other states such as Victoria. However the effect this would have on the size of the prison population would not have been clear: all we could have known was that if prisoners were serving less time because they were having remissions deducted from the bottom of their sentence, then the prison population would be less. We would not have known how judges and magistrates were going to compensate the effect of the legislation by setting sentences of different lengths.

Once remissions were being taken from the non-parole periods it was again conceivable that legislation could again change so that remissions were not deducted.

How much notice do we get of changes in legislation?

Taking the Sentencing Act as an example, to my knowledge the Department was first approached about possible effects of legislation similar to the Sentencing Act in February
1989. At that time, it was thought that the proposed legislation would only apply to prisoners with sentences of 3 years or more. The second reading speech introducing the bill occurred on the 10th-11th May 1989. The legislation was enacted at the end of September - altogether a little under 8 months notice - not a lot of time for planning.

Predicting other factors

We do receive an abundance of information about factors which may affect the numbers being received into prison and how long they are likely to stay in custody. Some of the information comes from our knowledge of policy changes under consideration either by our own Department or by other areas of the criminal justice system. Another source of information is the media.

Examining the recent press, we find headlines and stories such as:

"PUSH FOR TOUGHER CAR DEATH PENALTY" (Telegraph Mirror 22/7/92)

The story went on to say:

"A family whose son was killed by a car has begun a major push to have culpable driving laws changed. ... Cabramatta Labor MP ... and the family ... are campaigning for drivers causing death on the roads to be imprisoned for life ..."

"GET-TOUGH SCHEME FOR DANGER DRIVERS" (Telegraph Mirror 24/7/92)

"... The NSW Staysafe Committee has released a discussion paper outlining tougher minimum mandatory sentences for driving offences and the reintroduction of traffic courts. ... Under the plan, mandatory periods of imprisonment, licence disqualification, and fines could be imposed on drivers found guilty of culpable driving."

"NEW LAWS TO PUT RACISTS IN PRISON" (Telegraph Mirror 24/7/92)

"People who incite hatred or ridicule others because of their race and colour could face jail under strict new federal laws."

"INSURERS MOVE ON ARSON LAWS" (Telegraph Mirror 24/7/92)

"Insurance companies are considering pushing for legislation to ensure the medical profession reports burns victims in the same way they are bound to report gunshot wounds. ... An International Association of Arson Investigators spokesman yesterday said the move would lead to a higher rate of arson arrests in a shorter time."

"FRAUD ON WELFARE UP" (Sun Herald, 26/7/92)

"Welfare fraud and overpayments detected by the Federal Department of Social Security increased by nearly 50 per cent to $153 million last financial year."

Even the headline

"FAMILY LIVING IN STATION WAGON" (Sun-Herald, 26/7/92)

provides a reflection on the current economic and social circumstances, which in turn, may affect crime rates.

This set of headlines was found from scanning only three newspapers. Such a wealth of information does not, however, make the task of forecasting the prisoner population any easier. It is difficult to know which of these proposals will eventuate and for those which do eventuate, it is difficult to know when they might commence and then to know when their effects may start to be felt.

Although factors such as legislative change, (as well as deployment of police, judicial officer attitudes, etc) are difficult to predict, let alone quantify, as we have seen previously, we cannot however assume that the nett effect of any changes in these factors in the future will follow the same pattern as the nett effect of changes in these factors in the past. That is to say, it is unlikely that current trends will continue.

5. Summary And Conclusions

In summary, what I have argued this morning is that:

i.) past and current trends are difficult to identify;

ii.) while it is possible to make predictions about future prisoner numbers on the assumption "that current trends will continue", it is unlikely that current trends will, in fact, continue;

iii.) simply extrapolating from past patterns in the daily average number of prisoners held and past patterns in imprisonment rate does not produce reliable predictions because there is not one pattern which is continuing in
an unmodified way from the past into the future;

iv.) the effect of legislative and policy changes can totally swamp the effect of other factors such as the demographic composition of the potential offender population;

v.) the largest difficulty in estimating the effect of a new or proposed piece of legislation is to estimate how judicial officers will use the legislation, that is, in what ways they might amend their sentencing patterns;

vi) the size and composition of the prison population is the result of a complex set of social processes. Changes in the influential factors (e.g., changes in legislation, deployment of police, judicial officer attitudes, community attitudes, etc.) are difficult to predict, let alone quantify in advance.

