# Why is the NSW prison population growing?

### Don Weatherburn, Wai-Yin Wan and Simon Corben

**Aim:** *To provide a preliminary analysis of the rapid rise in the NSW prison population from January 2013 to March 2014.*

**Method:** *Descriptive analysis of court, crime, arrest and correctional data, and ARIMA modelling of prison trends.*

**Results:** *The key factors responsible for the recent rise in the NSW prison population appear to be a higher rate of arrest for serious crime and an increase in the proportion of convicted offenders given a prison sentence. There is no evidence that prisoners during 2013 are spending longer in custody but there is evidence the length of stay in custody may increase over the coming year. If the current trend in inmate numbers continues, the NSW prison population will rise by another 17 per cent (i.e., to about 12,500 inmates) by March 2015.*

**Conclusion:** *Early consideration should be given to measures that reduce the demand for prison accommodation and/or expand prison capacity.*

**Keywords:** *prison, incarceration, imprisonment, sentencing*

## Introduction

The NSW prison population has undergone some remarkable changes in the last 13 years. Between mid-2001 and mid-2009 it increased by 34 per cent. Over the next 3 years it then fell by 8 per cent, reaching a temporary low of 9,600 inmates. The relief provided to correctional administrators by this fall in inmate numbers, however, turned out to be short-lived. Between late September 2012 and late March 2014, the prison population reversed course and rose by 13 per cent, reaching a record high in March this year of 10,917.

The rapid growth in the NSW prison population is a matter of significant concern. Prison is a very expensive form of crime control. The marginal cost of each additional prisoner over the period from September 2013 to the present was approximately $119 per day. To be sure, the expenditure is not without its benefits. Incapacitating offenders does help reduce crime (Levitt, 1996; Marvell & Moody, 1994; Spelman, 2000; Wan, Moffatt, Jones, & Weatherburn, 2012; Witt & Witte, 2000). Recent research, however, suggests that the marginal effectiveness of prison as a crime control tool declines as a prison system expands (Liedka, Piehl, & Useem 2006). Rapid prison population growth also carries risks. If the number of prisoners expands faster than prison capacity, the resulting overcrowding can disrupt the provision of rehabilitation programs and services.

In extreme cases it can also spark prison unrest. It is critical, therefore, to understand why the NSW prison population is rising and whether the trend is likely to continue.



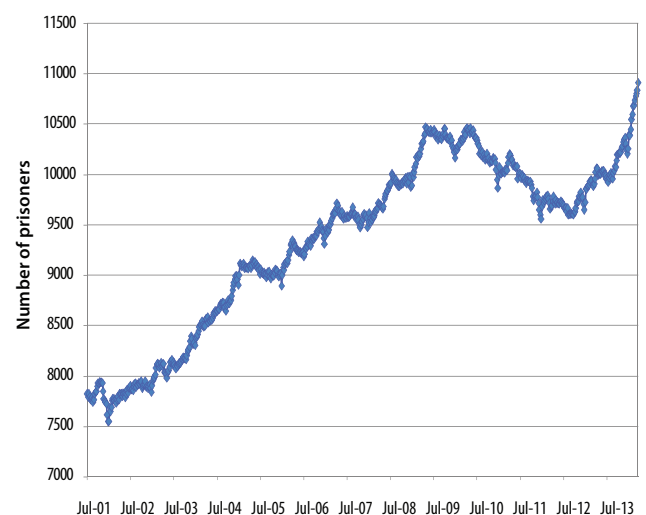*Figure 1. NSW prison population: July 2001 - March 2014*

