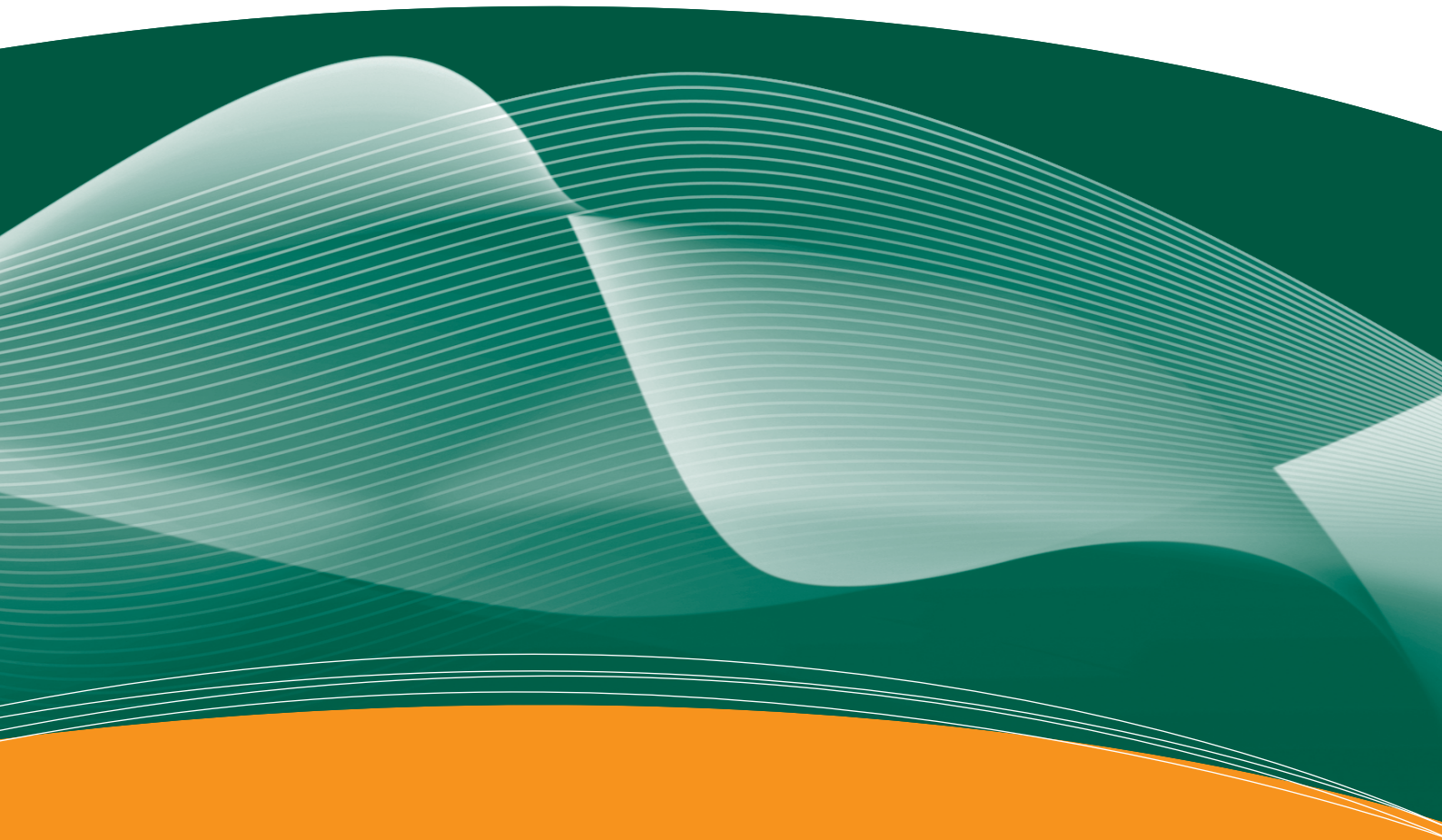
POLICYMONOGRAPHS

Regulating for Quality in Childcare: The Evidence Base

Trisha Jha



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Contents

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Executive Summary

- Regulation of childcare for the purposes of early childhood learning and development is a relatively new phenomenon. Where debates were once about whether children are better off in childcare or at home with a parent, today's conventional wisdom, based on sometimes misguided interpretations of research, is that childcare is good for all children provided it is of sufficient quality.
- A close reading of the evidence on childcare and early childhood programs suggests that the benefits of childcare accrue most strongly to children from disadvantaged backgrounds: the effects of public, universal childcare for children from middle to high socioeconomic backgrounds are mixed.
- The National Quality Agenda (NQA) endorsed by all states and territories in 2009 regulates childcare systems across Australia. It mandates increased minimum standards in various aspects of provision of care and a ratings system.
- 'Quality' in childcare is difficult to define, but for the purposes of regulation the key criteria are 'structural quality' inputs—staff-to-child ratios and carer qualifications. The NQF mandates substantial and costly reforms to these aspects of care.
- This report details that the costs of these reforms have been understated and the potential benefits overstated.

