



# Enforcing Compulsory Schooling by Linking Welfare Payments to School Attendance: Lessons from Australia's Northern Territory

Moshe Justman

Ben Gurion University and Melbourne Institute of Applied Economic and Social Research, University of Melbourne

Kyle Peyton

Yale University and Melbourne Institute of Applied Economic and Social Research, University of Melbourne

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## ABOUT THE AUTHORS

**MOSHE JUSTMAN**, Department of Economics, Ben Gurion University and Melbourne Institute of Applied Economic and Social Research, University of Melbourne.. Email: [mjustman@unimelb.edu.au](mailto:mjustman@unimelb.edu.au)

**KYLE PEYTON**, Department of Political Science, Yale University and Melbourne Institute of Applied Economic and Social Research, University of Melbourne. Email: [kyle.peyton@yale.edu](mailto:kyle.peyton@yale.edu)

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(ARC Centre of Excellence for Children and Families over the Life Course)  
Institute for Social Science Research, The University of Queensland  
St Lucia, Qld 4072, Telephone: +61 7 334 67477  
Email: [lcc@uq.edu.au](mailto:lcc@uq.edu.au), Web: [www.lifecoursecentre.org.au](http://www.lifecoursecentre.org.au)

## **Abstract**

Efforts to enforce compulsory schooling by linking welfare assistance to school attendance are rarely successful in themselves. One reason is a lack of credibility: targeted families may anticipate that welfare administrators will be reluctant to withdraw support when attendance does not improve. Australia's School Enrolment and Attendance through Welfare Reform Measure (SEAM) demonstrates the impact of a credible threat to link welfare payments to school attendance. Targeting the Indigenous population of the Northern Territory, its heightened credibility stemmed from the extreme circumstances in which it was implemented—the Northern Territory Emergency Response Act—and from the troubled history of race relations in Australia. We show, using a difference-in-difference analysis of standardized test data (NAPLAN) that SEAM had a substantial, immediate impact. In 2009, its first year, it triggered an increase in test participation rates of 16-20 percentage points over pre-SEAM levels of about 70%, and an increase in the share of the cohort achieving national minimum standards on these tests of 5-10 percentage points. However, welfare payments were rarely withheld from the remaining truant families, and as this quickly became known, participation rates fell immediately in subsequent years, though remaining significantly above pre-SEAM levels.

*Keywords: Australia, Indigenous population, Northern Territory Emergency Response, SEAM, compulsory schooling, linking school attendance to welfare payments*

*JEL codes: I25, I38*

## 1. Introduction

All advanced, industrialized countries have compulsory schooling laws with high levels of compliance; non-compliance is generally limited to a small fraction of families, many of them living in deprivation. Making sure these children attend school regularly is a key element in breaking the intergenerational chain of poverty, yet full enforcement often proves difficult. Options for intervention are limited: removing truant children from their families is an extreme measure that cannot be implemented except in special cases; and providing parents with positive inducements to send their children to school, such as the conditional cash transfers (CCT) now offered in some developing countries (Rawlings and Rubio, 2005) are expensive and unpopular in developed countries inasmuch as they reward parents of truant children for complying with the law.<sup>1</sup>

One policy approach implemented in the United States in a number of settings involves linking welfare payments to school attendance, on the assumption that the threat of withholding payments will be sufficient to deter truancy. Reviewing such programs, Campbell and Wright (2005), conclude that unless accompanied by case management resources, they do not significantly improve attendance. In many instances, caseworkers find valid reasons for non-compliance; in others, targeted families were unaware of the threat of withholding welfare payments. In general, welfare administrators appreciate that withholding payments will harm the very children they are trying to help and resist following through, and targeted families, realizing this, do not respond to them. This raises the question, whether more credible threats might achieve different results.

Australia's School Enrolment and Attendance through Welfare Reform Measure (SEAM) provides a unique opportunity to answer this question. SEAM threatened to withhold welfare payments from Indigenous parents in the Northern Territory whose children failed to meet school attendance requirements. It was implemented against the backdrop of the Northern Territory Emergency Response (NTER), an intervention directed at the Northern Territory's Indigenous population in response to allegations of child sex abuse in their communities, involving a military presence<sup>2</sup> and temporary suspension of Australia's Racial Discrimination Act (Broome,

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<sup>1</sup> Field experiments offering positive incentives for educational outcomes to disadvantaged students indicate that they can be effective (Levitt et al., 2012; Cook et al., 2014).

<sup>2</sup> The military component of the NTER was called "Operation Outreach" and involved approximately 600 soldiers from the Australian Defence Force.

2010). While formally separate from the NTER, the program gained credibility from the heightened anxiety generated by the NTER, and was further buttressed by the living memory of yet severer, purportedly well-meaning measures to which Indigenous Australians had been subjected by Australian governments.<sup>3</sup>

In this paper we estimate SEAM's impact on school attendance and learning achievement among the population of Indigenous children in the Northern Territory. To this purpose we apply a difference-in-difference analysis to data from the National Assessment Program—Language Arts and Numeracy (NAPLAN) on participation rates and test score averages in reading and numeracy, in grades 3, 5, 7 and 9, comparing the difference between Indigenous participation and performance in the Northern Territory and Indigenous participation and performance across Australia's states and territories, between 2008, the year before SEAM was implemented, and subsequent years, to 2012.<sup>4</sup> Previewing our main results, we find that in 2009, the first year in which SEAM was implemented, test participation increased dramatically among Indigenous children in the Northern Territory, by 16-20 percentage points compared to pre-SEAM levels (in 2008) of about 70%, where no similar increase was witnessed among the Indigenous populations of Australia's other states and territories. Surprisingly, this sharp rise in participation rates did not lower test means, suggesting that the academic ability of those induced to sit the test by SEAM was similar, on average, to that of students who would have taken the test absent intervention. Consequently, in 2009 the share of each cohort achieving minimum standard on these tests increased substantially, by 5 to 10 percentage points over its 2008 level of about 30%, where again no similar increase was witnessed among the Indigenous populations of Australia's other states and territories.

However, these achievements could not be sustained. The threat of withholding welfare payments from the remaining Indigenous parents whose children failed to meet school attendance requirements was not carried out except in a handful of cases; and as this was observed and became widely known, participation rates fell off. The following year, 2010, saw an erosion of about half the gains achieved the year before. By 2012, the

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<sup>3</sup> The most extreme of these policies was the forced removal of Indigenous children from their families by Australian Federal and State government agencies, which continued until as recently as 1969. In 2008, then Australian Prime Minister Kevin Rudd issued a formal recognition and apology for what is colloquially called "The Stolen Generations".

<sup>4</sup> We only had access to publicly available aggregate data. If individual-level data is released it will be possible to carry out more detailed analyses and shed further light on this unique experience.

last year in our study, participation rates had fallen substantially from their peak in 2009 but remained significantly above the baseline levels of 2008. However, nearly all the gains in the share of the cohort achieving minimum standard evaporated.

These findings demonstrate that a credible threat to link welfare payments to school attendance can substantially raise participation rates and learning achievement. Yet this increase could not be sustained even in the unique circumstances of the NTER, as the threat of withholding welfare payments proved hollow. This highlights the difficulty of following through on such threats, even in such unique circumstances as those in which SEAM was implemented, and consequently the largely temporary nature of the gains they achieve. In themselves, such programs offer at best an opportunity to demonstrate to parents that sending their children to school is worthwhile on its own merits.

Of the parents induced by SEAM to send their children to school in 2009, some continued to do so in subsequent years, when they no longer felt threatened, but many did not. Presumably, they did not perceive conventional schooling as valuable in itself. This may have been due to the importance they attach to traditional activities, not well served by conventional education,<sup>5</sup> or because they saw limited opportunities for their children in the labor market. This indicates that even when threats are initially credible, they cannot be fully effective unless parents and children are persuaded of the value of schooling.

The remainder of the paper is organized as follows. Section 2 briefly describes the Indigenous population in the Northern Territory; Section 3 describes the NTER and SEAM initiatives; Section 4 presents descriptive statistics on the impact of SEAM on education outcomes in the Northern Territory; Section 5 presents results of regression analysis of the data; and Section 6 concludes.

## **2. Indigenous Australians in the Northern Territory**

Indigenous Australians exhibit markedly weaker aggregate indicators of well-being compared to non-

Indigenous Australians in many important dimensions such as life expectancy, education levels, health

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<sup>5</sup> Altman, Buchanan and Biddle (2006) describe the Indigenous economy of the Northern Territory as comprising a private sector, a public sector and a non-market customary sector, where the customary sector includes such activities as fishing and hunting, art and craft production, and meeting cultural responsibilities. Time spent in school may have a negative effect on productivity in the customary sector. We expand on this in Section 2.

outcomes, employment and freedom from poverty (Stephens, 2010). The gap between Indigenous and non-Indigenous Australians is especially large in the Northern Territory, where a larger share of the Indigenous population lives in remote locations, where they are an overwhelming majority, and maintain a traditional way of life.<sup>6</sup>

*Life expectancy.* The most recent estimates from the Australian Bureau of Statistics (ABS)<sup>7</sup> put the life expectancy of Indigenous Australian men at 67 years, twelve years shorter than the Australian average, and that of Indigenous Australian women at 73 years, ten years below average. The average life expectancy of an Indigenous man or woman in the Northern Territory is about 2 years less than the average Indigenous Australian—slightly less than the average life expectancy in Bangladesh.