Figure 2. Change in number of prisoners by inmate status: January 2013 - March 2014
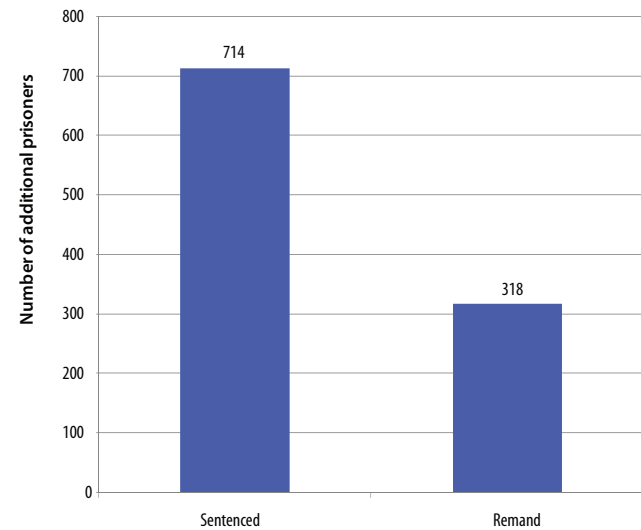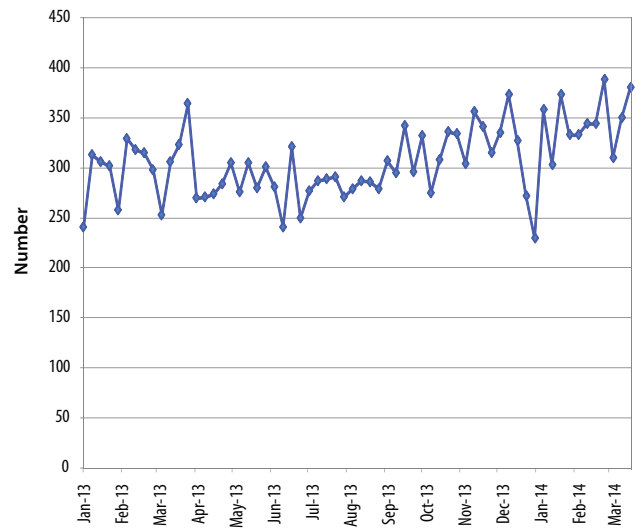


Figure 3. Prison receptions : January 2013 - March 2014

The purpose of this Bureau Brief is to address these issues. The analysis is only preliminary. The criminal justice system is extraordinarily complex and the data required to provide a full explanation for the rise in prisoner numbers is in some cases (e.g., information on rates of bail refusal at first court appearance) very difficult to obtain. Given the rate at which the NSW prison population is rising, however, it seems prudent to provide some analysis of the problem, even if only to help identify potential points of leverage in managing the growth in prisoner numbers. The main focus of the brief is on the period where growth in prisoner numbers has been fastest; that is, the period from January 2013 to March 2014. As court data for the first three months of 2014 are not yet finalised, our analysis of court sentencing data is limited to the period January 2013 to December 2013. Because of the delay between arrest and imprisonment, on the other hand, we examine arrest trends over the period 2012-2013. We focus most of our attention on the growth in sentenced prisoners for two reasons. Firstly, as can be seen in Figure 2, the growth in sentenced prisoners has been more substantial than the growth in remand prisoners. Secondly, a high proportion of persons held on remand are eventually sentenced to imprisonment with their terms of imprisonment backdated to the point of entry on remand.

## What is causing the growth in prisoner numbers?

### Changes in prisoner receptions

At the most basic level, the prison population is a function of the rate of arrival (reception) and the length of stay. That is, an increase in the prison population could be driven by an increase in the numbers sent to prison and/or an increase in how long prisoners are held. Figure 3 shows the trend in prisoner receptions over the period January 2013 to March 2014.

It is obvious from Figure 3 that the weekly number of receptions increased over the second half of 2013 and the first 3 months of

2014. The rate of increase in prison receptions over this period averaged 0.714 per cent per week. Put another way, an average of 291 people were received into custody in January 2013, whereas by March 2014, the average prisoner reception rate had risen to 357 and was showing no signs of decline. Increased prison receptions are clearly one factor making a substantial contribution to the growth in prisoner numbers. A key question arising out of Figure 3 is what is driving the increase in prison receptions.