  Costs: There are four kinds of costs that the commissioned reports do not adequately take into account: administrative costs, impacts on supply, impacts on female labour force participation, and deadweight loss.

  Benefits: There is very little evidence from Australian and international research that the childcare 'quality' measures regulated by the NQF improve outcomes for children.

  – Australian studies found only small positive effects of lower staff-to-child ratios for socio-emotional and behavioural outcomes—not for cognitive outcomes—and it is not clear whether the effects are enduring. Overseas studies found no effects, or effects only for younger children.

  – Australian studies mostly found no effect of higher carer qualifications on child outcomes, with the exception of one study which found improved behavioural outcomes for older children. Overseas studies mostly found no effects on child outcomes, with one exception which found improvement in children's academic achievement.
- In summary, there is scant evidence underpinning the NQF reforms to staff-to-child ratios and staff qualifications, bringing into question whether the cost involved represents an 'investment'.
- The NQF reforms are likely to increase the cost of care without measurably improving quality, at the same time potentially restricting access for socioeconomically disadvantaged children who benefit from it most.

Glossary of Acronyms

ACECQA	Australian Children's Education and Care Quality Authority
ARS	Academic Rating Scale
COAG	Council of Australian Governments
DOCS	Department of Community Services
ECEC	Early Childhood Education and Care
EPPE	Effective Provision of Preschool Education
EYLF	Early Years Learning Framework
FDC	Family Day Care
HIPPY	Home Interaction Program for Parents and Youngsters
HSIS	Head Start Impact Study
LDC	Long Day Care
LSAC	Longitudinal Study of Australian Children
NCAC	National Childcare Accreditation Council
NECDSC	National Early Childhood Development Steering Committee
NICHD	National Institute of Child Health and Development
NLSCY	National Longitudinal Study of Canadian Youth
NQA	National Quality Agenda
NQF	National Quality Framework
NQS	National Quality Standard
OECD	Organisation for Economic Co-operation and Development
OSHC	Outside School Hours Care
PPVT	Peabody Picture Vocabulary Test
QFP	Quebec Family Policy
QIAS	Quality Improvement and Accreditation System
RIS	Regulation Impact Statement
SDQ	Strengths and Difficulties Questionnaire
SES	Socio-economic status
SPO	Structure ➔ Process ➔ Outcome
STSI	Short Temperament Scale for Infants

Introduction

In the flurry of commentary on childcare, the sheer size of the growth in federal government expenditure on childcare subsidies has gone virtually unnoticed. During the decade 2002–03 to 2012–13, federal government spending on childcare grew at an average rate of 10.3% per year in real terms. Changes announced in the 2014 budget include freezes to income thresholds, rebate caps and benefit amounts. The Parliamentary Budget Office forecasts that these changes will cause childcare spending to slow to 4.9% annual average growth over the next decade—still a substantial growth rate.[1]

In the case of childcare, the government is lying in a bed of its own making—or at least a bed it has no plans to unmake, judging by comments made by the relevant federal Minister, Sussan Ley. The Productivity Commission's report into early childhood education and care does not indicate an intention to significantly challenge a key driver of this expenditure growth: the National Quality Agenda put in place by Labor. This is in spite of the fact that, as this report will detail, several important omissions were made in the process of assessing the costs and benefits of these reforms during the development of the policy.

Regulation of childcare for the purposes of early childhood learning and development is a relatively new phenomenon. When public subsidy for childcare became a core part of family policy in the 1980s, it was in recognition that families with two working parents were quickly becoming the norm, and that governments should facilitate childcare access in the name of productivity and gender equality.

This goal has persisted to the present day, but childcare policy has become more complex with the new focus on 'education' in childcare centres. There is currently no clear consensus as to how any conflict between these twin goals of childcare—parental labour force participation and early education—would be navigated by governments and the public.

The report will explain in detail the new regulations for childcare services, including how they differ from the old system, and the costs involved. It will also investigate some of the evidence for early childhood as a focal point for child development, as well as how 'quality' is conceptualised in public policy on childcare.

It will then draw on empirical studies of similar or comparable programs in Australia and overseas to make the case that the proven benefits are greatly overstated. There is very limited evidence to suggest that the incremental but expensive reforms to mandatory staff-to-child ratios and staff qualifications will result in clear benefits for children.

This report analyses the evidence base for the National Quality Agenda reforms and argues that any benefits which may arise do not represent value relative to the myriad costs imposed upon governments, families, and wider society.

