

# **Draft Report: Applying an economic approach to policy development**

## **The NSW pilot of the Washington State policy impact assessment tool.**

March 2016

Confidential Draft

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**Abstract:** The Washington State Institute for Public Policy developed cost-benefit model was is in use in around 20 jurisdictions where it embeds an economic approach to policy making. The model utilises an inter-disciplinary approach comprised of scientific method, economic theory, econometrics, statistics, probability theory and monte-carlo analysis. The potential to apply this approach locally for improved outcomes and resource allocation is the subject of this paper.

To pilot the approach and model in NSW, a sectoral cost-benefit analysis was conducted based on aggregate NSW justice system costs and avoided costs associated with crime and crime reduction interventions. This involved the calculation for the first time in NSW of financial returns to education, victim costs and spill over effects.

The project has demonstrated the feasibility of the model to systematise a powerful economic approach to evidence based policy development. This model represents an important step in the application of economic theory to policy development for reducing crime, improving outcomes for disadvantaged children and improving mental health care outcomes.

### **Relevant JEL Categories**

H5 National Government Expenditures and Related Policies: Public economics (sub categories H51 – gov't expenditure on health, H52 – gov't expenditure on education, H53 - gov't expenditure on welfare)

D6 Welfare Economics: Microeconomics (subcategories – D6 – welfare economics, D61 – allocative efficiency, D8 – Information, knowledge and uncertainty, D81 – criteria for decision making under uncertainty)

## **EXECUTIVE SUMMARY**

### **Pilot Project Objectives**

- The primary objective of the Policy Impact Assessment Tool (PIAT) pilot project was to test the potential utility in NSW of an economic approach to evidence-based policy making which has been successfully implemented in several jurisdictions.
- This approach, consisting of (i) a cost-benefit model (ii) the institutional capabilities to provide input to the model and utilise the results, was piloted in the NSW criminal justice cluster.

### **Potential application and public value**

The NSW pilot has successfully demonstrated the efficacy and suitability of the Washington State Institute for Public Policy (WSIPP) Cost Benefit Assessment Model for implementation in NSW.

- If successfully adapted in the NSW context, the PIAT can function as a practical instrument for resource allocation

- Key model outputs include summary reports on policy interventions showing what works, ranked by benefit-cost statistics along with a measure of investment risk. See page XX for a sample report.
- Such capability would be instrumental in achieving an investor based approach to resource allocation in which high return interventions are prioritised.
- Targeting investment in this way has the potential to maximise progress towards state priorities such as reducing adult reoffending.<sup>1</sup>
- The improvement in outcomes for NSW is potentially substantial. The results of this approach in Washington State were:
  - recidivism rates declined significantly relative to national rates after policy reform in the early 1980s.
  - today the incarceration rate stands at around 56% of the national rate.
  - criminal justice costs overall were lower than under alternative strategies or business as usual (BAU).<sup>2</sup>

### The Washington state approach

In 1983, in response to rising prisoner numbers and criminal justice system costs, and the lack of evidence to support policy choices, the state Legislature established WSIPP. The purpose of the WSIPP was to carry out non-partisan research to establish ‘what works’ to achieve policy objectives, initially to reduce recidivism.

The WSIPP established a methodology to calculate the costs and benefits of individual policies and standardise calculations about what was working in criminal justice. It follows a “three step research approach”, consisting of:

1. Systematically assessing evidence on ‘what works’ (and what does not) to improve outcomes.
2. Calculating costs and benefits and ranking public policy options according to the rate of return.
3. Determining the riskiness of the conclusions by testing how bottom lines vary when estimates and assumptions change.

The approach is readily adaptable and has been implemented in 19 U.S. state and 4 local governments (counties), in addition to Washington State.

These governments have used the approach to identify and eliminate unsuccessful programs and to target resources to alternatives that can generate a high return on investment to taxpayers and society.