One factor driving up prison receptions is an increase in the percentage of defendants refused bail (and therefore remanded in custody). Between the first and second 6 months of 2013, the percentage of defendants refused bail rose from 6.6 to 7.7 per cent. It is difficult to determine the full effect of this change because, as noted earlier, a large proportion of persons held on remand will at some future point become sentenced prisoners with their terms of imprisonment backdated to the point of entry on remand. This said, those who are remanded in custody and subsequently not convicted or not given a prison sentence unquestionably make an independent contribution to prison population growth. Figure 4 uses court data to compare the first and second 6 months of 2013 in terms of the number of additional convicted offenders given a prison sentence. The change is broken down by principal offence but, for clarity of exposition, the offence categories have been limited to those where the number of additional offenders sentenced to imprisonment exceeded nine. The top five contributors to the growth in sentenced prisoner receptions during 2013 were:

- *Aggravated sexual assault (an additional 73 persons imprisoned)*
- *Serious assault resulting in injury(an additional 55 persons imprisoned)*
- *Aggravated robbery (an additional 53 persons imprisoned)*
- *Drive while licence disqualified or suspended (an additional 51 persons imprisoned)*

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- *Deal/traffic drugs (non-commercial quantity)(an additional 51 persons imprisoned)*

Although these are the main contributors, it is clear that significant numbers of additional offenders have been sentenced to prison for a range of other offences as well. Summed across the remaining offence categories, a total of 205 additional offenders received sentences of imprisonment in the second half of 2013 (compared with the first half of 2013). Some proportion of these offenders will already be serving sentences but the new sentences will add to the prison population by extending the period they spend in prison.

A growth in the number of persons being sentenced to imprisonment usually signals a growth in the rate of arrest and/or a growth in the proportion of convicted offenders imprisoned.[1] We consider each of these possibilities in turn.

Persons arrested are referred to by police data as persons of interest (POIs). Figure 5 shows the *change* in persons of interest (POIs) proceeded against to court for the same offences as are shown in Figure 4. Because it can take between 6 months and 1 year for a case to proceed from arrest to conviction and sentence, we focus on the growth in POIs proceeded against over a period of time prior to but overlapping with the sharp rise in rates of imprisonment (viz. January-June 2012 to January-June 2013). As can be seen from Figure 5, several categories of offence, which have seen significant increases in the number of sentenced prisoners over this period, have also seen a significant increase in the number of arrests. The most notable of these are: *obtain benefit by deception, drive while licence is disqualified or suspended, burglary/break and enter, serious assault resulting in injury and dealing and trafficking in illicit drugs*.

These data suggest that some of the increase in prison receptions arises from increased crime and/or increased enforcement activity by police. It should be noted in passing, however, that policing policy can influence the likelihood of imprisonment even without changing the rate of arrest.