The history and context of Australian childcare

The foundations of the modern childcare system

Childcare as we know it today began with the passage of the *Child Care Act 1972* by the Liberal-Country Party government under William McMahon. This allowed for federal government funding of non-profit organisations for the purposes of establishing childcare.[2]

It was during the Hawke and Keating Labor governments (1983–1996) that childcare became a mainstream concern. The Australian Bureau of Statistics began to collect data systematically on childcare use in 1984.[3] Fee relief was introduced, and operational subsidies to providers were expanded during this period. The Hawke Government also allowed fee relief to be accessed by families who used private, for-profit care as well as those who used not-for-profit/community-run care.[4] Running parallel to federal government activity in the area, states and territories had their own licencing system with minimum standards for the lawful operation of different kinds of childcare services.

Inspired by lobbying that began in the late 1980s from childcare and social service peak bodies such as the Australian Early Childhood Association and the Australian Council of Social Service (ACOSS),[5] a system of accreditation was introduced in 1993–94.

The new system of accreditation applied nationally, was administered by a National Childcare Accreditation Council (NCAC), and was called the Quality Improvement and Accreditation System (QIAS).[6] Initially, it applied only to long day care centres but was later expanded to family day care, outside-school-hours care and occasional care.[7] This accreditation system sat on top of existing state and territory licencing arrangements.

There were two main reasons for introducing accreditation. The first was that, with young children spending increasing amounts of time in care, it made sense for there to be some kind of mechanism for assuring quality of services. Where state and territory licencing involved mandatory minimum 'inputs', accreditation would be a way of assessing 'outputs'—the way a centre operated in practice, and the kinds of experiences children had.[8] This distinction is further elucidated upon later in the paper.

The other reason was that fee relief was becoming increasingly costly, so introducing an approval mechanism for centres to access subsidies was "sheer economics", according to Peter Staples, then minister for Aged, Family and Health Services.[9] It was thought of as a way to ensure that taxpayers could expect better value for money. There are echoes of this logic through to the current regulatory environment for childcare, although NCAC/QIAS has been superseded by the reforms in the National Quality Agenda.

The evolution of childcare policy over the last few decades has taken place against a broader socio-political backdrop in which feminism, sociology and child development have interwoven. Its philosophical foundations stretch as far back as the 19th century, when the first debates were had among liberals and social reformers about the best way to raise children and, importantly, which children should be the focus of these social engineering programs.[10]

In the 1990s, neuroscientific studies on the pivotal nature of brain development in young children catalysed the discussions about the significance of the early years in child development into a debate about the purpose of childcare and early childhood education. The impetus for this to feed into a proper public policy response soon followed.

More recently, the work of Nobel laureate James Heckman on the economics of investing in early childhood has been (wrongly) used to reinvigorate the case for large-scale public investment in the institutionalisation of early childhood, with promises of returns on everything from school achievements to reductions in crime.[11]

The 'early years' investment theory influences public policy to different extents across nations and jurisdictions. However, as this report will show, it is clearly evident in aspects of Australian government policy.

Box 1: Childcare and preschool

'Childcare' refers to any non-parental care of children. In context of this report, it refers to 'formal' childcare—centre-based care or family day care that does not involve a relative, babysitter or other in-home carer. The purpose of childcare is generally so that parents can undertake other activities (usually work) while having their children looked after. Provision of childcare mostly fits into two categories: long day care (LDC) and family day care (FDC). Outside-school-hours care (OSHC) and vacation care, for school-age children, are also technically childcare but are not discussed in this report.

'Preschool' refers specifically to a structured early education program. It is usually part-time (two or three half-day sessions a week) and most often attended by children in the year or two before they are due to begin school. The purpose of preschool is to assist in the transition to school and to equip children with the skills they need to adjust to formal schooling. Provision differs state-by-state but most often preschool is government-run (and attached to primary schools), community-run, or is part of a long day care centre.