### Approach of the NSW pilot project

- Treasury obtained the WSIPP model through the PEW-MacArthur Results First Initiative, a joint project of The Pew Charitable Trusts and the John D. and Catherine T. MacArthur Foundation to support application of the WSIPP cost-benefit approach to policy and budget choices.<sup>3</sup>

<sup>1</sup> <http://www.nsw.gov.au/making-it-happen>

<sup>2</sup> Washington State Institute for Public Policy, 2006, *Options to Stabilize Prison Populations in Washington: Interim Report*, p.1

- An extensive consultation process was undertaken with key agencies in the NSW Justice Cluster including BOSCAR, Police, Corrections, AGD and ODPP.
- Data was received from justice agencies and was used to calculate costs relevant to the model. For transparency, the methods used to develop cost estimates were documented in technical working papers. The focus was on populating the model with NSW cost data while retaining the majority of WSIPP model parameters. The model was tested with NSW data (where available) and results were recorded.
- Evidence on effective interventions for Australia/NSW and effect sizes from international studies was reviewed for input into the model.
- A peer review of the technical working papers and consultation on data inputs with participating NSW justice agencies was undertaken.

## NSW Policy Context

In the past five years, broad sensibilities in the public policy environment have trended towards seeking a means of evidenced-based decision making.

The appetite for evidenced-based decision making reflects the NSW Government's stated goal of delivering services in a financially responsible manner:

*"We will ensure disciplined and effective management of public finances so that we can continue to deliver services and infrastructure like hospitals, schools and transport, and to protect the most vulnerable people in our society."*<sup>4</sup>

The broad strategic direction of the NSW Government has dictated that the NSW criminal justice system achieve objectives - including to reduce adult re-offending by five per cent by 2019 - while staying within budget,<sup>5</sup>

## Expenditure Considerations: NSW Justice Cluster

The past 10 years has seen significant expenditure growth in all the pillars of the justice system: police, criminal courts, corrective custodial services and correctives community supervision. The following chart shows the 10 year compounded annual growth rate (CAGR) of operating expenditure for the pillars of the justice system.<sup>6</sup>

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<sup>3</sup> Further information on the Pew-MacArthur Results First Initiative is available from: <http://www.pewtrusts.org/en/projects/pew-macarthur-results-first-initiative>

<sup>4</sup> NSW Government, 2011. *NSW 2021: A Plan to Make NSW Number One*, page 8.

<sup>5</sup> <http://www.nsw.gov.au/making-it-happen>

<sup>6</sup> The following charts are based on data from NSW Budget Papers and the Productivity Commission's Report on Government Services Reports (ROGS), various years.

BOSCAR have flagged that a reduction in recidivism would result in substantial savings in prisoner numbers and therefore correctional outlays, creating relatively greater benefits than a reduction in the number of new sentenced prisoners.<sup>7</sup>

The challenging environment requires a portfolio of programs that reduce demand for criminal justice services. This can only be achieved if there is a means of assessing the effectiveness of a portfolio of programs.

A consideration of the origins of WSIPP and the structure of the WSIPP model, demonstrates the potential the model has for meeting the challenges of the current environment.

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<sup>7</sup> Don Weatherburn et al, cited in NSW Parliamentary Research Service, 2015. *Reducing adult reoffending* Briefing Paper N2/2015, page 1.

## Section 1: Washington State Cost-Benefit Model

### Origin and regulatory environment

The Washington State Institute for Public Policy (WSIPP) was created by the Washington legislature in 1983.<sup>8</sup> WSIPP is governed by a Board of Directors that represents the legislature, governor and public universities. The board guides the development of all WSIPP activities.

WSIPP was established to carry out practical, non-partisan research. This research is carried out at the direction of the legislature or the Board of Directors. WSIPP has a close working relationship with legislators, state agencies and experts in the field to ensure that studies answer relevant policy questions.

