

A large, stylized number '40' in a brown color. The '4' is composed of a vertical bar and a horizontal bar, while the '0' is a simple circle.

YEARS OF IMPACT

We're
just getting
started.

Return on Investment 3: Evaluating the cost- effectiveness of Needle and Syringe Programs in Australia

Amy Kwon | 12th August 2026



The Kirby Institute at UNSW Sydney
is located on the Traditional Lands of
the Bidjigal peoples.

We acknowledge the Traditional Owners
of Country throughout Australia, and First
Nations people's continuing connection to
culture, land, sea, waters, and community.

We pay our respects to Elders,
both past and present.

Needle and Syringe Programs (NSPs)



- **Provide** sterile injecting equipment and harm reduction services to people who inject drugs



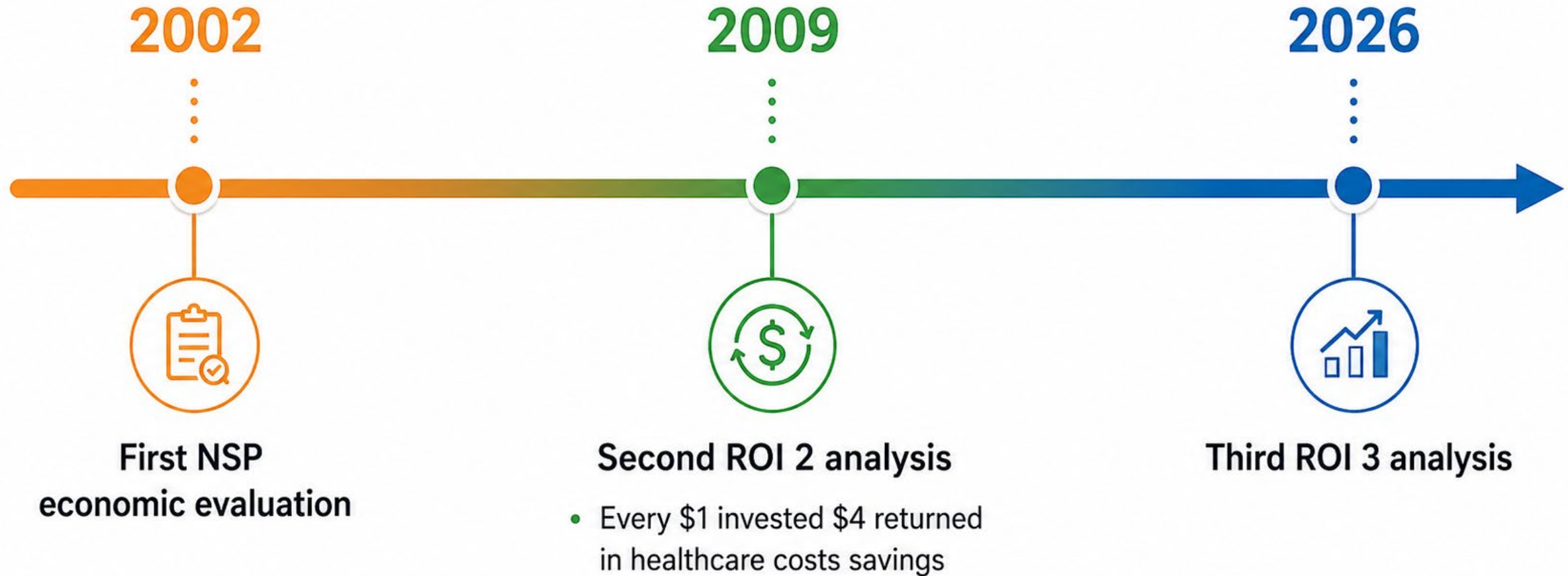
- **Prevent** HIV and HCV transmission by reducing the sharing of injecting equipment



- Australia began supporting NSPs - **1986**



Previous and current ROI studies



Why ROI 3?



- HCV prevention and treatment landscape has changed substantially in the **DAA era**.
 - RNA+ from 51% to 7% between 2015-2025



- Healthcare costs associated with HCV are reduced.