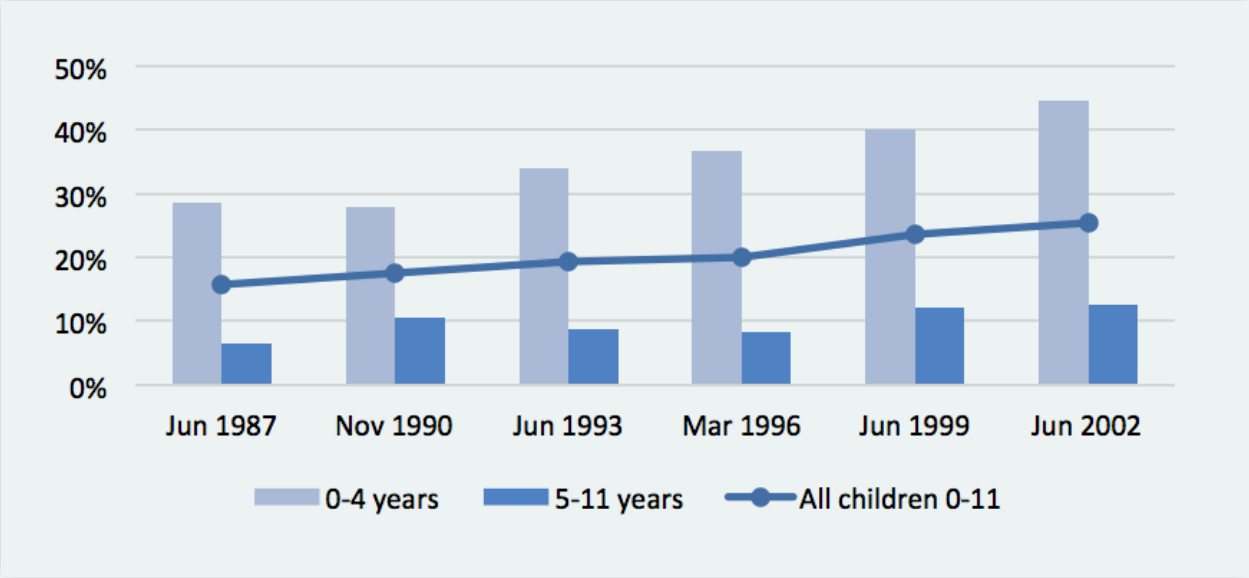
The statistical context of childcare

In 2013, there were 1,033,214 Australian children aged 0–12 years in some form of Australian Government-approved formal childcare. The number and proportion of children in formal childcare has grown substantially since data began to be collected in the 1980s. Due to changes in statistical classifications and reporting, it is not possible to create an unbroken time series, so the data presented here is in two periods: 1987–2002 and 2008–2013.

Figure 1 shows the proportion of children engaged in formal care changed significantly over the 1980s and 1990s, from 15.7% in 1987 to 25.4% in 2002.

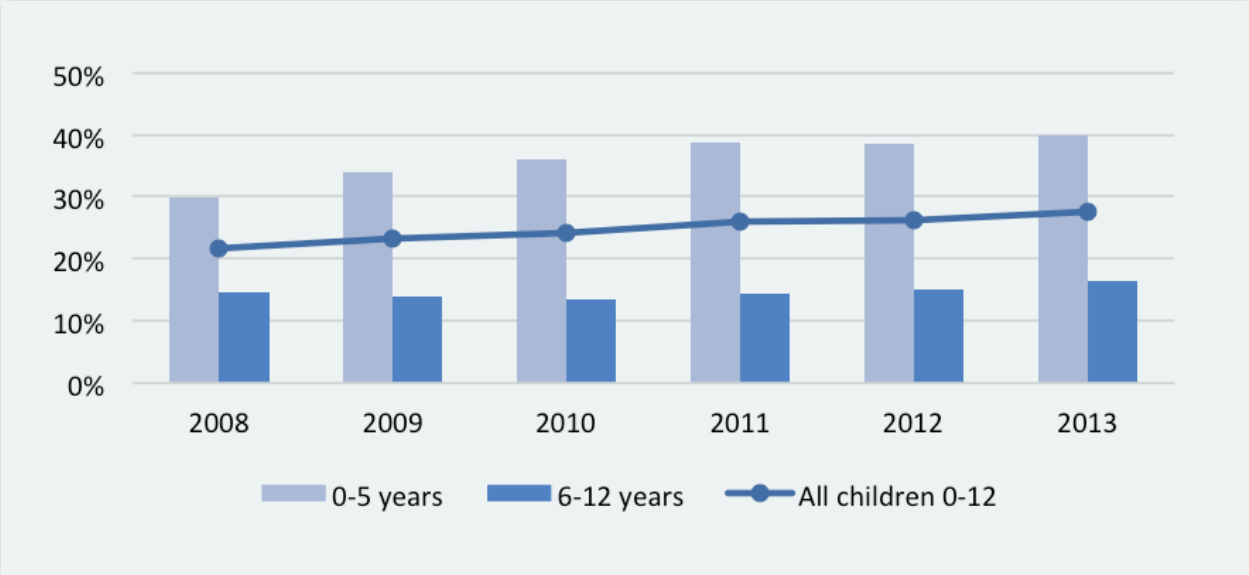
In 2005, the method of data collection used by the ABS changed, and preschool was no longer included as a type of childcare. Figure 2 shows the change in the proportion of children attending formal care exclusive of preschool over recent years. Even with preschool excluded, 29.9% of children younger than school age (0–5) were in formal childcare in 2008, reaching 39.8% in 2013.