The WSIPP cost benefit model was established in 1997 to estimate the economic value of programs that reduce crime. The model computes the costs and benefits of various programs. The model has been expanded to additional policy areas over the years. Specifically, in 2009, WSIPP was directed by the Legislature to “calculate the return on investment to taxpayers from evidence-based prevention and intervention programs and policies. Specifically, WSIPP were asked to identify policies that have been proven to improve outcomes in the following areas:<sup>9</sup>

- K-12 education
- Child welfare
- Substance abuse
- Mental health
- Public health
- Public assistance
- Employment
- Housing

The results from the WSIPP model analysis are publicly available and made accessible to the broader community through the publication of straight forward consumer friendly reports. A good example of this type of report is “*What Works and What Does Not<sup>10</sup>?*”

### How the tool works

The basic premise of the WSIPP model is that it uses the available evidence to calculate what interventions can provide taxpayers with a good return on their investment. This is achieved through three broad steps<sup>11</sup>:

- 1) review evidence on effectiveness of interventions
  - a. systematically assess program evaluations to identify costs and benefits of interventions (e.g. of policies to achieve outcomes such as reducing recidivism)
  - b. produce an ‘estimated effect’ of a policy on a particular outcome
  - c. an estimate of the margin of error in that effect.
- 2) calculate costs and benefits overall for the State and rank policy options.

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<sup>8</sup>Details on the WSIPP and their publications are available from their website: <http://www.wsipp.wa.gov/>

<sup>9</sup>Washington State Institute of Public Policy, 2014. *Technical Appendix and User Manual*, page 5.

<sup>10</sup><http://www.wsipp.wa.gov/Reports/562>

3) measure riskiness of conclusions -- by testing how bottom lines vary when estimates and assumptions change.

### How the tool is used

The variable of most interest is the marginal cost of a change in prisoner numbers in the system as a result of any given policy intervention. The tool is used to rank competing programs in various policy spheres (for example criminal justice policies). For example, assume the government has limited funds to spend on a single crime prevention program and the NSW Department of Justice puts forward a number of proposals to prevent crime. Assuming these policies have documented effect sizes, the model will be run for each of these programs and will calculate the individual net benefits. The competing programs will be ranked on the basis of their net benefits and from there the political process will determine which programs are selected. The Washington state approach can be used to understand the benefits of operational practices within a policy area.

It is worth noting that though the marginal cost estimates are the central input into the model, they are just one of the many inputs.

The WSIPP league table illustrates interventions that have been evaluated in a consistent and transparent fashion and give reliable guidance on 'best bets'. The alternatives are ranked by cost benefit ratio and the preferred options will be consistent across Washington State.

See page **XX** for an extract of the league table. These reports and analyses are published in full on the institute's website.

	Monetary Benefits (taxpayer) \$	Monetary Benefits (non-taxpayer) \$	Costs \$	NPV \$	Benefit cost ratio	Me (oc p
Employment Training/Job Assistance in the Community	1,311	4,190	135	5,366	40.76	
Cognitive Behavioral Therapy (moderate and high risk)	2,308	7,387	412	9,283	23.55	
Correctional Education in Prison	5,238	16,188	1,128	20,298	19.00	
Drug Offender Sentencing Alternative (drug offenders)	5,318	17,047	1,542	20,823	14.51	
Vocational Education in Prison	5,017	15,429	1,571	18,875	13.01	
Drug Treatment in the Community	4,206	13,504	1,602	16,108	11.05	
Work Release	1,749	5,368	661	6,456	10.77	
Drug Offender Sentencing Alternative (property offenders)	2,666	8,607	1,540	9,733	7.32	
Mental Health Courts	4,998	15,425	2,935	17,488	6.96	
Supervision with Risk Need and Responsivity Principles (high and moderate risk)	5,817	18,386	3,543	20,660	6.83	
Correctional Industries in Prison	1,713	5,329	1,417	5,625	4.97	
Drug Treatment in Prison	3,834	11,743	4,603	10,974	3.38	
Drug Courts	3,376	12,057	4,178	11,255	3.69	
Offender Re-entry Community Safety Program (dangerously mentally ill offenders)	18,120	52,415	32,247	38,288	2.19	
Intensive Supervision: With Treatment	3,610	11,559	7,874	7,295	1.93	
Intensive Supervision: Surveillance Only	133	445	4,140	4,718	0.14	
Domestic Violence Perpetrator Treatment Programs	1,165	3,742	1,359	6,266	3.61	

Source: WSIPP and PEW Foundation (2014)

## What value does this add?

The published reports show policy-makers and the community:

- what works, ranked by benefit-cost statistics and therefore
- where tax dollars are best directed, and
- a measure of investment risk.