- Is NSPs continue to provide good value for money in 2024?

Methodology for ROI 3 - Calculations

Benefit-to-cost ratio

$$\frac{\text{Benefits in averted infections in monetary terms (inc. healthcare and other costs averted) per year}}{\text{NSP program costs per year}}$$

- Effectiveness of NSPs
 - HIV infections (56% effectiveness)
 - HCV infections (58% effectiveness)
 - Injection-related injury or disease (48% effectiveness)– sensitivity analysis
- Coverage of NSPs
 - 85% (80-90%), SuperMIX

Validation of approach

- Used ROI 2 parameters into ROI 3 equations produced similar outputs
- Suggests simpler method is suitable

Estimated annual cases of incident infections averted	HIV	HCV
ROI 2 modelling estimates	3,205	9,667
ROI 3 calculations using ROI 2 parameters	3,076	9,694

Healthcare costs (2024 AUD)

	Mean	Low	Upper
HIV (lifetime cost)	\$281,107	\$194,367	\$410,571
HCV (per infection)	\$19,875	\$19,177	\$20,573
Diagnosis and care	\$7,678	\$6,980	\$8,376
DAA treatment (70% reduction PBS)	\$12,167	\$12,167	\$12,167

- Government perspective (direct costs only)

NSP costs (2024 AUD)

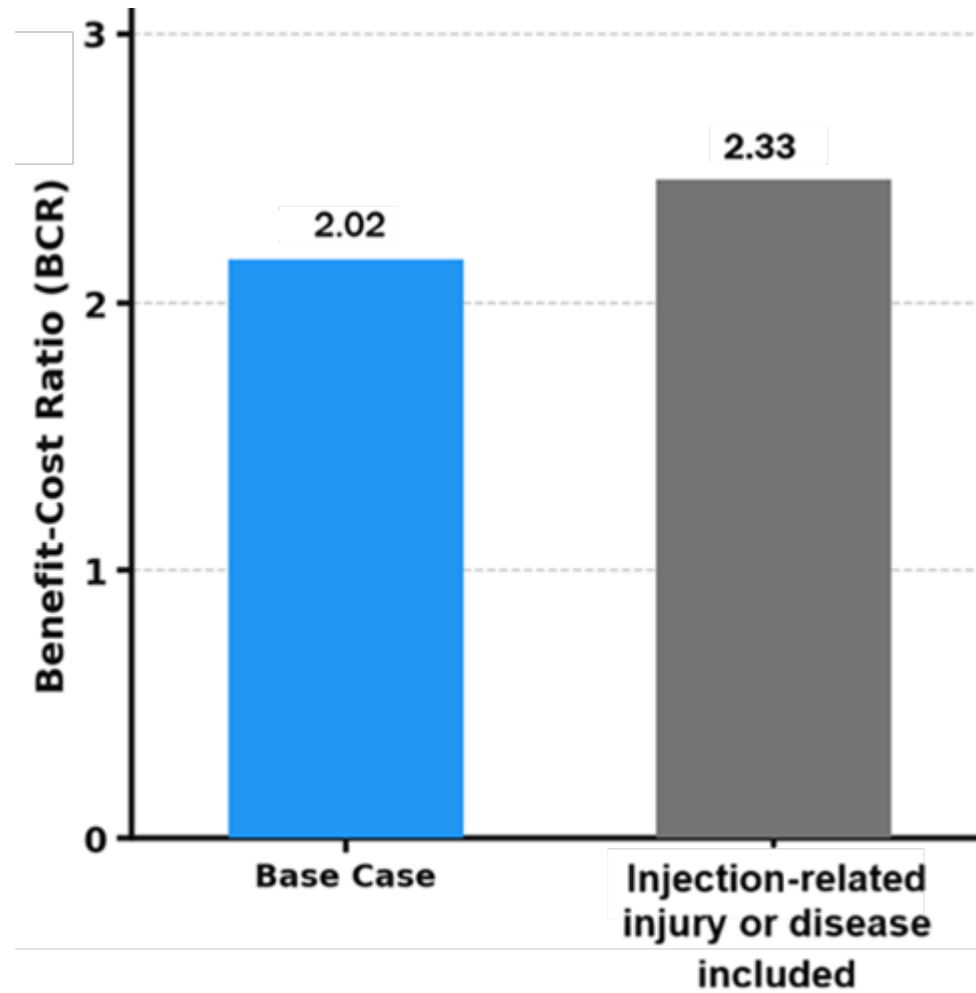
	Mean	Low	Upper
ACT	\$ 1,291,772	\$ 1,162,595	\$ 1,420,949
NSW	\$ 11,312,492	\$ 5,926,632	\$ 14,754,195
NT	\$ 862,855	\$ 776,570	\$ 949,141
QLD	\$ 7,819,490	\$ 7,037,541	\$ 8,601,439
SA	\$ 2,481,985	\$ 2,233,787	\$ 2,730,184
TAS	\$ 1,075,584	\$ 968,026	\$ 1,183,143
WA	\$ 4,133,885	\$ 3,720,497	\$ 4,547,274
VIC	\$11,009,083	\$ 9,908,175	\$ 12,109,991
Australia	\$ 39,987,147	\$ 31,733,822	\$ 46,296,316