*Education.* Participation in the National Assessment Program for Literacy and Numeracy (NAPLAN) in 2008, the year before SEAM was implemented, averaged over 90% for the Australian population at large; just under 80% for all Indigenous Australians; and about 70% for the Indigenous population of the Northern Territory (slightly more in grades 3 and 5; slightly less in grades 7 and 9).<sup>8</sup> In 2012, more than 1 in 5 Indigenous students in Australia performed below the national minimum standard in year 3 numeracy and reading compared to 1 in 30 non-Indigenous Australian students. At the same time, almost 60% of year 3 Indigenous students in the Northern Territory scored below the national minimum standard on the mathematics and reading component of NAPLAN; in grade 9 about 67% failed to meet minimum standards.

*Labor market outcomes.* Differences in aggregate labor market outcomes between Indigenous and non-Indigenous Australians are similarly arresting. Approximately 76% of non-Indigenous Australians participate in the labor force, and 72% are employed, while only 57% of Indigenous Australians participate in the workforce and only 48% are employed. The labor market participation rate for Indigenous Australians in the

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<sup>6</sup> Their overall share of the population in the Northern Territory, 27% according to the 2011 census, is by far the highest of any Australian state or territory. A larger share of Indigenous Australians live in New South Wales, but they make up only 2.5% of its population. Indigenous Australians also own roughly half the land in the Northern Territory.

<sup>7</sup> [Life expectancy trends - Australia](#), Australian Social Trends, March 2011 (ABS cat. no. 4102.0)

<sup>8</sup> NAPLAN national reports, <http://www.nap.edu.au/results-and-reports/national-reports.html>.

Northern Territory is even lower, 44%, according to the 2011 Labour Force Survey.<sup>9</sup> Although the Northern Territory has the lowest participation rate it also has one of the lowest Indigenous unemployment rates. This low rate of unemployment is partly driven by the Community Development Employment Project (CDEP), a work for welfare scheme that was especially common in remote areas, where approximately 80% of Indigenous persons in the Northern Territory live (Hunter and Gray 2012).<sup>10</sup>

Altman, Buchanan and Biddle (2006) describe Indigenous employment in Australia as divided among three sectors: the private or market sector; the public sector (predominately CDEP); and the customary or informal sector, which includes activities such as hunting, fishing and gathering, production of art and crafts and land, habitat and species management participation. Employment in the customary or informal sector is especially large in remote Indigenous communities, which account for a disproportionately large fraction of the Indigenous population of the Northern Territory. Ignoring this third sector as non-market activity, as ABS statistics do, leads one to underestimate the level of employment among the Indigenous population in the Northern Territory. Recognizing the importance of this third sector leads to a more realistic assessment of the opportunity cost of conventional schooling and hence to a further downward revision of the already low returns to schooling that Indigenous families in remote areas can reasonably anticipate.

Table 1, drawn from the National Aboriginal and Torres Strait Islander Social Survey (NATSISS) for 2008 provides further evidence of the distinct cultural identity and socio-economic circumstances of Indigenous Australians living in the Northern Territory compared to other large Indigenous populations in Western Australia, Queensland, New South Wales and South Australia. Indigenous Australians in the Northern Territory have stronger ties to traditional Indigenous culture and ways of life, and are less likely to report they or a relative had been forcibly removed from their natural families. In some respects—psychological distress, disability, employment rates—they are similar to other Indigenous Australians, but Indigenous Australians in

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<sup>9</sup> Labour Force Characteristics of Aboriginal and Torres Strait Islander Australians, Estimates from the Labour Force Survey, 2011 (ABS cat. no. 6287.0)

<sup>10</sup> In July 2013 the Australian government replaced CDEP with the Remote Jobs and Communities Program (RJCP). While successive policy agendas have aimed to sharply reduce the gap in employment outcomes, one estimate suggests that “labour force participation rates would take over a century to converge if the trends for the period 1971-2006 were to persist” (Altman, Biddle and Hunter, 2008)

the Northern Territory have less formal schooling and less access to money income, and hence are less socially mobile within Australian society at large.

**Table 1. Selected characteristics of the Indigenous population, by state/territory**

	Northern Territory	Western Australia	Queensland	New South Wales	South Australia
Speak Indigenous language	62.6	22.6	19.1	3.2	25.9
Identify with tribal group	85.4	62.3	64.2	51.7	72.7
Live on homelands	40.5	29.5	16.7	29.6	17.9
Involved in cultural events	81.3	70.0	65.2	55.1	65.0
Has crisis support	85.2	90.1	84.6	92.0	90.8
Removed from natural family	4.8	11.0	7.2	7.7	11.9
High/very high distress	28.1	31.8	29.2	31.6	33.4
Disabled	46.3	45.8	48.0	52.4	54.8
Drinker	48.5	65.6	66.2	66.9	66.3
Nine years of school or less	44.4	28.5	28.9	43.4	29.3
Employed	49.0	54.2	57.2	45.5	49.6
Unemployed	9.8	10.9	8.6	11.8	11.4
Could raise \$2000 in a week	32.0	42.9	45.8	47.8	45.5
Lack money for basic needs	32.6	29.1	23.9	29.7	31.4

*Source:* National Aboriginal and Torres Strait Islander Social Survey (NATSISS), 2008

### 3. The perception of SEAM within the context of the NTER

The impact of the School Enrolment and Attendance through Welfare Reform Measure (SEAM) on education outcomes, on which we focus in this paper, can only be understood against the backdrop of the controversial Northern Territory Emergency Response (NTER) or “Northern Territory Intervention” initiated shortly before it, for although SEAM was not part of the NTER Act, it was the operational context of the NTER that lent SEAM much of its initial credibility.

The NTER was implemented by the Liberal-National Coalition government under John Howard in 2007, during the lead-up to the federal election that year. The initial response deployed additional police and military units<sup>11</sup> in the Northern Territory as an immediate response to allegations of widespread child neglect and sexual abuse in Indigenous communities outlined in the publication of *Little Children are Sacred* (Wild and Anderson, 2007).<sup>12</sup> The NTER was supported by subsequent Labor governments under both Kevin Rudd and Julia Gillard and enjoyed a strong bi-partisan mandate. It introduced a range of measures aimed at addressing the perceived abuse of children and women in Indigenous communities and narrowing the gaps in economic opportunity between Indigenous and non-Indigenous Australians. These measures included, among others, deployment of additional police to affected communities, restrictions on alcohol and pornography, reforms that limited Native land rights, added Commonwealth funding for community services, and sequestering a proportion of welfare benefits for basic needs—racially targeted measures that required temporary suspension of the Racial Discrimination Act (see Broome (2011) for a comprehensive discussion). The Australian Defense Force presence ended in 2008 but the Intervention continued until August 2012 through various policy initiatives (Altman and Russell, 2012), and has since been replaced by the similarly oriented Stronger Futures Policy. It left Indigenous leaders divided on whether its advantages outweighed its authoritarian approach.

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<sup>11</sup> The Australian Defence Force (ADF) began “Operation OUTREACH” on 27 June 2007 and deployed approximately 600 ADF personnel, approximately 400 of them soldiers (<http://www.defence.gov.au/opEx/global/opoutreach/index.htm>).

<sup>12</sup> The formal status of the Northern *Territory* allowed national intervention in a manner that would not have been constitutionally possible in Australia's states.

SEAM was seen as a key element in narrowing the economic gap between Indigenous and non-Indigenous Australians and interrupting the intergenerational transmission of poverty, specifically by raising school attendance rates, which were very low among Indigenous Australians in the Northern Territory: an average attendance rate of 78% in 2008 compared to a national average of 91% and yet larger differences in standardized test (NAPLAN) participation rates.<sup>13</sup> It aimed to achieve this purpose by linking income support payments to school attendance. Administered by the Department of Families, Community Services and Indigenous Affairs (FaHCSIA), it was announced in June 2008, and began in January 2009. In its first year, it formally targeted a small population of parents receiving Centrelink (welfare) payments with children in one of fourteen schools in six trial areas. Table 2 shows the distribution of children and parents across the six trial areas targeted by SEAM in 2009, along with population statistics from the Australian Bureau of Statistics (ABS). Katherine Town Camps is an exclusively Indigenous community located near Katherine Township, a regional center in the Northern Territory. Overall, 989 parents and 1,658 children were deemed within the scope of SEAM in 2009, a small fraction of the overall Indigenous population of the Northern Territory.