Figure 1: Children aged 0–11 attending formal care (inclusive of preschool) (proportion of resident population); 1987–2002



Source: ABS (Australian Bureau of Statistics), Child Care, Cat. 4402.0, various years

Figure 2: Children aged 0–12 attending formal care (excluding preschool) (proportion of resident population); 2008–2013



Source: Report on Government Services 2014 Volume B, Chapter 3: Early Childhood Education and Care, Table 3A.8

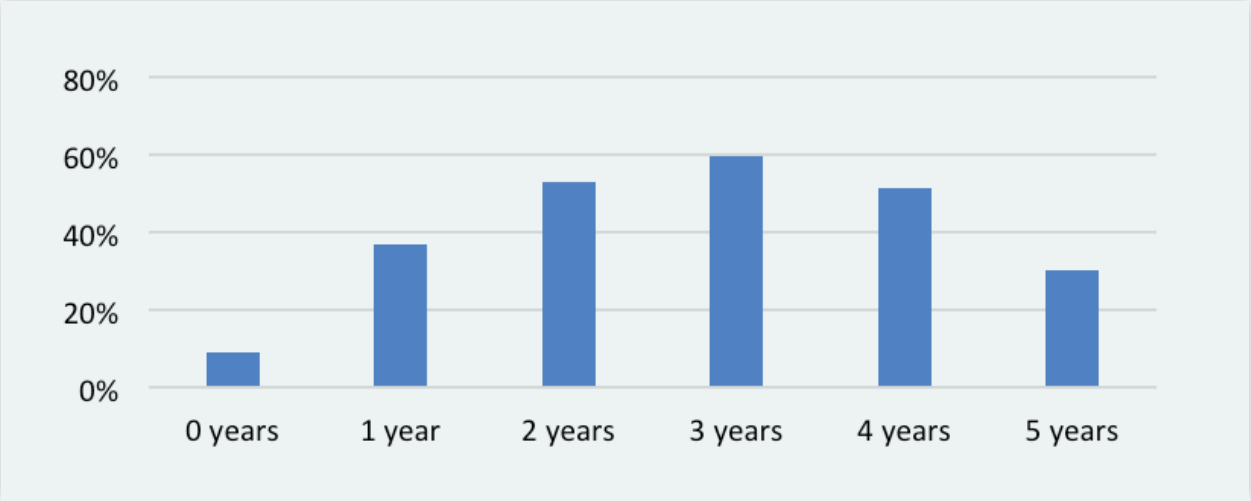
Attendance at formal childcare becomes more likely as children grow older (Figure 3). The dip at age five is attributable to the fact that many children are already in school at that age, and the dip at age four is also attributable to the fact that many state government-run or -administered preschool programs in which four-year-olds may participate do not meet the definition of 'Australian Government approved'.

The figures for childcare and preschool cannot simply be added together to get a total figure, because a number of children are counted in both the preschool and childcare statistics. Some children attend preschool programs within their childcare centre, while others attend two different centres.

In 2012, 53% of Australian children were enrolled in a preschool program in the year before school, whether provided by their childcare centre or a dedicated preschool (Figure 4).

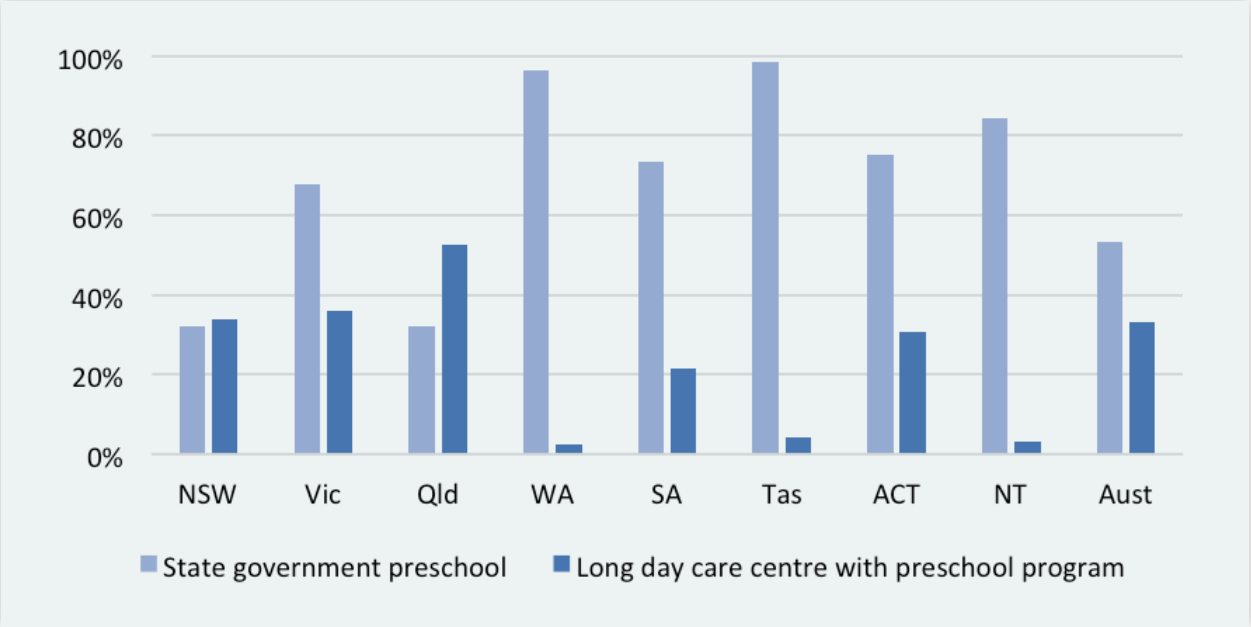
In Figure 4, 'state government preschool' refers to preschools that are run by state governments and preschools which may be run by community providers but are nevertheless administered by the state government. Long day care centres with preschool programs are regulated by the federal government.