Results (2024)

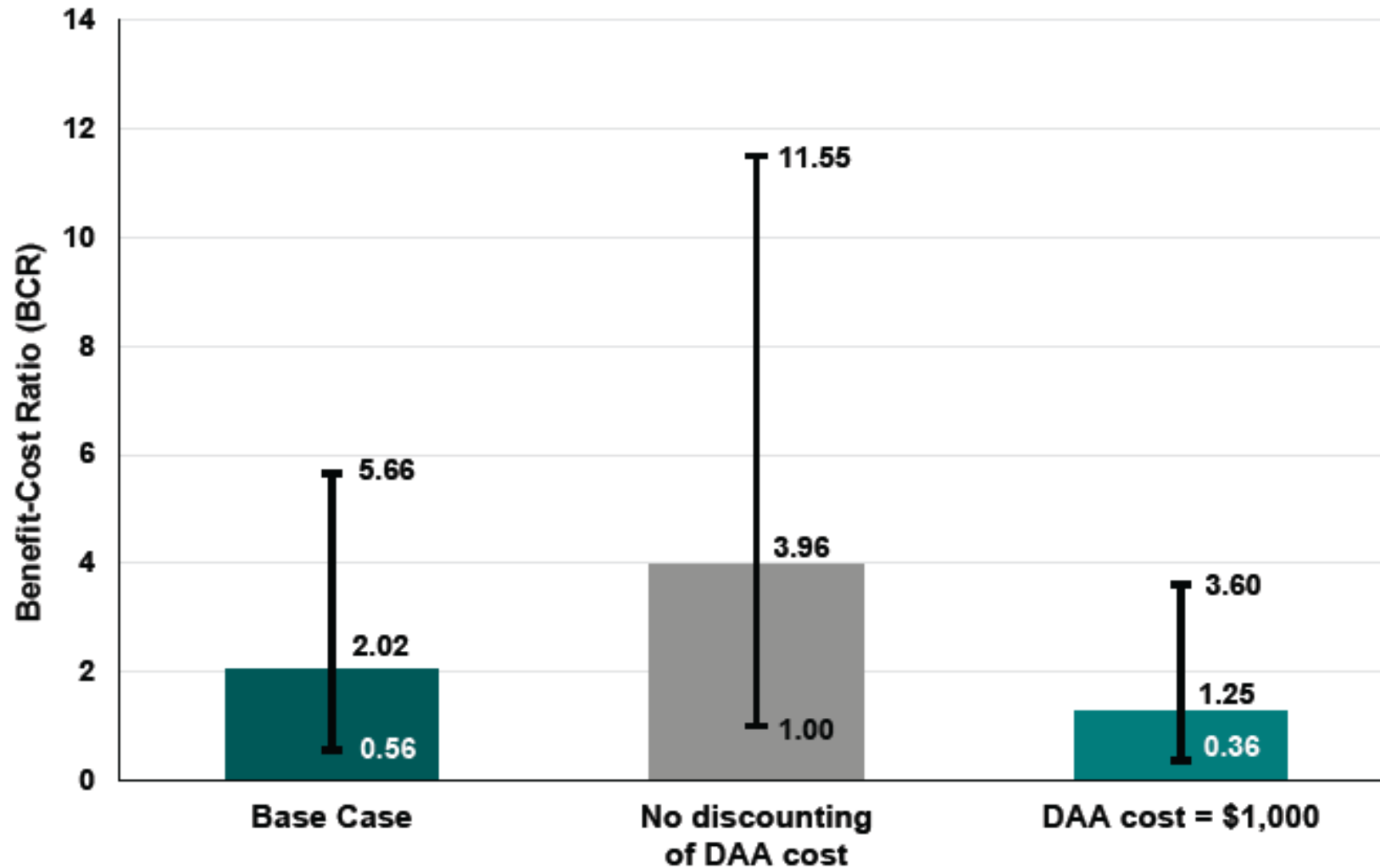
HIV infections averted	94 (95% UI: 17–313)
HCV infections averted	4,264 (95% UI: 903–13,050)
Total healthcare cost savings	\$232 million (95% UI: \$95–665 million)
Return on Investment	\$2.02 (95% UI: \$0.56-5.66)