Figure 5. Change in arrests by offence type: January-June 2012 to January-June 2013
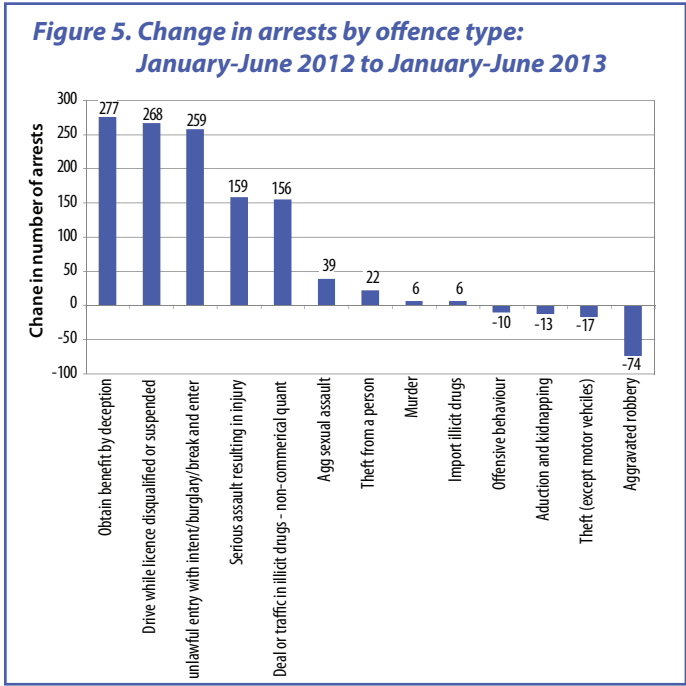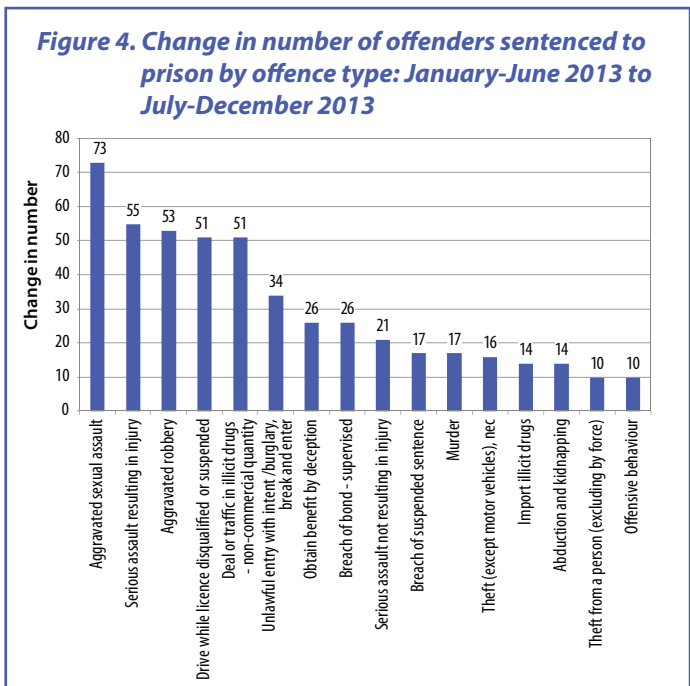
The decision to imprison a convicted offender is strongly influenced by factors such as the seriousness of the offence within a category (e.g., an increase in assaults involving serious injury), the length of the offender's prior criminal record, the number of concurrent offences and any past record of breaching community based orders. If police target offenders with these characteristics, the proportion sentenced to prison will rise even if the arrest rate does not. Some of the offence categories in Figure 5 that do not show significant changes in arrest rates may nonetheless have contributed to the growth in imprisonment because the offenders arrested for these offences may have committed more serious forms of offence or had characteristics (e.g., longer criminal records) that would have rendered them more likely to be imprisoned.

As noted earlier, a growth in the number of persons being sent to prison for various offences can arise from a growth in the proportion of convicted offenders sentenced to imprisonment. Table 1 explores this issue for the offences displayed in Figures 4 and 5. The first column lists the offences. The second and third show, respectively, the number and percentage imprisoned in the first 6 months of 2013. The fourth and fifth show the number and percentage imprisoned in the second 6 months of 2013. The final column shows the *percentage point change* in the percentage of convicted offenders given a prison sentence (i.e., the difference between columns five and three).

There are some surprisingly large changes. The two most notable are for *drug importation* and *aggravated sexual assault*. In the former case the percentage of convicted offenders imprisoned rose by 15.6 percentage points. In the case of *aggravated sexual assault*, the percentage imprisoned rose by 10.8 percentage points. Increases in the proportion of convicted offenders imprisoned are evident for all except four of the offences in the list. Another part of the reason for the growth in prisoner numbers, then, is a growth in the proportion of convicted offenders given a prison sentence.



Figure 4. Change in number of offenders sentenced to prison by offence type: January-June 2013 to July-December 2013