Figure 3: Children attending Australian Government approved childcare services by age, 0–5 years, 2013 (proportion of resident population)



Source: Report on Government Services 2014 Volume B, Chapter 3: Early Childhood Education and Care, Table 3A.9

Figure 4: Children enrolled in a preschool program in the year before full time schooling, 2012 (proportion of population)



Source: Report on Government Services 2014 Volume B, Chapter 3: Early Childhood Education and Care, Table 3A.16

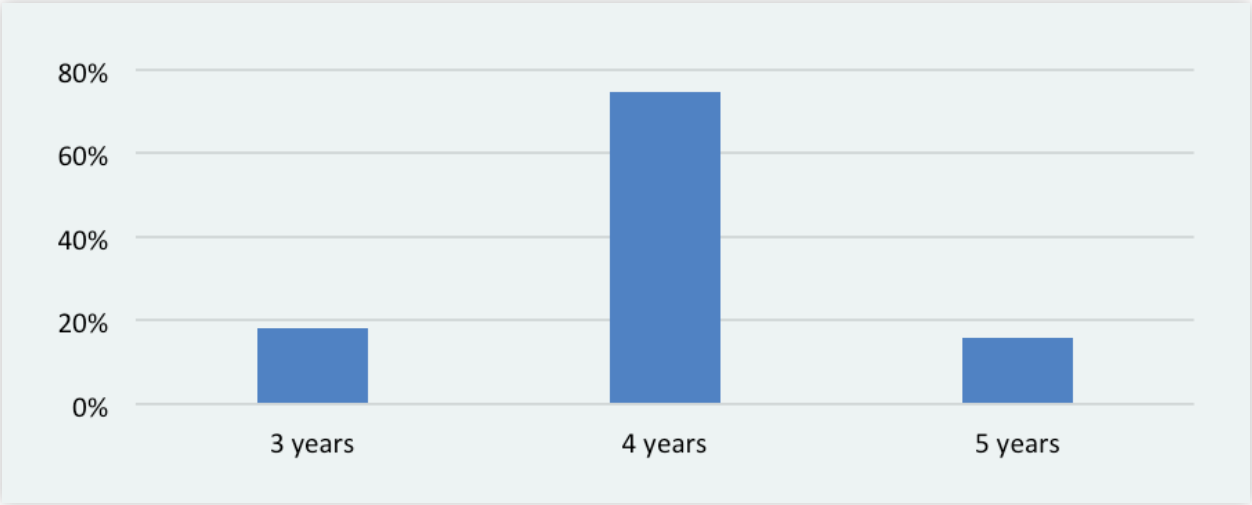
The proportions differ markedly across states because of the different ways state governments treat preschool and long day care centres with preschool programs. In New South Wales, for example, only 32% of children attend state government-run or -administered preschool programs but a further 34% of children attend long day care centres that incorporate a preschool program.

Figure 5 shows that most children attend preschool in the year immediately before they start school (typically four- and five-year-olds). There are smaller numbers of children who start preschool when they are three years old.

Though the amount of time children spend in formal care each week has increased over the last few years, the average attendance at long day care and family day care is the equivalent of three working days a week.

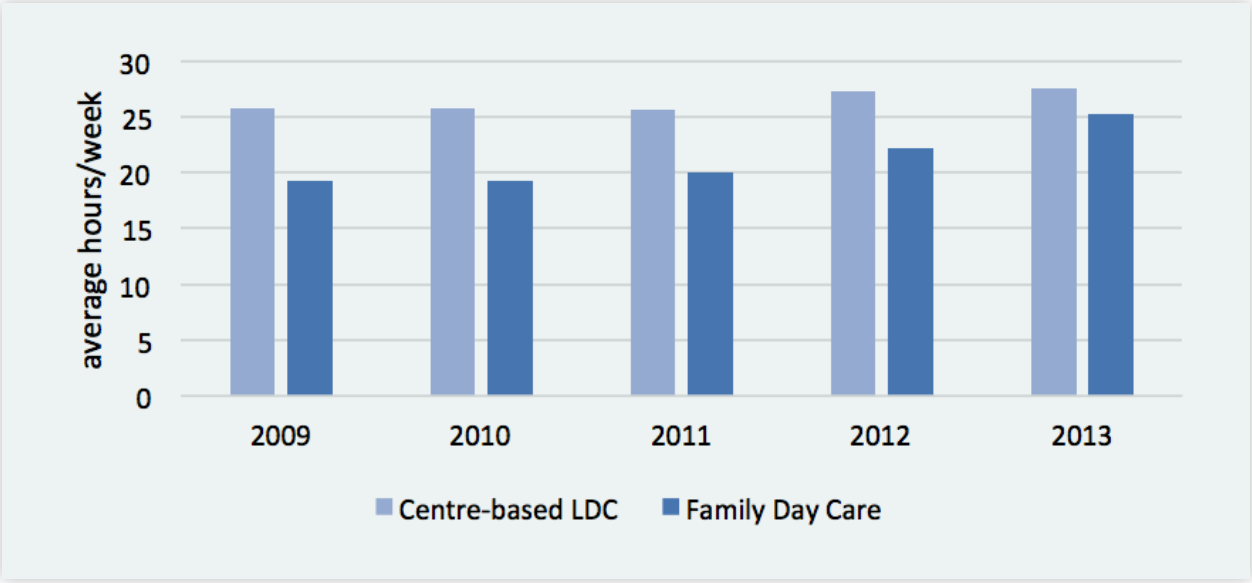
Figures 1 to 6 illustrate some general trends. Use of formal childcare is increasing by the proportion of children participating as well as by the number of hours children are spending in care. There are also significant proportions of children attending some form of preschool education—though this differs across jurisdictions.