## Impact

Early focus in Washington State was on juvenile and adult criminal justice. According to assessments from the Results First Initiative, by 2011 impacts on several crime indicators were achieved in Washington State<sup>12</sup>.

- Juvenile arrest rates declined 67% relative to national rate of 49% (since 1990) See figure 1
- Non drug crime rate dropped (each year since 2005)
- Crime rates down without increased incarceration
- Reconviction rates (1990-2006) across all prison release cohorts show downward trends.
- State incarceration rate is approximately 56% of the national rate.
- WSIPP have estimated that investment in evidence-based programs since 2006 has resulted in 1,500 fewer prisoners as at 2013.<sup>13</sup>

### Keeping Track of Results: Juvenile Arrest Rates

Change since 1990 in the United States and in Washington State

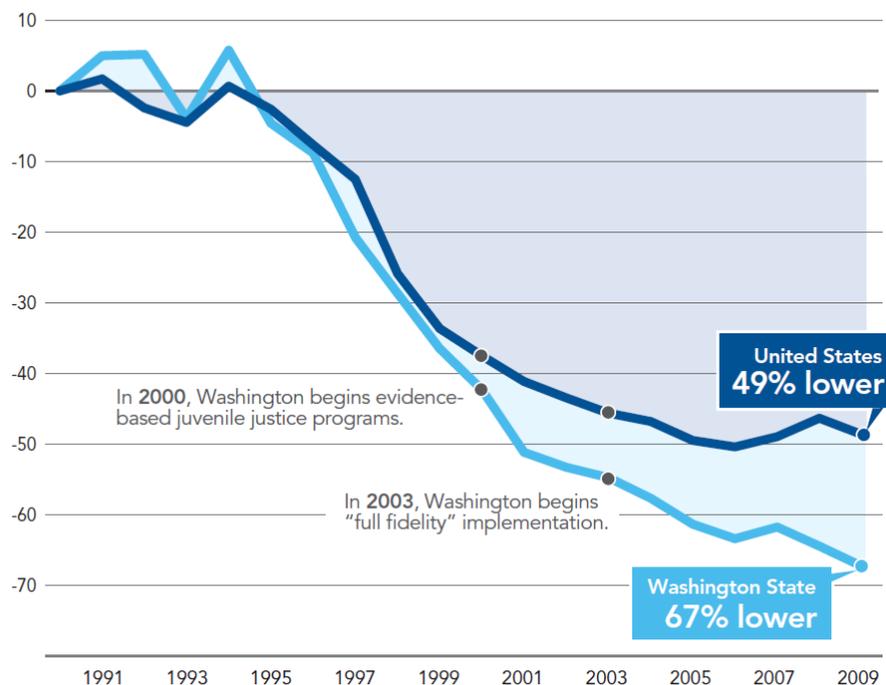


Figure 1 - Juvenile arrest rates

<sup>12</sup> Washington State Institute for Public Policy and Pew-MacArthur Foundation

<sup>13</sup> Aos, S, 2013. *Evidence-Based Policy Options that Reduce Crime and Save Money [PPT]*. ICCA Annual Research Conference

## Adult supply and demand prison beds

In 2006, WSIPP forecasted the effects of evidenced based programs on the prison construction in Washington (see figure 1 below). The apparent effectiveness of evidence based programs has exceeded WSIPP projects. For 2015, the most aggressive implementation portfolio would lead to a prison system of 20,000 plus beds with 22,000 plus beds if nothing was done<sup>14</sup>. As at September 2015, the Washington State prison system had 18,458 beds and an average daily population of 18,361<sup>15</sup>.