In general, the tools available to us and our limitations are as follows:

1. We are able to monitor our current position, that is the current rate at which the prison population is increasing.

2. When we have information on numbers received and sentences to be served we can make predictions about future prison populations. We can do this either assuming that nothing changes or by incorporating hypothetical scenarios, such as what would be the effect on the prison population over a particular time period if sentences awarded for a specific offence were doubled/halved, etc.

3. We can develop more and stronger links with other agencies within the criminal justice system, including judges and magistrates, in order to improve information flow about proposed legislative and policy changes.

4. It is not possible to know what the prison population is going to be in, say 10 years, by simply looking at numbers held in past years. The size of the prison population in 10 years will depend on the numbers received and the length of time they serve.

5. We are not well able to predict future legislative changes.

6. The amount of notice we get of proposed legislative changes is not sufficient for extensive departmental planning.

7. We are not well able to predict the extent of reaction of judicial officers to legislative changes.

So where does this leave us?

My beliefs about forecasting prisoner numbers have changed over time. I began by believing that there exists some pattern in the prison population which could be determined if one had sufficient information. The first set of difficulties I came across seemed to be technical ones:

... if only we had more data ....
... if only we had better data ....
... if only we had a more sophisticated statistical technique ....
... if only we had a more flexible computer system.

The source of the next set of difficulties that I saw were the policy and legislative changes. I could see that the policy and legislative changes, while having a marked effect on the size of the prison population, were frequently unable to be predicted very far in advance. I saw such policy and legislative changes as interruptions or interferences to what would otherwise be a predictable pattern. If one could locate the various policy and/or legislative changes and then quantify the effects on the size of the prison population of each of these changes one would be able to discover some underlying pattern in prisoner numbers to which other changes, including future changes, could either be added or subtracted.

It is more realistic to accept that political change is and will continue to be part of the overall process. It is not an interference which superimposes variations on some underlying pattern. I am giving this paper at a time when in NSW, there is a delicate balance in Government which does not hold a majority in the Lower House but rather needs to rely on support from the three non-aligned independents; when Ministers from the same political party have different visions of the role of corrections, when Departmental heads are appointed on short-term contracts. Such circumstances lead to individuals wishing to make an impact rather than maintaining the status quo. Hence change will continue to be inevitable.

Once again, where does this leave us?

We do what we can and recognise the role and potential impact of what we do. Despite what I have said previously, I believe that it is important to continue to monitor current trends in prisoner numbers and to forecast future prisoner numbers based on current
trends continuing. However, rather than seeing this as providing the number of prisoner beds required at some future time, I see such projections as part of the political process. The material we produce acts as information, perhaps as a warning, that these will be the potential numbers if current practices do not change. Hence these projections, rather than providing an independent measure of the situation, become part of the process - possibly providing the stimulus for future change.

Similarly when forecasting the future prisoner numbers likely as a result of potential or proposed new legislation or policy it is important to provide not just one estimate but a number of estimates in order to consider possible reactions of judicial officers to any new legislation. Those planning the legislation should also be warned that it is possible that a different scenario from any of those outlined might eventuate. Attempts should be made at more extensive consultation with judicial officers concerning their opinion of proposed legislative changes and what they consider their practice would be under proposed legislation.

Forecasting the size of the prison population is an art not a science. Any estimates provided become part of the discussion, and part of the political process. What is being measured is not independent of the process of making the measurements. The question of how best to estimate future prisoner numbers is an important one which does not have an easy answer. It is easier to nominate the obstacles to be avoided than to actually avoid them.

REFERENCES