Figure 5: Children enrolled in a preschool program by age, 3–5 years, 2012 (proportion of resident population)



Source: Report on Government Services 2014 Volume B, Chapter 3: Early Childhood Education and Care, Table 3A.16

Figure 6: Children aged 0–12, average attendance at Australian Government approved childcare services (hrs/wk); 2009–2013



Source: Report on Government Services 2014 Volume B, Chapter 3: Early Childhood Education and Care, Table 3A.11

The nature of childcare policy and regulation

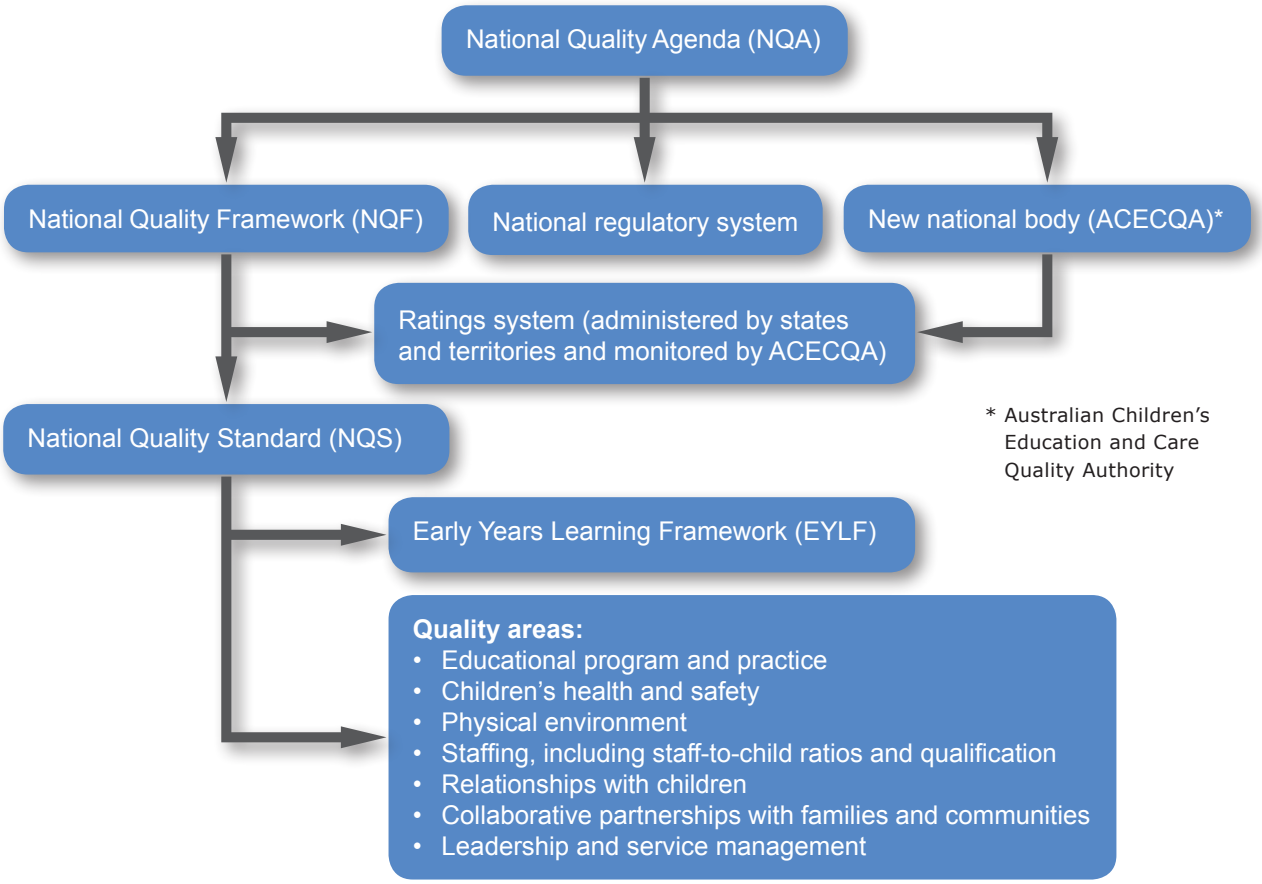
Childcare policy and the National Quality Agenda

The early childhood education and care (ECEC) sector is currently governed by all three levels of government, each of which has different roles and uses different instruments to fulfil these roles.