**Adult Prison Supply and Demand in Washington: 2008 to 2030, Current Forecast and the Effect of Alternative Evidence-Based Portfolios**

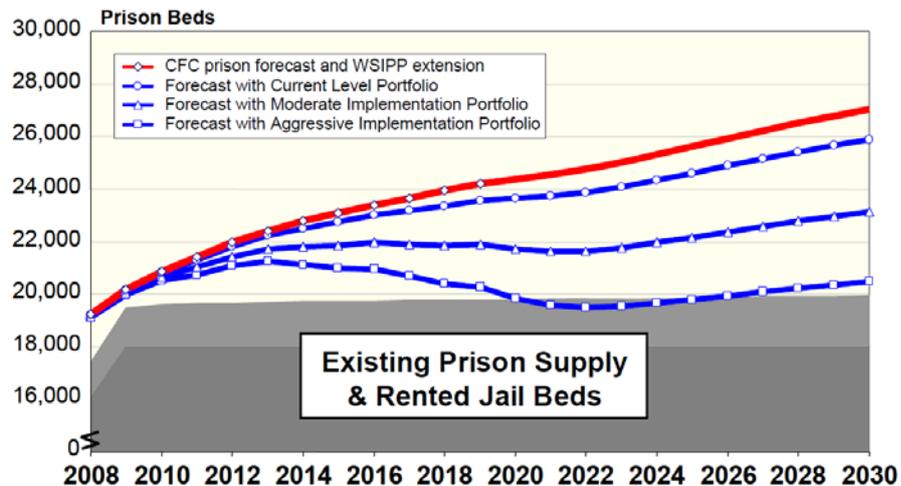


Figure 2 - WSIPP forecasts adult supply and demand for prison beds

## Case Studies

The following case studies demonstrate the use of the WSIPP model in various jurisdictions. These case studies also demonstrate that the model can be used at both operational and strategic levels of policy making.

### Box 1: Case study - Hot spot policing

- Hot spot policing involves using data driven crime mapping to deploy police officers. WSIPP used their 'what works' methodology to assess the effectiveness of hotspot policing. Meta-analysis was drawn from nine studies (from UK and US).
- WSIPP describes the analysis of the studies: "this broad group of studies estimates the effectiveness of hot spot policing (compared to state-wide average practices), primarily in urban

<sup>14</sup> Washington State Institute for Public Policy, 2006, *Options to Stabilize Prison Populations in Washington: Interim Report*, p.13

<sup>15</sup> <http://www.doc.wa.gov/aboutdoc/docs/msPrisonPopulation.pdf>

jurisdictions in the United States. Hot spots policing concentrates policing in high crime areas or on specific crimes such as drug trafficking. This strategy differs from ‘traditional’ policing, which typically relies on random preventative patrol or response to calls for service.”

- WSIPP found that on average, the deployment of a police using hot spot methods is 11% more effective in reducing crime than standard policing.
- While this description may read like an academic exercise, this kind of work has translated to reforms in policing practice. For example, in 2012 the Seattle Police Department started to roll out hot spot policing. The Seattle Police Department is in partnership with George Mason University in order to assess if its practices are in line with the literature and ideas in effective policing.

The WSIPP cost-benefit approach is being applied in both the US and the UK. Of the US jurisdictions undertaking the Results First Initiative, six have completed the first stage of implementation of the analytical model. These six states have already seen important policymaking successes.

- Shifting, cutting or allocating a total of \$38 million in funding, with anticipated returns of as much as \$38 for every \$1 invested over the next seven to ten years.
- Using the model to analyse proposed criminal justice policies.
- Passing legislation that incorporates the Results First approach in state policy and budget processes as a matter of law.<sup>16</sup>
- • In 2007, the Washington Legislature invested \$48m in programs such as functional family therapy and was able to cancel the construction of a \$250m prison.
- • This investment of \$48m is estimated to produce a return of 8.39% per year.
- • In the US over the period of 2012-2015 19 states and 4 counties have collectively directed \$152.1m to evidence based programs with an estimated return of \$521.3m.