**Table 2: Target populations in SEAM sites, 2009**

Location	Total Population	Indigenous Population	Parents in SEAM	Children in SEAM
Katherine Township	9,208	2,365	354	611
Katherine Town Camps	?	?	111	191
Hermannsburg	623	537	87	125
Wallace Rockhole	68	63	15	21
Tiwi Islands	2,579	2,267	203	336
Wadeye	2,112	1,927	219	374
			989	1,658

*Notes:* Population statistics come from the 2011 Australian Census; target numbers from DEEWR (2011).

<sup>13</sup> MySchool data provided by the Australian Curriculum Assessment and Reporting Authority (ACARA). See Table 2, below.

Government reports published by the Department of Employment, Education and Workplace Relations (DEEWR) indicate that high awareness of the SEAM program among parents was accompanied by a high level of misinformation about how the program worked and whom it targeted (DEEWR 2011). According to the report “parents and communities had limited understanding of the details of SEAM, and this was compounded by misinformation”. The report cited several common *misconceptions* among parents and community members that heightened its effectiveness not only among its target population but among the entire Indigenous population of the Northern Territory:

- It was directed at all Indigenous children in remote areas
- All carers (including grandmothers and aunts) would have their payments suspended if they were caring for a truant child.
- All Indigenous families in trial locations were subject to SEAM, including waged families and families participating in CDEP.
- Non-compliance with SEAM would trigger immediate suspension of payments, rather than requiring a compliance period as was actually the case.

In fact, of the 989 parents deemed within scope of the SEAM program in 2009 none had their payments suspended for failure to comply (DEEWR 2011). The stated policy goal of SEAM was to increase enrolments, and 918 parents (1604 children) were sent enrolment notification letters which requested they provide their child’s school enrolment details to Centrelink within 14 days. According to the DEEWR evaluation report the overall non-compliance rate was 170 parents (286 children). Of these, 56 parents (84 children) were sent enrolment warning notices, the final step before having their benefits suspended. The majority complied but eleven chose to move out of the scope of the program (effectively this was the most severe sanction for non-compliance in 2009). The strong threats implicit in the information campaign that accompanied the initial implementation in 2009 were not carried out.

#### **4. The impact of SEAM on educational outcomes: Descriptive statistics**

While raising school enrollment and attendance rates was the immediate target of SEAM its ultimate goal was to have a positive impact on learning achievement. We did not have access to individual enrolment or attendance data that would have allowed us to track changes in Indigenous attendance rates. However, we are

able to estimate the impact of SEAM on learning outcomes from NAPLAN participation and achievement data.<sup>14</sup> Tables 3 and 4 presents comparative summary statistics on NAPLAN outcomes in two knowledge domains, reading and numeracy, averaged over four grade levels (3, 5, 7, and 9), in five successive years: from 2008, the year before SEAM was implemented to 2012. They illustrate vividly both the immediate impact, in 2009, of the perceived threat of SEAM on education outcomes in the Northern Territory, and the abatement of this effect in subsequent years as it became increasingly apparent that the threat of withholding welfare payments was not being carried out.

Three indicators are presented in these tables: the participation rate, the share of students in the cohort above minimum standard, and the pass rate. The participation rate is defined as the percentage of students participating in the NAPLAN test (including students exempted by the school) as a percentage of the total number of students in the year level.<sup>15</sup> The share of students in the cohort above minimum standard is defined for grade level  $g$  and knowledge domain  $d$  in year  $t$  (say, grade 7 numeracy in 2010) as:

$$S_{gdt} = (P_{gdt} - M_{gdt}) / T_{gt}$$

where  $P_{gdt}$  is the number of students in grade  $g$  participating in the test in knowledge domain  $d$  in year  $t$ ,  $M_{gdt}$  is the number of students scoring below minimum standard on that test, and  $T_{gt}$  is the total number of students in grade  $g$  in year  $t$ . This is distinct from our third indicator, the pass rate, which is the percentage of students participating in the test who scored above minimum standard. It is defined as

$$R_{gdt} = (P_{gdt} - M_{gdt}) / P_{gdt}.$$

Each table averages these indicators over the four grade levels participating in NAPLAN within each year and knowledge domain.

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<sup>14</sup> NAPLAN comprises five knowledge domains (numeracy, reading, grammar, spelling and writing). Each year, in mid-May, the Australian Curriculum Assessment and Reporting Authority (ACARA) administers tests in each domain to all Australian students in grades 3, 5, 7, and 9. The data reported here are from the 2008-2012 NAPLAN National Reports published by ACARA, and available at <http://www.nap.edu.au/results-and-reports/national-reports.html>.

<sup>15</sup> Non-participating students are students classified as absent or withdrawn (by the parents).

**Table 3. NAPLAN outcomes in reading, averaged over all grade levels**

	Participation			Above minimum standard			Pass rate		
	All	All	Indigen	All	All	Indigen	All	All	Indigen
	Non-Indig	Indigen	in NT	Non-Indig	Indigen	in NT	Non-Indig	Indigen	in NT
2008	96%	87%	67%	92%	61%	22%	95%	70%	33%
2009	96%	89%	86%	92%	65%	31%	96%	73%	36%
2010	96%	87%	76%	92%	64%	30%	96%	73%	39%
2011	96%	87%	77%	92%	65%	30%	96%	75%	39%
2012	95%	86%	74%	91%	63%	27%	96%	73%	36%

Source: The 2008-2012 NAPLAN National Reports, <http://www.nap.edu.au/results-and-reports/national-reports.html>.

**Table 4. NAPLAN outcomes in numeracy, averaged over all grade levels**

	Participation			Above minimum standard			Pass rate		
	All	All	Indigen	All	All	Indigen	All	All	Indigen
	Non-Indig	Indigen	in NT	Non-Indig	Indigen	in NT	Non-Indig	Indigen	in NT
2008	96%	86%	68%	97%	66%	32%	97%	77%	48%
2009	96%	88%	85%	97%	67%	38%	97%	77%	45%
2010	95%	87%	75%	97%	66%	32%	97%	76%	43%
2011	95%	86%	76%	97%	68%	38%	97%	79%	49%
2012	95%	85%	72%	96%	64%	30%	96%	75%	43%

Source: The 2008-2012 NAPLAN National Reports, <http://www.nap.edu.au/results-and-reports/national-reports.html>.

The pattern of change in participation rates is similar for both knowledge domains. First, a sharp increase in 2009—19 percentage points in reading, 17 in numeracy—without parallel for Australia as a whole, or for the general Indigenous population. This change nearly erased in one year the difference between the participation rates of the Indigenous population in the Northern Territory and the entire Indigenous population of Australia. This illustrates the dramatic effect that can be achieved by a credible threat to link welfare payments to

schooling. However, though the threat was initially perceived to be credible it was not actually carried out, and as this came to be known it resulted in an immediate falling off in participation rates, in 2010, of ten percentage points in each domain, with smaller declines in subsequent years, leaving participation rates in 2012, in reading and numeracy, respectively seven and four percentage points above their 2008 pre-SEAM levels.

Note that this dramatic immediate rise in participation rates did not trigger commensurate declines in pass rates—the share of test takers achieving minimum standard levels—as one might expect. The pass rate in reading actually rose by three percentage points, mirroring a similar rise in the general Indigenous population, while the pass rate in numeracy fell by the same measure. Subsequent years saw yet further gains in reading pass rates and fluctuating changes in numeracy. We take this as indicating that those who were not taking NAPLAN tests absent SEAM but were induced to do so by SEAM had similar academic ability, especially in reading, to students who participated in NAPLAN before SEAM was implemented.

This rise in participation rates without a commensurate decline in pass rates resulted in immediate increases in the share of the Indigenous cohort in the Northern Territory achieving minimum standard over pre-SEAM 2008 levels: an increase in 2009 of ten percentage points in reading, from 21% to 31%, and six percentage points in numeracy, from 32% to 38%. These are dramatic increases in measured achievement learning, gained in only one year. However, again, we see much of these gains eroded in subsequent years. The gain in reading in 2012, of six percentage points over the base level, remains substantial, while the share achieving minimum standard in numeracy fluctuates strongly, above and below 2008 levels, from year to year.<sup>16</sup> These patterns are illustrated graphically for each grade level in Figures 1-4. The underlying data is provided in the appendix.