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**Table 1. Changes in the probability of imprisonment by offence type: January-June 2013 to July-December 2013**

| Offence | January-June 2013 | | July-December 2013 | | Percentage point difference in % imprisoned |
|---|---|---|---|---|---|
| | Number imprisoned | % imprisoned | Number imprisoned | % imprisoned | |
| Import illicit drugs | 27 | 84.4 | 41 | 100.0 | 15.6 |
| Aggravated sexual assault | 115 | 50.9 | 188 | 61.6 | 10.8 |
| Theft (except motor vehicles), nec | 131 | 16.8 | 147 | 21.2 | 4.5 |
| Deal or traffic in illicit drugs - non-commercial quantity | 121 | 27.1 | 172 | 31.3 | 4.1 |
| Aggravated robbery | 180 | 76.6 | 233 | 80.6 | 4.0 |
| Obtain benefit by deception | 130 | 14.9 | 156 | 18.6 | 3.7 |
| Offensive behaviour | 15 | 2.5 | 25 | 5.1 | 2.5 |
| Serious assault resulting in injury | 513 | 21.9 | 568 | 24.2 | 2.3 |
| Breach of bond - supervised | 93 | 10.1 | 119 | 12.3 | 2.3 |
| Breach of suspended sentence | 223 | 50.3 | 240 | 52.1 | 1.7 |
| Drive while licence disqualified or suspended | 257 | 5.4 | 308 | 6.9 | 1.5 |
| Serious assault not resulting in injury | 66 | 13.0 | 87 | 14.2 | 1.2 |
| Murder | 17 | 100.0 | 34 | 100.0 | 0.0 |
| Abduction and kidnapping | 19 | 82.6 | 33 | 82.5 | -0.1 |
| Unlawful entry with intent/burglary, break and enter | 407 | 55.1 | 441 | 54.0 | -1.2 |
| Theft from a person (excluding by force) | 41 | 49.4 | 51 | 46.8 | -2.6 |

What could cause such a change? There are two main possibilities. The first is a hardening of court attitudes toward offenders. The second is a change in the profile of offenders coming before the courts. The growth in imprisonment rates for *importing drugs*, for example, may reflect changes in the quantities of illegal drugs found in the possession of those convicted of drug importation, or an increase in the percentage of convicted drug offenders who have a prior conviction for drug trafficking. The growth in imprisonment rates for those convicted of *aggravated sexual assault* may be due to a growth in the number of convictions involving child as opposed to adult sexual assault, or growth in the number of cases where the victim has suffered serious injury. Past research (Lulham & Fitzgerald, 2008) suggests that court sentencing practices change rather slowly over time. A change in the profile of offenders coming before the courts would therefore seem the most likely explanation for the rise in the percentage of convicted offenders imprisoned.

## Changes in the length of stay

We turn now to the potential contribution of changes in the length of time inmates are spending in custody. The easiest way to examine this is to plot the number of persons discharged from correctional centres in NSW. If the length of stay in custody is rising, we should expect to see a fall in the rate of discharge from custody.

Figure 6 shows the number of inmates discharged from custody each week from the week ending 18 March 2012 to the week ending 23 March, 2014. The longer time period is chosen to highlight the fact that the sharp change in prisoner discharges between December and January is a periodic feature of the
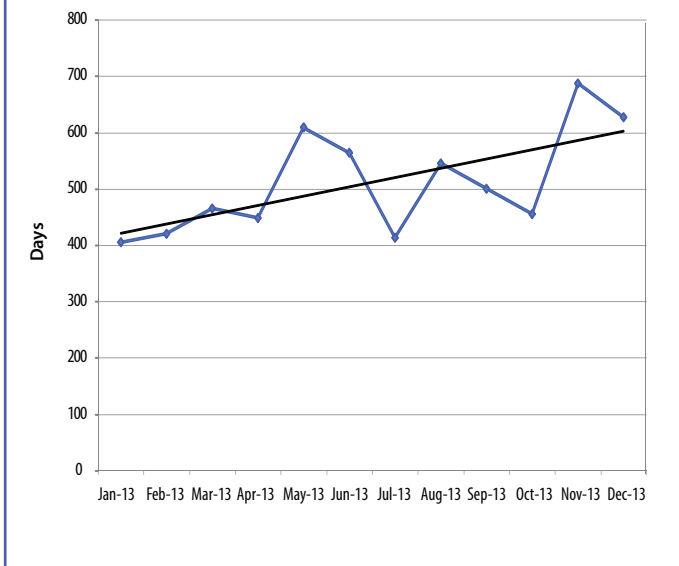