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<sup>16</sup> Further information is available from: <http://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2014/02/05/achieving-success-with-the-pewmacarthur-results-first-initiative>

The following case study from New Mexico illustrates the impact the WSIPP model has had on the various levels and in different jurisdictions.

***Box 2: Case study – Results First Initiative New Mexico***

In September 2011, the New Mexico Legislative Finance Committee partnered with the Pew MacArthur Results First Initiative to advance the use of cost-benefit analysis to inform policy and budget decisions in New Mexico.

Over the period September 2011 to October 2013, the state has used the Results First approach to:

- Direct \$32.45 million to evidence-based programs that the model shows will deliver high returns for New Mexico residents.
- Shift funds away from a program that Corrections Department determined was ineffective to an alternative that analysis showed would produce strong outcomes.
- Calculate the ‘cost of doing nothing’, which are the long-term costs the state will incur if current trends continue. For example, an analysis of offenders released in 2011 showed that that single cohort will cost the state \$360 million over 15 years if current recidivism patterns persist.
- Develop an inventory of recidivism-reduction programs to identify the extent to which the state is using evidence-based programs.

The WSIPP model has been adapted for use in the UK at the Dartington Social Research Unit (see Box3).<sup>17</sup>

***Box 3: Case study: UK Investing in Children***

- The *Investing in Children* program, developed by the Dartington Social Research Unit and co-sponsored by the Early Intervention Foundation, uses the WSIPP cost-benefit model to assess child welfare investments in the UK.
- The program website provides decision makers with a cost-benefit analysis of over 100 interventions involving children and families:  
<http://investinginchildren.eu/search/interventions> .

<sup>17</sup> Further information is available from:

[http://investinginchildren.eu/sites/default/files/Investing%20in%20Children%20-%20An%20Overview%20%28Version%201.0%20September%202013%29\\_1.pdf](http://investinginchildren.eu/sites/default/files/Investing%20in%20Children%20-%20An%20Overview%20%28Version%201.0%20September%202013%29_1.pdf)

- Many of the interventions are “Blueprints” approved, which means the interventions meet standards according to the *Blueprints for Healthy Youth Development*:  
<http://www.blueprintsprograms.com/>
- The Social Research Unit is continuing to review programs against the standards of evidence, to improve the cost-benefit model and to run new programs through the model. They are also advising sites in Ireland and Northern Ireland about the potential for applying the model there.

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## Section 2. NSW PIAT Pilot Project

### *Approach of the pilot*

- Treasury obtained the WSIPP model through the PEW-MacArthur Results First Initiative.
- The focus was on populating model with NSW cost data but majority of WSIPP model parameters were retained
- An extensive consultation process was undertaken with key agencies in the Justice Cluster (BOSCAR, Police, Corrections, AGD, ODPP)
- Data was received from justice agencies and was used to calculate costs relevant to the model. For transparency, the methods used to develop cost estimates were documented in technical working papers.
- Evidence on effective interventions for Australia/NSW and effect sizes from international studies were reviewed for input into the model.
- A peer review of the technical working papers and consultation on data inputs with participating agencies (BOSCAR, Police, Corrections, AGD) was undertaken.
- The model was tested with NSW data (where available) and results were recorded.

### *Peer-review*

- The peer review process so far has been limited to independent experts within the NSW Government with plans to expand peer review to independent non-government experts in the near future
- Technical papers were circulated internally to a range of NSW Treasury and other NSW agency experts for review
- As data was treated and cost estimates derived, informal and informal meetings were arranged with the relevant data providers
- Three working groups were convened to enable data providers to review the methodology and any issues related to the overall project

## Section 3. Crime Victim Costs

### *Background*

NSW Treasury's approach was to implement a close replication of the WSIPP model. The WSIPP model seeks to monetise benefits, both individual and social, arising as a result of policy or intervention innovations which, inter alia, reduce instances of offending or reoffending by adult or juvenile offenders. Much of the benefit of reduced offending arises from averted costs of detection, prosecution and incarceration, and averted cost of victimisation.