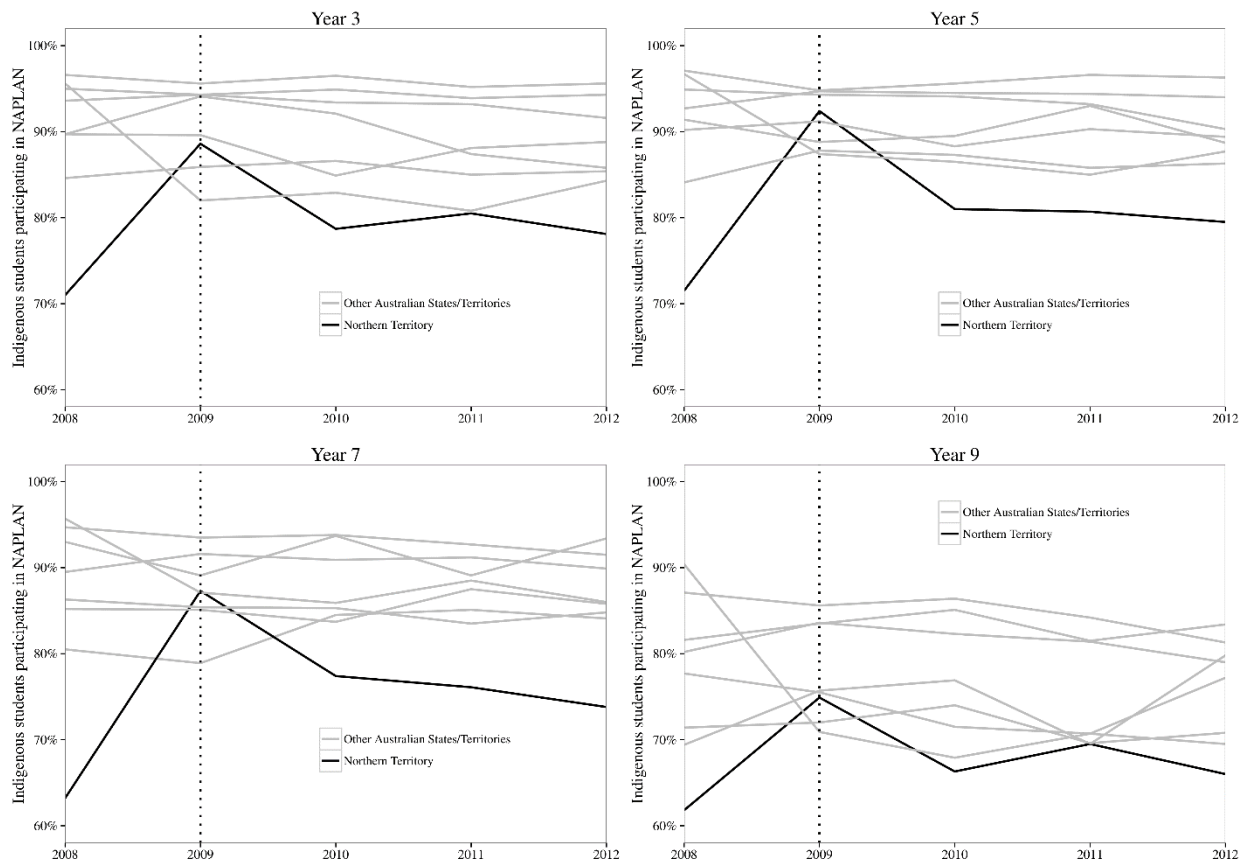
Figure 1 shows trends in the percentage of Indigenous students participating in the NAPLAN reading test in the Northern Territory, marked by the black line, compared to Indigenous students in Australia's other states and territories, marked by gray lines. In 2008, prior to the implementation of SEAM, participation in the NAPLAN reading test among Indigenous students in the Northern Territory was the lowest in Australia,

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<sup>16</sup> This pattern of fluctuation would seem to reflect NAPLAN's testing pattern. Cohorts tested in 2009, then in grades 3, 5, 7 and 9, experienced a credible threat; the younger three of these were again tested in 2011. These are the years for which we see strong positive increases. The cohorts tested in 2008, 2010 and 2012 were never subject to a credible threat and exhibit no ultimate gains.

regardless of year level. The spike in participation in 2009 is visually obvious in Figure 1 for all year levels with the largest increase in grades 5 and 7 and the smallest in grade 9; in 2009, the Northern Territory's Indigenous participation share is no longer the lowest of all states and territories in any grade. However, this increase falls off immediately, in 2010, in all grades, as a result of which the Northern Territory's Indigenous participation share is again the lowest of all states and territories in each grade and each year from 2010 on. Nonetheless, in all grade levels, participation rates in NAPLAN reading tests in 2012 are markedly higher than in 2008.

**Figure 1: Trends in NAPLAN reading test participation by State/Territory**

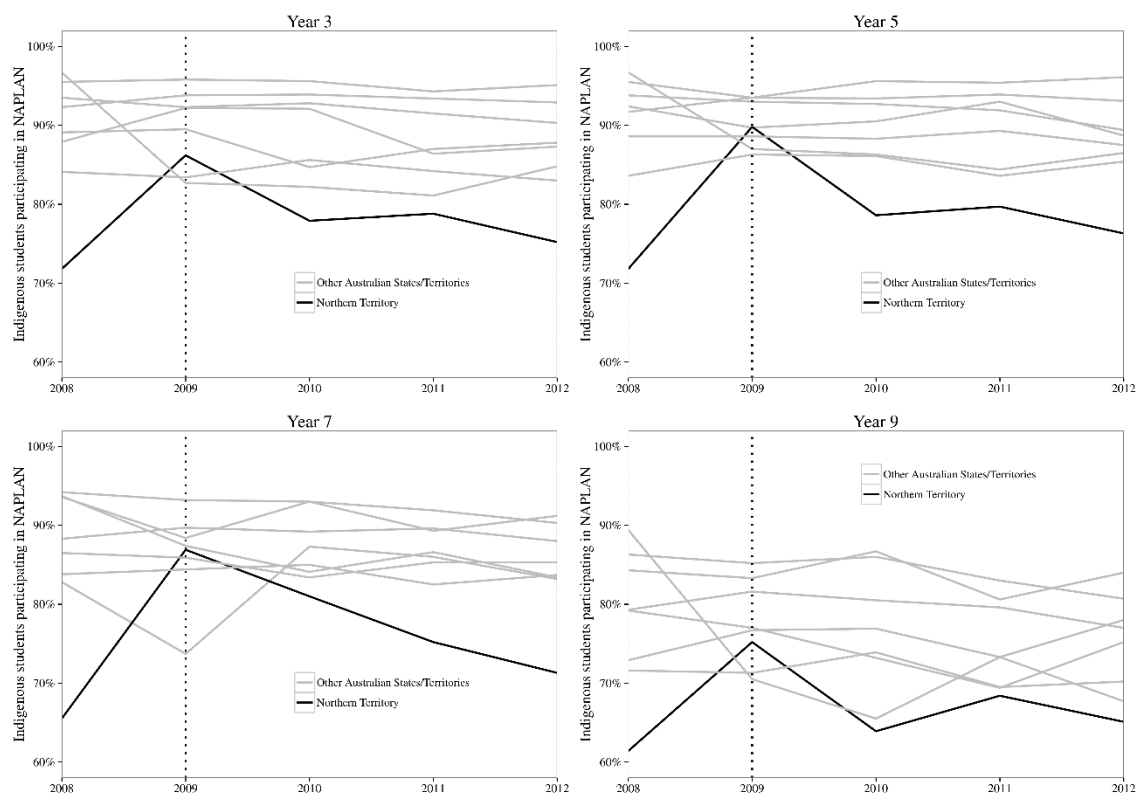


Source: NAPLAN National Reports, 2008-12, <http://www.nap.edu.au/results-and-reports/national-reports.html>.

Figure 2 shows trends in the percentage of Indigenous students participating in the NAPLAN numeracy test in each grade level and year, again comparing the Northern Territory to other states and territories. The same dynamic patterns observed for participation rates in reading tests are again apparent here: a sharp rise in 2009

followed by a sharp immediate decline in 2010, and further gradual decline in subsequent years to a final level, in 2012, higher than the base level in 2008. Again this pattern is unique to the Northern Territory; no other state or territory exhibits a similar pattern.