*Figure 6. Persons discharged from NSW correctional centres: March 2012 - March 2014*
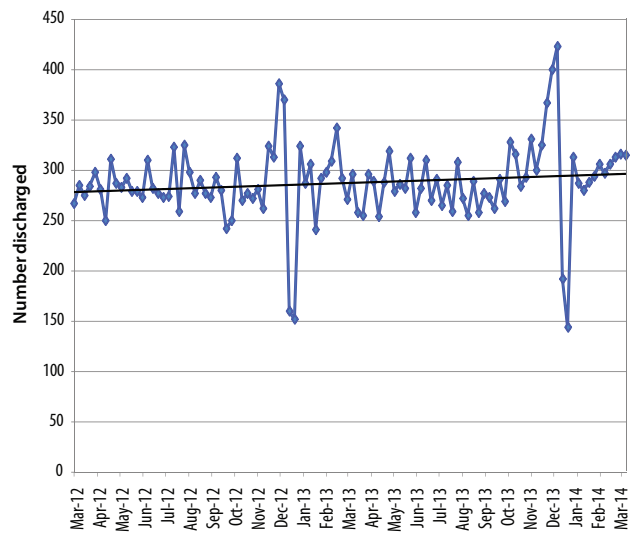
series. There is no evidence in Figure 6 of a fall in the number of inmates discharged from custody. In fact, if the fitted linear trend is any guide, there has been a slight increase in prisoner discharges.

Another way to test for changes in the length of stay in custody is to examine changes in the average aggregate non-parole period imposed by the courts. Figure 7 shows the mean aggregate non-parole period for each month of 2013.

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**Figure 7. Mean aggregate non-parole period: January - December 2013**

have both clear evidence of an increase in crime *and* an increase in arrests are *murder* and *obtain benefit by deception*. Between 2012 and 2013, the number of murder offences rose from 67 to 83. Recorded fraud offences (which include obtaining benefit by deception) have risen by 13.2 per cent over the same period.

There is good reason to believe, then, that much of the increase in arrest rates in recent times is due to changes in policing policy and/or resources rather than changes in crime. This makes the future course of arrest rates very difficult to predict. This point is underscored by the fact that, despite the large increase in arrests between the first 6 months of 2012 and the first 6 months of 2013, arrest rates for the offences we have focussed on here have now gone into reverse. Figure 8 shows the trend in the number of arrests, between the first 6 months of 2013 and the second 6 months of 2013. The offence categories are those employed in earlier figures. As can be seen from Figure 8, there were falls in arrests for all offences except *driving while licence disqualified or suspended* and *murder*. The largest fall involved *obtain benefit by deception* but the fall in this case was probably affected by the fact that there are generally long lags in the discovery and reporting of fraud offences.

If the future course of arrests is hard to predict, the future course of bail and sentencing decisions is even harder to gauge. It is entirely unclear whether the proportion of offenders given a custodial penalty will continue to increase, whether the recent growth in aggregate non-parole periods will continue or whether other key factors not currently exerting any effect (e.g., parole revocations) will start to exert an effect. The impact of the new NSW Bail Act (2013) which, among other things, removed the presumptions previously surrounding bail, will not become clear until several months after its proclamation in May this year. The effect on the NSW prison population of the proposed new mandatory sentencing laws for assault (Roth 2014) will depend on what form they eventually take. At this stage that form is unknown as, at the time of writing, they are still being considered by Parliament.

It is clear that, during 2013 at least, the mean non-parole period imposed on those who received a prison sentence increased (possibly because of a change in the profile of offenders coming before the courts). At first sight, the trend in Figure 7 might appear to conflict with that in Figure 6. The effect of changes to non-parole periods during 2013, however, will not be felt until the offenders receiving longer non-parole periods reach the point where earlier cohorts of offenders would normally have been released (i.e., 2015 and beyond). Figures 6 and 7 therefore suggest that, although the rise in prisoner numbers during 2013 was not due to a rise in the length of stay in custody, increases in sentence length during 2013 may put further upward pressure on the prison population in 2014.