- BCR > 1 in **83.7%** of 10,000 parameter sets.
- **Sustained investment is critical** to maintain progress towards elimination targets.

Impact of alternative assumptions



Sensitivity in DAA costs



Limitations and discussion

- **Risk heterogeneity:** does not capture different risk groups.
- **Conservative approach:** HIV and HCV only
 - Injecting-related injury or diseases (2.33 vs 2.02)
 - Other harm reduction programs were not included (i.e., Opioid Agonist Therapy)
- **Simple approach:** provides clear estimates but with constraints.
 - Undiagnosed or untreated individuals and may still progress to cirrhosis and other HCV-related complications
- **Data gaps:** limited evidence
 - DAA costs

User friendly spreadsheet

Uncertainty Analysis							
This sheet is used to present the uncertainty estimates for the ROI. To generate the results, enter the desired number of calculations in cell K7 (a minimum of 1,000 calculations is recommended), then click mean, median, best estimate, maximum, and the 2.5th and 97.5th percentiles, representing the 95% uncertainty interval (UI), for each outcome. Cell B15 shows proportion of simulations that are ROI greater than 1.							
	Min	2.50%	Mean	Median	Best Estimate	97.50%	Max
HIV Cases Averted	9	17	101	75	94	318	129
HCV Cases Averted	483	872	4,472	3,480	4,264	12,991	18,527
Injecting-related injury and disease Cases Averted	0	0	0	0	0	0	0
Benefits from HIV Infections (\$)	\$2,123,402	\$4,601,705	\$30,432,395	\$21,998,305	\$26,490,468	\$99,233,854	\$45,509,179
Benefits from HCV Infections (\$)	\$5,394,684	\$10,438,471	\$55,799,961	\$42,680,083	\$54,147,614	\$167,945,891	\$188,783,385
Benefits from Injecting-Related Injury and Disease Infections (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Benefit (\$)	\$9,033,205	\$21,841,991	\$86,232,357	\$75,209,701	\$80,638,082	\$212,551,996	\$246,294,940
NSP Cost (AUD)	\$31,736,492	\$32,106,957	\$39,050,586	\$39,063,857	\$39,987,147	\$45,917,136	\$43,406,929
Benefit-to-cost ratio (BCR)	0.20	0.55	2.24	1.93	2.02	5.67	5.72
% of ROI > 1	83.19%						

<https://github.com/The-Kirby-Institute/NSP-ROI-model>

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and syringe programs in Australia

2026



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- NSP managers
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Thank You!