**Figure 2: Trends in NAPLAN mathematics test participation by State/Territory**

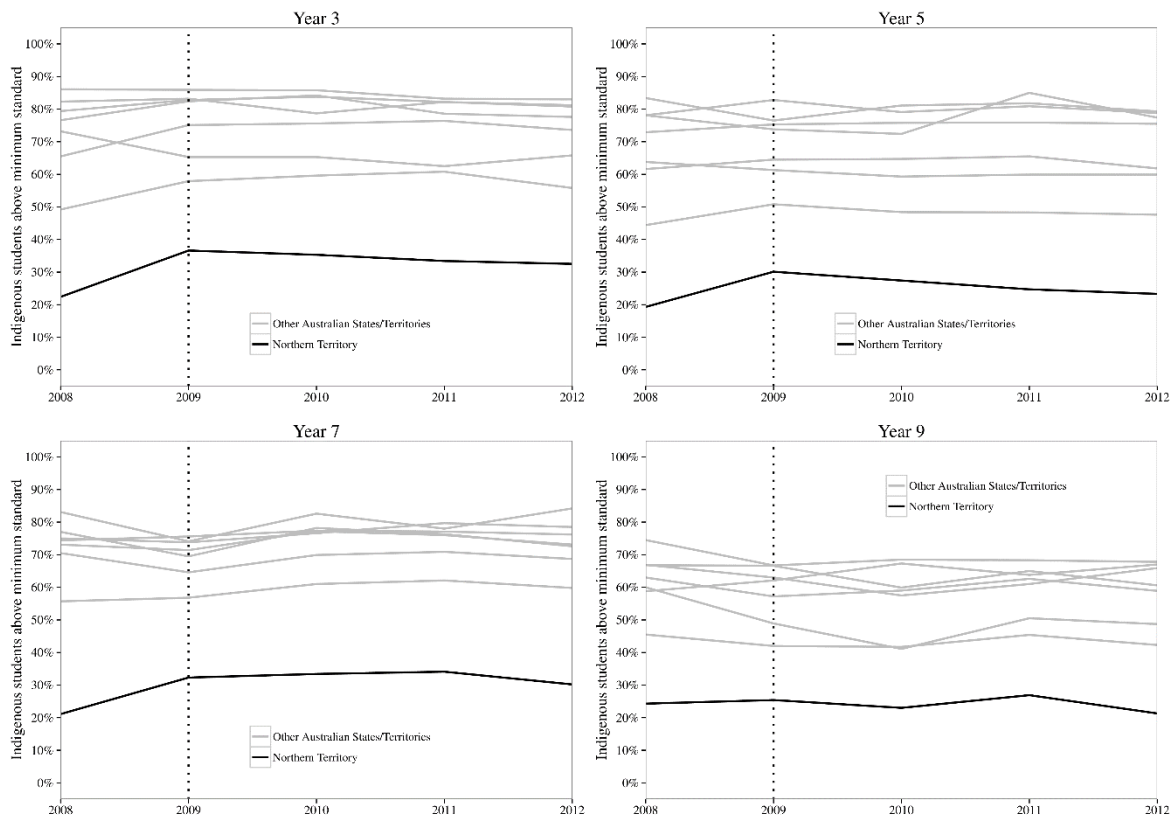


Source: NAPLAN National Reports, 2008-12, <http://www.nap.edu.au/results-and-reports/national-reports.html>.

Figures 3 and 4 present time trends in the percentage of Indigenous students above minimum standard, respectively in reading and numeracy, for each grade level, comparing the Northern Territory (the black line) to Australia's other states and territories (the gray lines). We find significant differences between the two knowledge domains and among grade levels. In reading we find a substantial increase of about ten percentage points, from about 20% to about 30%, in grades 3, 5 and 7, followed by a very mild decline that leaves much of the initial gain intact, while grade 9 shows no systematic effect. Trends in numeracy, in Figure 4, are less pronounced, with more fluctuation. Nonetheless we see here, too, increases in the share reaching minimum

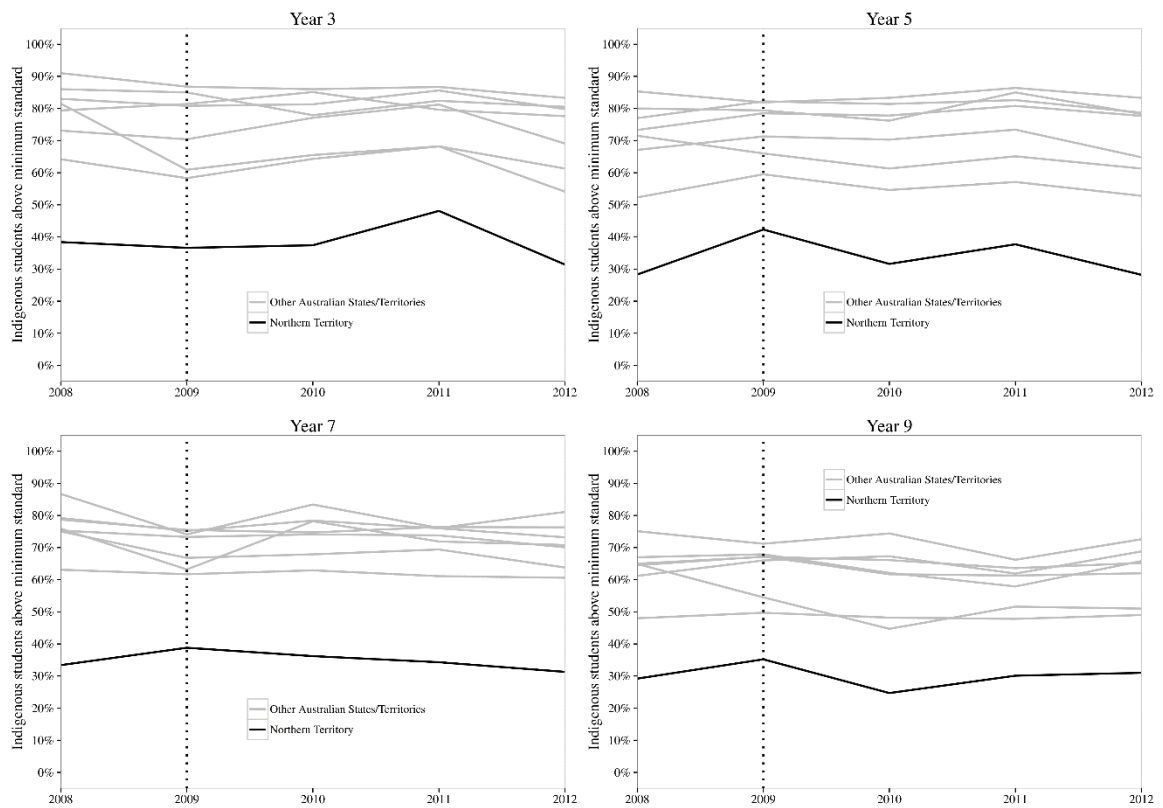
standard from 2008 to 2009 in grades 5, 7 and 9 (the largest increase is in grade 5), followed by a decline in 2010; there is no increase for grade 3

**Figure 3: Indigenous students above minimum standard in reading by State/Territory**



Source: NAPLAN National Reports, 2008-12, <http://www.nap.edu.au/results-and-reports/national-reports.html>.

**Figure 4: Indigenous students above minimum standard in mathematics by State/Territory**



Source: NAPLAN National Reports, 2008-12, <http://www.nap.edu.au/results-and-reports/national-reports.html>.

## 5. The impact of SEAM on educational outcomes: Regression analysis

To further characterize SEAM's impact on participation and learning outcomes among the Indigenous population of the Northern Territory, we apply regression analysis to our data, using a difference in differences approach to estimate average annual effects of SEAM on participation rates and on the percentage of students above minimum standard. We assume that the entire Indigenous population of the Northern Territory was untreated in 2008, before implementation of SEAM; then fully treated in 2009 by the credible threat of having welfare payments withheld from parents who did not send their children to school; and then partially or ineffectively treated in subsequent years as the threat lost its credibility.<sup>17</sup> The Indigenous populations of other states and territories are taken to be untreated in all years and grade levels and both knowledge domains.

We estimate each of our two equations over all eight states and territories in Australia, pooling all years and grade levels, and both knowledge domains, thus taking Australia's other seven states and territories as our control group. As we showed in Section 3, the Indigenous population of the Northern Territory is different from that in other states and territories in other respects as well, not only in not being subject to SEAM. To test the robustness of our results to the choice of control group we first apply the synthetic control method (Abadie and Gardeazabal, 2003; Abadie, Diamond and Hainmueller, 2010), which automatically constructs an artificial control from the other states and territories by weighting them based on pre-treatment covariates. Then we use placebo tests on all states and territories to construct a non-parametric test of the robustness of our results.<sup>18</sup>

### 5.1 The basic difference-in-differences specification

For our basic difference-in-differences specification we pool the data over five years (2008-2012), four grade levels, two knowledge domains, and all eight states and territories, to estimate the following equation:

$$Y_{idgt} = \alpha + \beta_r I_r + \sum_{g=3,5,7} \gamma_g I_g + \sum_{t=2009}^{2012} \delta_t I_t + \eta I_{NT} + \sum_{t=2009}^{2012} \kappa_t I_t I_{NT} + v_{idgt}$$

where  $Y_{idgt}$  is the outcome variable—the participation rate or share of the cohort above minimum standard—for the Indigenous population in state/territory  $i$ , in knowledge domain  $d$  (numeracy or reading) and grade  $g$  (3,

<sup>17</sup> If the assumption that all Indigenous parents of truant Children in the NT were treated—i.e., believed their welfare payments would be reduced if they did not send their children to school—is an overstatement, then our estimated effects are biased downward.