## Will the increase continue?

This brings us to the critical question of whether the rapid increase in the NSW prison population observed over the past 15 months will continue. This is a difficult question to answer because most of the causes of the increase in imprisonment rates appear to be endogenous (internal to the criminal justice system) rather than exogenous (external to the system).

Consider the growth in arrests, for example. Normally one might expect a growth in arrests to follow a growth in crime. Few of the offences which have been associated with increased arrest rates, however, are showing any signs of increasing. In fact, many are in decline.[2] Over the past 24 months, for example, there have been falls in *break and enter dwelling* (down by 13.3%), *break and enter non-dwelling* (down by 10.5%) and *stealing from the person* (down 11.8%). Recorded rates of crime in many of the other categories of offence that have seen increased numbers of arrests have remained stable, including: *importing illicit drugs*, *offensive conduct*, *abduction and kidnapping*, *other theft*, *robbery with a firearm* and *robbery with a weapon other than a firearm*. The only offences for which we

In circumstances such as these, the best that can be done to predict the future course of the NSW prison population is to assume that the current policy settings, policing practice and other relevant factors (e.g., sentencing) remain unchanged and construct a forecast based on past trends. Figure 9 shows the result of fitting a statistical[3] model to the weekly prison population data with terms capturing seasonal variation and a quadratic time trend as independent variables. The forecasting period was set to 104 weeks. The first vertical line shows the point at which the forecast begins. The second vertical line shows the position 12 months later. The middle (red) line shows the predicted prison population. The two dashed lines on either side of the red line show the 95 per cent prediction intervals surrounding the prediction. As can be seen from the graph, other things being equal, at the current rate of increase, the NSW prison population is predicted to rise by another 17 per cent (i.e., to about 12,500 inmates) by the end of March next year.

Figure 8. Change in arrests by offence type:
January-June 2013 to July-December 2013



Figure 9. NSW prison population: observed and forecast
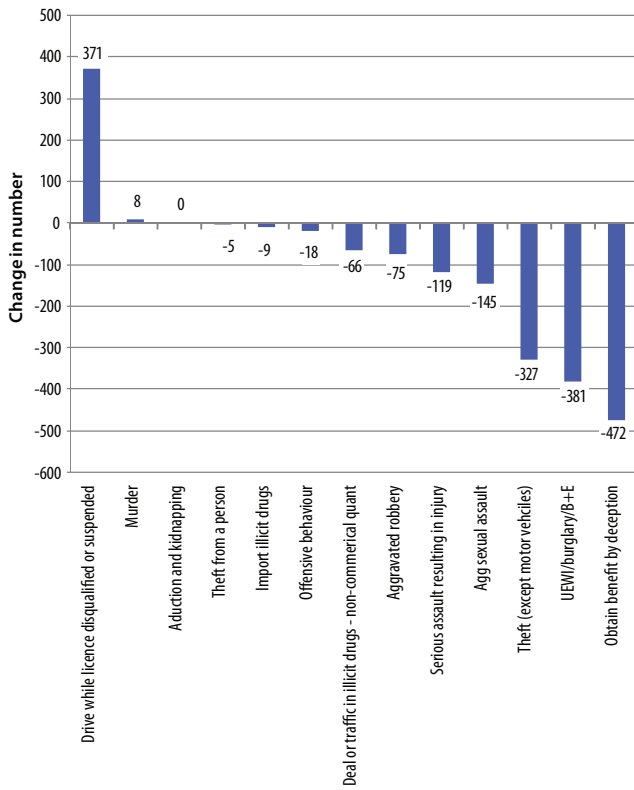
## Conclusion

The projection shown in Figure 9 suggests that consideration should be given to measures that reduce the demand for prison accommodation and/or expand prison capacity. Given the time it takes to bring additional prison capacity on stream, some consideration of measures to reduce demand would seem an important first step. It should be acknowledged that this recommendation hinges on the assumption that the factors identified in this brief as giving rise to recent prison population growth will for the foreseeable future remain unchanged. This assumption may not be correct. Apart from the fall in arrests in the second half of 2013 (which may only be temporary), however, there is no strong reason to expect favourable change in the factors affecting the prison population in the short term. Indeed, if courts respond to the new bail laws and the (yet to be enacted) sentencing laws by reducing the number of defendants granted bail and/or increasing the length of gaol terms, the prison population may actually rise faster than predicted here.