### *Estimating victim costs for NSW*

As the WSIPP model equations and parameters form the basis for the NSW PIAT, our approach to estimating victim costs similarly includes tangible and intangible cost per crime estimates.

Our approach to estimating intangible costs is different from the WSIPP approach which relies on jury awards data that includes pain and suffering and lost quality of life. Our approach primarily relies on the lost quality of life approach used in cost of crime analysis in the UK. NSW Victim Award information is also included in our estimate of intangible victim costs

Our approach to estimating tangible costs is constrained by the lack of data on lost productivity and medical and mental health costs for crime victims in Australia. NSW Health hospital activity data for assault victims is our primary source for tangible costs.

### *Results*

The Table provides a comparison of victim cost inputs for the PIAT and for the WSIPP model. The WSIPP model includes victim costs for robbery and property. These have not been determined for NSW due to lack of data. Subsequent work on the NSW PIAT may consider these areas.

The WSIPP victim cost inputs are generally higher than NSW. Some of the differences are accounted for by the following:

- WSIPP intangible cost for murder is based on a US Value of Statistical Life (VSL) estimate that takes into account jury award data for pain and suffering costs, whereas the Australian VSL estimate does not include pain and suffering costs;
  - WSIPP tangible cost of murder is based on lost life-time earnings for the murder victim; productivity losses have not been included in the NSW approach; and
  - WSIPP intangible costs for assault and sexual offence are based on jury awards which account for pain and suffering and lost quality of life. These are much higher compared to NSW which include relatively modest victims' compensation awards.
- Insert table: *Source: NSW Treasury calculations; WSIPP (2013).*

### *Further work*

Estimates of tangible costs will need to be regularly updated with the latest data from NSW Health. Investigation of other costs including mental health services would improve the current estimates.

Further work is also required to review the results from alternative approaches in the international literature on estimating intangible costs for crime victim costs. For example, Monash University is

currently preparing a study for publication on costs for crime victims using a willingness to pay approach.

Details on estimating crime victim costs for NSW are provided in Appendix A.

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## Section 4. Marginal Cost Analysis

### Background

For criminal justice system costs, the WSIPP model uses marginal operating and capital costs. Marginal costs are defined as those costs that change over a period of several years as a result of changes in the crime workload.

### Explaining Marginal Costs

- Marginal (or incremental costs) are an economic measure of what an additional unit of output costs to produce. In the case of the Government, an additional unit of output could be an x-ray performed at a hospital, or an additional carriage on a train service.
- Marginal costs are an economic measure – they are not generally used for accounting purposes, and shouldn't be confused with Budget and financial measures.
- In the case of cost-benefit analysis, marginal costing allows us to assess the impact of a specific policy intervention – because marginal costs only measure the impact on costs of a specific action. In this way we can value the additional costs imposed by a program or project, and compare them to the additional benefits attributable to a program or project.
- Average costs usually include cost elements like depreciation and sunk costs that do not change as the impacts of a policy change roll through. The use of average costs would overstate the value of possible off-setting savings from a policy change.

#### *Justice sector marginal costs WSIPP definition*

*Some short-run costs change instantly when a workload changes. For example, when one prisoner is added to the state adult corrections' system, certain variable food and service costs increase immediately, but new staff are not typically hired right away. Over the course of a governmental budget cycle, however, new corrections' staff are likely to be hired to reflect the change in average daily population of the prison. In the Institute's analysis, these "longer-run" marginal costs have been estimated. The longer-run marginal costs reflect both the immediate short-run changes in expenditures, as well as those operating expenditures that change after governments make adjustments to staffing levels, often in the next few budget-writing cycle.*

Source: WSIPP (2012).<sup>18</sup>

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<sup>18</sup> Washington State Institute of Public Policy, 2012. Return on Investment: Evidence-Based Options to Improve Statewide Outcomes Technical Appendix and User-Manual page 26.