<sup>18</sup> Computations are done in R with the “synth” package (Abadie, Diamond Hainmueller, 2011).

5, 7 or 9), in year  $t$  (between 2008 and 2012). Here,  $I_r$  is an indicator for the reading domain (numeracy is omitted) and  $\alpha_r$  is a fixed effect for reading;  $I_g$  is an indicator for grade level (grade 9 is omitted) and  $\alpha_g$  is a grade level effect;  $I_t$  is an indicator for year (2008 is omitted) and  $\alpha_t$  is a year effect;  $I_{NT}$  is an indicator for the Northern Territory and  $\alpha_{NT}$  is the Northern Territory fixed effect;  $\alpha_{idgt}$  is the difference-in-difference effect for year  $t$ ; and  $v_{idgt}$  is an i.i.d. error term. Our interest focuses on  $\alpha_{idgt}$  as it varies over time: it averages out the difference in the difference in the outcome between the base year and year  $t$  between the Northern Territory Indigenous population and the Indigenous populations in other states and territories, over all grade levels, knowledge domains and states and territories. We expect a large significant positive value in 2009, compared to 2008, the effect of the credible threat; and a subsequent decline, compared to 2009, when the threat proves hollow.<sup>19</sup> The results of the two regressions—for participation and share above minimum standard—are presented in Table 5.

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<sup>19</sup> The key assumption here is that treatment is independent of the stochastic component.

**Table 5: Indigenous outcomes, pooled difference-in-difference regressions**

	Participation		Above minimum standard	
	Estimate	Std. Error	Estimate	Std. Error
Intercept	0.791	0.009	0.644	0.016
Northern Territory (NT)	-0.211	0.018	-0.452	0.034
Grade 3	0.123	0.007	0.146	0.014
Grade 5	0.132	0.008	0.101	0.014
Grade 7	0.101	0.007	0.110	0.014
t=2009	-0.017	0.009	-0.022	0.016
t=2010	-0.017	0.009	-0.014	0.016
t=2011	-0.026	0.009	-0.011	0.016
t=2012	-0.026	0.009	-0.026	0.017
Reading	0.007	0.005	-0.022	0.010
NT in 2009	0.196	0.025	0.099	0.048
NT in 2010	0.101	0.024	0.054	0.046
NT in 2011	0.115	0.024	0.077	0.048
NT in 2012	0.085	0.025	0.042	0.047

*Notes:* Linear model fit by robust regression. Standard errors come from bootstrapping the regression model 1999 times by fixed-x resampling. Estimates are approximately the same when the model is fit by OLS.

Considering first the participation equation, in the left panel of Table 5, we find that the average participation rate of the Indigenous population in the Northern Territory in 2008 is a highly significant 21.1 percentage points lower than the average rate for the Indigenous populations of other states and territories in grade 9, and 8-11 percentage points lower in the lower grades; there was no significant difference in participation rates between numeracy and reading; and participation rates in 2008 were generally higher than in subsequent years by 1.7-2.6 percentage points.

Our main quantities of interest in these equations are the difference in difference coefficients,  $\Delta$ , estimating the time variation of Indigenous participation in the Northern Territory compared to the time variation of Indigenous outcomes in other states and territories; they appear in the shaded bottom four rows of Table 5. We find a highly significant effect of 19.6 percentage points in 2009, which then falls off by nearly half in 2010, rises slightly in 2011, and falls again in 2012, to a level 8.5 percentage points above 2008 participation rates. Of these changes, the difference between 2009 and subsequent years is statistically significant as are the differences between each year and 2008 (all for  $p$ -values of 0.001); however our estimates for 2010, 2011 and 2012 are not statistically different from each other.

Turning now to the share of the Indigenous cohort above minimum standard, we find that in the base year, 2008, in grade 9 numeracy, the share above minimum standard in the Northern Territory is an alarming (and highly significant) 45 percentage points lower than the average share among the Indigenous populations in other states and territories. This difference is smaller in earlier grades, between 31 and 35 percentage points, but still very large; and larger in reading by a marginally significant 2.2 percentage points. Shares above minimum standard in 2008 were again higher by 1.1-2.6 percentage points compared to subsequent years. Finally, regarding our difference in difference coefficient, the difference over time in the difference between the share of Indigenous students above minimum standard in the Northern Territory and their share among the Indigenous populations of other states and territories, we find an effect of 9.9 percentage points in 2009 (significant for a  $p$ -value of 0.02). Subsequent values remain positive, between 4.2 and 7.7 percentage points above the 2008 share, but no other differences are statistically significant.

## **5.2 Synthetic control**

The appropriateness of the difference in differences approach rests on the assumption that absent any treatment the potential change over time in the outcome variable, after controlling for observables, should be the same for the control and treated groups. This assumption gains plausibility the more similar the treatment and control groups are prior to treatment. Our basic regression used the Indigenous population in all other states

and territories as our control group, though some are very different from the Northern Territory.<sup>20</sup> A synthetic control is a weighted average of potential control units that best approximates the treated unit prior to treatment on relevant observable covariates, thus achieving greater similarity between treatment and control units (Abadie, Diamond and Hainmueller, 2010). We used an automated method to construct our synthetic control for both regressions, based on the following pre-treatment covariates (all variables refer to 2008 values):

1. Percentage of students participating in NAPLAN
2. Percentage of participating students who scored above minimum standard
3. Percentage of students in the cohort above minimum standard
4. Average achievement in NAPLAN test

We obtained, in this application, that the synthetic control for the Northern Territory is simply Western Australia.<sup>21</sup> We therefore re-estimate the regressions in Table 5 over just two geographic units: the Northern Territory and its synthetic control the state of Western Australia. The results are presented in Table 6.

**Table 6. Regression estimates with Western Australia as a synthetic control**

	Participation		Above minimum standard	
	Estimate	Std. Error	Estimate	Std. Error
Intercept	0.711	0.006	0.494	0.015
Northern Territory (NT)	-0.133	0.007	-0.255	0.018
Grade 3	0.126	0.004	0.112	0.011
Grade 5	0.137	0.004	0.039	0.011
Grade 7	0.113	0.004	0.103	0.011
t=2009	0.001	0.007	0.015	0.018
t=2010	0.019	0.007	0.020	0.018

<sup>20</sup> As an extreme example, where the share above minimum standard for Indigenous students in the Northern Territory is rarely above 40%, in the Australian Capital Territory, 80% of students score above minimum standard in many domain and grade level combinations.

<sup>21</sup> The program assigned a weight of 1 to Western Australia and a weight of 0 to all other states.

t=2011	-0.006	0.007	-0.034	0.018
t=2012	0.001	0.007	0.002	0.018
Reading	0.011	0.003	0.056	0.008
NT in 2009	0.163	0.010	0.054	0.025
NT in 2010	0.056	0.010	0.017	0.025
NT in 2011	0.090	0.010	0.027	0.025
NT in 2012	0.055	0.010	0.012	0.025

*Notes:* Linear model fit by robust regression. Standard errors come from bootstrapping the regression model 1999 times by fixed-x resampling. Estimates are approximately the same when model is fit by OLS.

The effects we find here are similar but somewhat smaller. Thus the rise in participation rates between 2008 and 2009 is here 16.3 percentage points, still large but smaller than the estimate of 19.6 using all states as counterfactuals; the subsequent decline between 2009 to 2010 is now slightly larger but similar, 10.7 percentage points compared to 9.6; and the remaining difference in 2012, over the 2008 base-year value is again smaller, 5.5 percentage points compared to 8.5. Making the same comparison for the share above minimum standard we find again a similar dynamic but with the estimates using WA as the synthetic control yielding smaller, though not statistically different, estimated coefficients. The difference in results between the two methods is the result of two effects: The first is the greater similarity of the Indigenous population of the Northern Territory to the Indigenous population of Western Australia should reduce the possibility of spurious effects introducing a bias when the Indigenous population of the Northern Territory is compared to less similar Indigenous populations in states and territories other than Western Australia. The second is the greater random variation associated with outcomes in a single state, which are averaged out when the full set of states is included in the regression. We cannot say how much of the difference should be attributed to each effect and treat the two sets of estimates as upper and lower bounds on the actual treatment effect.