There is one final point that deserves mention, although it has no immediate bearing on the question of how to respond to the rise in prisoner numbers. It is commonly assumed that the demand for correctional resources can be predicted from changes in conditions external to the criminal justice system, such as changes to the age profile of the population or changes in crime. This is obviously not true. The rapid rise in the NSW prison population over the past decade has occurred against the backdrop of an aging population and dramatic falls in the incidence of most major categories of crime.[4] Imprisonment rates are not driven solely by conditions external to the justice system. They are very strongly affected by factors such as policing, bail and penal policy. There are two practical implications of this. The first is that management of the demand for correctional resources requires close liaison between police and those responsible for criminal justice policy and correctional administration. The second is that forecasting models need to be supplemented with tools that allow administrators to explore the potential impact of policies likely to affect the demand for prison accommodation. The Bureau is working closely with Corrective Services NSW in developing the latter.

## Acknowledgements
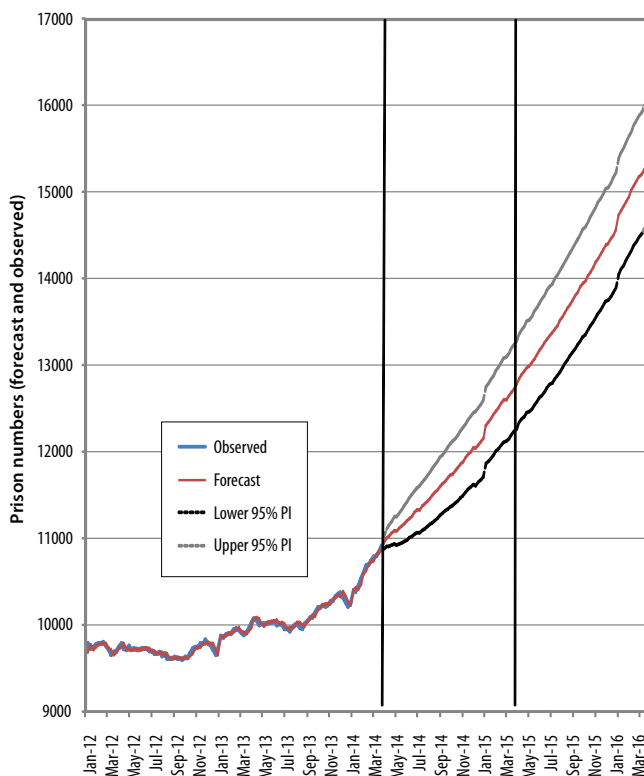
## Notes

1. We ignore the possibility of an increase in conviction rates because conviction rates are very unlikely to change over a period as short as a year.

2. In some cases our measurement of crime rates is so poor (e.g. drug trafficking, driving while licence is disqualified or suspended; child sexual assault), it is impossible to tell whether the increase in arrests reflects an increase in crime.

3. ARIMA(0,1,0)

4. Comparing 2013 with 1990 in NSW, for example, the motor vehicle theft rate is down by 77 per cent lower, the rate of robbery with a firearm is down by 73 per cent, the rate of break and enter (non-dwelling) rate is down by 68 per cent, the rate of break and enter dwelling is down by 52 per cent, the murder rate is down 43 per cent, the rate of robbery without a weapon is down 35 per cent and the rate of robbery with a weapon other than a firearm is down by 29 per cent. The recorded rate of some offences, such as assault and sexual assault remains higher than it was in 1990. The recorded assault rate in NSW, however, has been falling since 2008, while the rate of sexual assault, though still unacceptably high, has remained comparatively stable (Goh & Holmes, 2014).

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