### *Estimating marginal costs for NSW*

Our objective was to replicate WSIPP's method of estimating marginal costs in the criminal justice system by regressing time series of variable operating costs against time series of agency specific activities (arrests, convictions, days of custodial care).

Marginal costs were estimated for police, courts, prosecutions, corrective service custodial services and corrective service community supervision. Quarterly operating expenses were collected for the period FY00-FY13. In estimating the marginal costs, the estimation methods outlined in the WSIPP technical manual were followed as closely as possible.

### *Further work*

Our analysis is not without its gaps and potential cautions. The confidence intervals bounding the point estimates of most marginal costs reported here are wider than many analysts might accept.

In all likelihood, estimates of marginal costs would be sharpened if agencies employed marginal costing rather than average costing in budgeted policy proposals.

Work is underway with BOCSAR to improve these intervals.

Details estimating marginal costs for NSW are provided in Appendix B.

## Section 5: Lifecycle Earnings

### *Background*

WSIPP have noted the literature showing that education is protective against exposure to criminal behaviour; it is a broadly accepted intuition that successful labour market outcomes reduce the risk of unemployment and shocks to household finances.

Lifecycle earnings inputs are relevant in the WSIPP model for assessing the impact of program interventions involving young people, those under 18 years of age. The relevant areas for use by the WSIPP model include:

- Child welfare
- Pre-K to 12 Education
- Children's mental health
- Health care
- Substance abuse

### *Estimating lifecycle earnings for NSW*

Work was undertaken to demonstrate the feasibility of re-creating, using Australian panel data and other local sources, the returns to education parameters used by WSIPP.

The perspective on labour market outcomes adopted here is earned income by single year of working life accumulated in the interval between terminating formal education and retirement (taken to be 65 years of age). Earned income is expressed in constant 2011 Australian dollars. Summed working life earnings are discounted by the Social Discount rate to give an estimate of average lifetime earnings for each of four education attainment levels:

- completed less than Year 12,
- completed Year 12,
- completed vocational training to level III or above, and
- completed tertiary education.

### *Results*

The major findings include the observation that students completing Year 12 earn a 50% premium in lifetime earnings over those not completing Year 12. However, those leaving secondary education before Year 12 but completing vocational education at Level III or above, earn a lifetime 68% premium. Year 12 students progressing to tertiary or vocation education earn a 56% or 11% premium respectively.

Tertiary graduates earn a 47% lifetime premium over the average earnings of all earners.

While we only measure increases in income as a function of educational attainment, these results are likely to have broader implications across other categories of benefits: lower corrective services, healthcare and welfare costs, and a more productive workforce, among others.

***Further work***

The PIAT model can be extended to examine interventions for programs involving young people, such as early childhood interventions.

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## Section 6: Localising Evidence

### *Review of Australian evidence*

The PIAT trial included a review of evidence conducted in Australia on effective interventions for use in the PIAT model. The review revealed a small number of locally executed outcome evaluation studies that meet an acceptable quality standard.

WSIPP sourced outcome evaluations from the global literature and increasingly has sourced evaluations that meet both a quality standard and a reported level of minority representation in the control and treatment groups. Many of the evaluations in the global literature involve interventions that are applicable to the NSW context.

### *Further work*

Recommendations for further work include the following:

- A priority for future work is to improve the evidence base of effective interventions in NSW.
- In the interim, it is feasible to use evidence from the global literature in the PIAT tool to assess the return on investment based on NSW cost inputs.
- Further examination of the cost structure for the justice system will be important as program and operational costs underlie the potential for positive returns on investment.

## Section 7 – Other economic estimates

A number of inputs in the model required calculations derived from economic theory. These included:

- The deadweight loss of taxation (both state and Commonwealth)
- The effective rate of taxation
- Lifecycle costs of welfare dependence

These estimates derived by NSW Treasury had their basis in economic theory and made use of available empirical work. The estimates were inputted in the part of the model which calculated avoided costs.

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## **Section 8. Lessons Learned and Recommended Next Steps**

Insert section

### **Appendices**

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