### 5.3 Placebo tests

To further test the robustness of our results, we construct a placebo test for the initial treatment effect. Placebo tests are widely used to show that an effect that has been identified is not spurious (DiNardo and Pischke 1997; Angrist and Krueger 1999; Abadie and Gardeazabal, 2003). For each state and territory we construct a synthetic control and calculate the difference in difference in outcome variables between 2008 and 2009 within each grade-domain:

$$Z_{idg} = (Y_{idg,2009} - Y_{idg,2008}) - (Y_{c(i)dg,2009} - Y_{c(i)dg,2008})$$

where  $Y_{idg}$  is as before the outcome for state or territory  $i$  in knowledge domain  $d$  and grade  $g$ ; and  $c(i)$  is the synthetic control for state or territory  $i$ . We then compare the treatment effect across all states and territories.

The results for participation rates in NAPLAN are presented in Table 7, and for the share achieving minimum standard in Table 8.

Considering first the treatment effect on participation rates, in Table 7, we find that for both domains and across all grade levels, the highest values are in the Northern Territory with the exception of year 9 numeracy, where Queensland and Tasmania show stronger effects. The probability of achieving a result "as good" as this from random permutations,  $(1/8)^7(3/8)$ , is less than  $10^{-6}$ . Averaging the treatment effects on participation for the Northern Territory across all grade levels and both knowledge domains we obtain a value of 17.6, slightly higher than the value obtained from the regression with the synthetic control.

**Table 7: Placebo test for the treatment effect on participation rates**

	Numeracy				Reading			
	Year 3	Year 5	Year 7	Year 9	Year 3	Year 5	Year 7	Year 9
Aust. Capital Terr.	4.34	-0.22	-9.70	4.38	4.72	-3.13	-1.50	5.70
New South Wales	3.90	3.58	4.62	4.35	7.33	3.77	4.89	5.49
Queensland	4.02	3.61	4.93	12.22	1.98	6.23	6.06	12.52
South Australia	-14.30	-7.70	-5.31	-17.80	-12.97	-7.35	-7.40	-18.00

Tasmania	11.46	5.63	-4.23	8.21	12.57	6.99	1.00	6.89
Victoria	1.24	-0.22	6.18	-1.31	0.13	0.92	1.72	-3.11
Western Australia	-5.00	2.70	8.68	-4.10	-3.10	2.70	0.05	-3.25
Northern Territory	15.10	15.30	30.50	14.10	16.30	17.20	25.70	6.80

*Notes:* This table lists all possible estimates that could have been obtained using the synthetic control method. Each jurisdiction's synthetic control is a weighted average of other jurisdictions except for the Northern Territory which assigns a weight of 1 to Western Australia. The pre-SEAM covariates for each permutation are the participation rate in 2008, the proportion above minimum standard, the average test score and the pass rate in all years. Computations were done using the synth package in R (Abadie, Diamond and Hainmueller 2011).

**Table 8: Placebo test for the treatment effect on the share achieving minimum standard**

	Numeracy				Reading			
	Year 3	Year 5	Year 7	Year 9	Year 3	Year 5	Year 7	Year 9
Aust. Capital Terr.	4.75	0.59	-9.28	4.08	3.74	-6.77	-4.37	7.05
New South Wales	2.66	4.38	4.68	2.65	2.14	4.06	6.03	5.75
Queensland	10.76	1.27	5.67	9.30	12.17	3.62	2.12	-1.63
South Australia	-17.96	-7.86	-4.88	-12.50	-12.53	-4.41	-3.85	-8.41
Tasmania	-3.20	-2.80	-8.60	-4.80	-1.10	-2.60	-1.50	-3.90
Victoria	3.90	5.75	5.05	-0.24	-1.13	9.01	4.42	1.51
Western Australia	-3.20	3.00	6.80	-3.10	-0.90	3.50	7.00	-6.80
Northern Territory	4.10	6.80	6.80	4.30	5.50	4.40	10.10	4.60

*Notes:* This table lists all possible estimates that could have been obtained using the synthetic control method. Each jurisdiction's synthetic control is a weighted average of other jurisdictions except for the Northern Territory which assigns a weight of 1 to Western Australia. The pre-SEAM covariates for each permutation are the participation rate in 2008, the proportion above minimum standard, the average test score and the pass rate in all years. Computations were done using the synth package in R (Abadie, Diamond and Hainmueller 2011).

Table 8, presents treatment effects on the share achieving minimum standard. The result again indicates the presence of a significant treatment effect for the Northern Territory. The results are not as strong but still highly significant. The Northern Territory remains the only state or territory with a positive effect for all grade levels and both knowledge domains. Its effect is largest in grades 5 and 7 numeracy and grade 7 reading; it has the second largest effect in grade 9 numeracy and grades 3 and 5 reading; and the third largest effect in grade 3 numeracy and grade 9 reading. The probability of achieving a results as good as this from random permutations,  $(1/8)^3 (2/8)^3 (3/8)^2$ , is less than  $10^{-5}$ . Averaging the treatment effects on share achieving minimum standard for the Northern Territory across all grade levels and both knowledge domains we obtain a value of 5.8, again slightly higher than the value obtained from the synthetic control regression.

Table 9 presents the different estimates obtained for the various treatment effects from the three methods used: difference in differences regressions using all states/territories as controls; difference in differences regressions using a synthetic control (Western Australia); and the average effect obtained from a disaggregated calculation of difference in differences effects between the Northern Territory and its synthetic control (Western Australia).

**Table 9: Comparison of estimates**

	Participation			Share above minimum standard		
	Basic regression	WA as counterfactual	By grades & domains	Basic regression	WA as counterfactual	By grades & domains
Increase from 2008 to 2009	19.6	16.3	17.6	9.9	5.4	5.8
Decline from 2009 to 2010	9.5	10.7		4.5	3.7	
Increase from 2008 to 2012	8.5	5.5		4.2	1.2	

*Notes:* The estimates in columns 4 and 7 are the average of all Northern Territory synthetic control estimates from row 8 in Tables 7 and 8 respectively.

While these estimates vary across the different methods they present a similar pattern. The initial effect of SEAM, when the threat was perceived to be credible, was very large: participation rates rose in one year by 16-20 percentage points above an average base rate of 68%, then declined in one year by about 10 percentage points, once it became clear that the threat was not carried out; and reached a participation rate 5 to 8 percentage points above pre-SEAM levels in 2012, the last year in our study.

The initial effect of SEAM on the share of the cohort achieving minimum standard in the first year of implementation, when the threat was perceived to be credible, was also large: an increase of between 5 and 10 percentage points above an average base rate of 32%. This was followed by a large decline the following year of between 3 to 5 percentage points, and share levels in 2012 that were 1 to 4 percentage points above pre-SEAM levels.

## **6. Concluding remarks**

Australia's School Enrolment and Attendance through Welfare Reform Measure (SEAM), implemented in 2009 to raise school attendance rates among Indigenous children in the Northern Territory, against the backdrop of the Northern Territory Emergency Response (NTER), provides a unique opportunity to study the effect of a *credible* threat to link welfare payments to school attendance. The strong police and military presence that was part of the NTER, the temporary suspension of the Racial Discrimination Act, as well as the troubled history of race relations in Australia, created a climate in which the threat of truancy being punished by immediate loss of welfare payments, implicit in SEAM, was widely believed. This engendered a strong positive response initially. However, as the harsh measures implicitly threatened by SEAM were not carried out in practice, and this became widely known, the threat evaporated and much, though not all of the gains dissipated.

In this paper we estimated the strength of this response and its variation over time from participation rates in Australia's National Assessment Program—Language Arts and Numeracy (NAPLAN) tests, and from learning achievement reflected in these tests. Specifically, we estimated difference-in-differences regressions that

compared the change in participation rates and test scores in reading and numeracy, in grades 3, 5, 7 and 9, between 2008, the year before SEAM was implemented, and each year until 2012, between the Indigenous population of the Northern Territory and the Indigenous populations of Australia's other states and territories. We find that in 2009, the first year in which SEAM was implemented, test participation increased dramatically, on average between 16 and 20 percentage points above a pre-SEAM rate of 68%, beyond the average change in Australia's other Indigenous populations. This rise in participation rates did not lower test means appreciably, suggesting that the academic ability of those induced to sit the test by SEAM was similar, on average, to that of students who would have participated in NAPLAN absent SEAM. Consequently, the share of each cohort achieving minimum standard in each subject in that year increased substantially in 2009, by between five and ten percentage points over a pre-SEAM base rate of 32%, with no similar rise in other Indigenous populations. However, as the threat of withholding welfare payments was not actually carried out except in a handful of cases, and this was observed and became widely known, participation rates fell off substantially in the following year, and subsequent years saw most but not all of the gains evaporating. Participation rates in 2012, the last year in our study, remained significantly above pre-SEAM participation rates but nearly all the gains in the share of the cohort achieving minimum standard had disappeared by then.

These findings demonstrate that a *credible* threat to link welfare payments to school attendance can be extremely effective, at least in the short run. At the same time they also demonstrate the difficulty of following through on such threats, even in the unique circumstances of SEAM, which leant them their initial credibility. Once the threat proved hollow, most of the initial gains were reversed, indicating that many of the parents coerced into sending their children to school by SEAM did not appreciate the value of schooling for their children. This suggests that even credible efforts to enforce compulsory schooling by linking welfare payments to school attendance or other punitive action, will not be fully effective unless they are accompanied by measures that increase parents' and children's appreciation of the value of schooling.

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## Appendix

**Table A1: Grade 3 Mathematics**

<i>State/Territory</i>	% Participating in NAPLAN					% Above Minimum Standard				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Northern Territory	0.72	0.86	0.78	0.79	0.75	0.38	0.37	0.37	0.48	0.31
Western Australia	0.84	0.83	0.86	0.84	0.83	0.64	0.58	0.64	0.68	0.54
Queensland	0.94	0.92	0.93	0.92	0.90	0.73	0.70	0.77	0.81	0.69
New South Wales	0.92	0.94	0.94	0.93	0.93	0.83	0.81	0.81	0.86	0.80
Victoria	0.89	0.89	0.85	0.87	0.88	0.86	0.85	0.78	0.82	0.81
South Australia	0.97	0.83	0.82	0.81	0.85	0.81	0.61	0.65	0.68	0.61
Tasmania	0.95	0.96	0.96	0.94	0.95	0.91	0.87	0.86	0.87	0.83
Australian Capital Territory	0.88	0.92	0.92	0.86	0.87	0.79	0.81	0.85	0.80	0.78

**Table A2: Grade 3 Reading**

<i>State/Territory</i>	% Participating in NAPLAN					% Above Minimum Standard				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Northern Territory	0.71	0.89	0.79	0.81	0.78	0.22	0.37	0.35	0.33	0.32
Western Australia	0.85	0.86	0.87	0.85	0.85	0.49	0.58	0.60	0.61	0.56
Queensland	0.95	0.94	0.93	0.93	0.92	0.65	0.75	0.76	0.76	0.74
New South Wales	0.94	0.94	0.95	0.94	0.94	0.79	0.83	0.84	0.82	0.81
Victoria	0.90	0.90	0.85	0.88	0.89	0.82	0.83	0.79	0.82	0.81
South Australia	0.96	0.82	0.83	0.81	0.84	0.73	0.65	0.65	0.62	0.66
Tasmania	0.97	0.96	0.96	0.95	0.96	0.86	0.86	0.86	0.83	0.83
Australian Capital Territory	0.90	0.94	0.92	0.87	0.86	0.77	0.82	0.84	0.79	0.78

**Table A3: Grade 5 Mathematics**

<i>State/Territory</i>	% Participating in NAPLAN					% Above Minimum Standard				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Northern Territory	0.72	0.90	0.79	0.80	0.76	0.28	0.42	0.32	0.38	0.28
Western Australia	0.84	0.86	0.86	0.84	0.85	0.52	0.60	0.55	0.57	0.53

Queensland	0.94	0.93	0.93	0.92	0.89	0.67	0.71	0.70	0.73	0.65
New South Wales	0.92	0.94	0.93	0.94	0.93	0.73	0.79	0.78	0.81	0.78
Victoria	0.89	0.89	0.88	0.89	0.88	0.77	0.82	0.81	0.83	0.79
South Australia	0.97	0.87	0.86	0.84	0.87	0.71	0.66	0.61	0.65	0.61
Tasmania	0.95	0.94	0.96	0.95	0.96	0.85	0.82	0.83	0.86	0.83
Australian Capital Territory	0.92	0.90	0.90	0.93	0.89	0.80	0.79	0.76	0.85	0.78

**Table A4: Grade 5 Reading**

<i>State/Territory</i>	% Participating in NAPLAN					% Above Minimum Standard				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Northern Territory	0.71	0.92	0.81	0.81	0.80	0.19	0.30	0.27	0.25	0.23
Western Australia	0.84	0.88	0.87	0.86	0.86	0.44	0.51	0.48	0.48	0.48
Queensland	0.95	0.94	0.94	0.93	0.90	0.62	0.64	0.65	0.65	0.62
New South Wales	0.93	0.95	0.94	0.94	0.94	0.73	0.75	0.76	0.76	0.75
Victoria	0.90	0.91	0.88	0.90	0.89	0.78	0.83	0.79	0.81	0.79
South Australia	0.97	0.87	0.87	0.85	0.88	0.64	0.61	0.59	0.60	0.60
Tasmania	0.97	0.95	0.96	0.97	0.96	0.83	0.76	0.81	0.82	0.79
Australian Capital Territory	0.91	0.89	0.89	0.93	0.89	0.78	0.74	0.72	0.85	0.77

**Table A5: Grade 7 Mathematics**

<i>State/Territory</i>	% Participating in NAPLAN					% Above Minimum Standard				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Northern Territory	0.65	0.87	0.81	0.75	0.71	0.33	0.39	0.36	0.34	0.31
Western Australia	0.84	0.84	0.85	0.82	0.84	0.63	0.62	0.63	0.61	0.61
Queensland	0.94	0.93	0.93	0.92	0.90	0.79	0.75	0.78	0.76	0.73
New South Wales	0.88	0.90	0.89	0.90	0.88	0.75	0.73	0.74	0.74	0.70
Victoria	0.87	0.86	0.83	0.85	0.85	0.79	0.75	0.75	0.76	0.76
South Australia	0.94	0.87	0.84	0.87	0.83	0.75	0.67	0.68	0.69	0.64
Tasmania	0.94	0.88	0.93	0.89	0.91	0.87	0.74	0.83	0.76	0.81
Australian Capital Territory	0.83	0.74	0.87	0.86	0.83	0.76	0.63	0.78	0.72	0.71

**Table A6: Grade 7 Reading**

<i>State/Territory</i>	% Participating in NAPLAN					% Above Minimum Standard				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Northern Territory	0.63	0.87	0.77	0.76	0.74	0.21	0.32	0.33	0.34	0.30
Western Australia	0.86	0.85	0.85	0.83	0.85	0.56	0.57	0.61	0.62	0.60
Queensland	0.95	0.94	0.94	0.93	0.92	0.73	0.71	0.77	0.76	0.73
New South Wales	0.89	0.92	0.91	0.91	0.90	0.74	0.76	0.77	0.77	0.76
Victoria	0.85	0.85	0.84	0.88	0.86	0.75	0.74	0.77	0.80	0.79
South Australia	0.96	0.87	0.86	0.88	0.86	0.70	0.65	0.70	0.71	0.69
Tasmania	0.93	0.89	0.94	0.89	0.93	0.83	0.74	0.83	0.78	0.84
Australian Capital Territory	0.81	0.79	0.85	0.85	0.84	0.77	0.69	0.78	0.76	0.73

**Table A7: Grade 9 Mathematics**

<i>State/Territory</i>	% Participating in NAPLAN					% Above Minimum Standard				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Northern Territory	0.61	0.75	0.64	0.68	0.65	0.29	0.35	0.25	0.30	0.31
Western Australia	0.72	0.71	0.74	0.69	0.70	0.48	0.50	0.48	0.48	0.49

Queensland	0.86	0.85	0.86	0.83	0.81	0.65	0.67	0.66	0.64	0.65
New South Wales	0.79	0.82	0.81	0.80	0.77	0.64	0.67	0.62	0.61	0.62
Victoria	0.79	0.77	0.73	0.69	0.75	0.67	0.68	0.62	0.58	0.66
South Australia	0.89	0.70	0.65	0.73	0.68	0.65	0.55	0.45	0.52	0.51
Tasmania	0.84	0.83	0.87	0.81	0.84	0.75	0.71	0.74	0.66	0.73
Australian Capital Territory	0.73	0.77	0.77	0.73	0.78	0.61	0.66	0.67	0.62	0.69

**Table A8: Grade 9 Reading**

<i>State/Territory</i>	% Participating in NAPLAN					% Above Minimum Standard				
	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Northern Territory	0.62	0.75	0.66	0.69	0.66	0.24	0.25	0.23	0.27	0.21
Western Australia	0.71	0.72	0.74	0.70	0.71	0.46	0.42	0.42	0.45	0.42
Queensland	0.87	0.86	0.86	0.84	0.81	0.63	0.57	0.59	0.63	0.59
New South Wales	0.80	0.84	0.82	0.81	0.79	0.67	0.67	0.60	0.65	0.61
Victoria	0.78	0.75	0.71	0.71	0.77	0.67	0.63	0.57	0.61	0.66
South Australia	0.90	0.71	0.68	0.71	0.69	0.60	0.49	0.41	0.50	0.49
Tasmania	0.82	0.83	0.85	0.81	0.83	0.75	0.67	0.69	0.68	0.68
Australian Capital Territory	0.69	0.76	0.77	0.69	0.80	0.59	0.62	0.67	0.64	0.67