The National Quality Agenda (NQA) was agreed upon by the Council of Australian Governments (COAG) in 2009[12] and encompasses both federal and state/territory responsibilities for governing ECEC. It currently includes long day care (LDC), family day care (FDC), outside school hours care (OSHC) and preschools.

The Australian Children's Education and Care Quality Authority (ACECQA), is part of the NQA. It is an independent national authority that is responsible for guiding the implementation of all aspects of the NQA.[13] It oversees, but is not directly undertaking, regulatory and assessment functions.[14] ACECQA also produces reports and is involved in relevant processes and inquiries to improve the function of the NQA.[15]

Figure 7: National Quality Agenda for Early Childhood Education and Care



One of the main components of the NQA is a national regulatory system governed by the National Law and National Regulations. These are relatively uniform across jurisdictions, but exist in legislation at the state/territory level. They detail the minimum standards that are necessary to lawfully operate an approved childcare service.

The other main component of the NQA is the National Quality Framework (NQF). It consists of the National Quality Standard (NQS) and a ratings system which is administered by the states and territories. This ratings system uses the NQS as the 'yardstick' of quality, so the quality of services across all jurisdictions is broadly similar.

The NQS consists of seven Quality Areas listed in Figure 7:[16]

1. Educational program and practice
2. Children's health and safety
3. Physical environment
4. Staffing arrangements
5. Relationships with children
6. Collaborative partnership with families and communities
7. Leadership and service management

Each Quality Area is divided into standards that are, in turn, divided into elements.

Under the ratings system, services are assessed as:

- Significant Improvement Required
- Working Towards NQS
- Meeting NQS
- Exceeding NQS

There is also the option of applying to ACECQA for an 'Excellent' rating, which is not available any other way. As at June 2014, 40% or 5,821 of Australia's 14,435 childcare services had received a rating.[17] Given that the reforms came into effect on 1 January 2012, this represents approximately 2.5 years' worth of assessment.

The ratings system and the NQS sit on top of the minimum standards prescribed in the National Law and National Regulations. The primary function of the ratings system is to equip families with the right information to make more informed decisions about which services to use. It is designed to partially rectify the information asymmetry that exists between services and parents.[18] There is some evidence to suggest that parents are unable to accurately gauge the quality of childcare services, particularly LDC.[19] It is to this end that the government has arranged for this information to be readily accessible on mychild.gov.au. Broadly speaking, this is a worthwhile goal.

The Early Years Learning Framework (EYLF) is a guide for services on how the learning and educational components of their roles under the new reforms should be undertaken. Though the EYLF is a federal government document, states and territories are granted relative flexibility in how it is incorporated.

Local governments also play a role in regulating ECEC, sometimes in ways that overlap and contradict federal and state/territory policy. Local councils, which are in charge of most planning decisions, are able to make decisions about where childcare services can be located. Some councils, as the Productivity Commission's draft report into ECEC noted, can be more interventionist and require the meeting of conditions that can differ wildly across various councils.[20] The other main, long-standing role that councils play in ECEC policy is overseeing or acting as a clearinghouse for community care services and family day care services.[21]

A holistic picture of the main components of the National Quality Agenda has been provided here for clarity and context. However, this report will primarily focus on the aspects that are used to assure quality in the ECEC sector and, by extension, the benefits of quality.

Table 1: Responsibilities for early childhood education and care policy

Federal Government	• Subsidies and expenditure under Family Assistance Law • ACECQA
State and Territory Governments	• National Law and National Regulations enforcement • Ratings system • Some preschools (particularly those attached to schools) • Implementation of the Early Years Learning Framework • Child protection — such as Working with Children checks • Food safety
Local Governments	• Planning and zoning • Operating and/or overseeing of some services, including family day care

Source: Adapted from Productivity Commission, Draft Report into Early Childhood Education and Care, Figure 7.1

New South Wales and the National Quality Framework

The impact of the NQF is different for each state or territory because the existing standards were different. New South Wales is used here as an illustrative case study.

Furthermore, from January 2014, the NQF requires early childhood-qualified teachers (ECTs) for centre-based childcare. Centres with up to 29 children require part-time degree-qualified ECTs, but at least one full-time teacher is required for up to 40 children, two are required for up to 59 children etc. to a maximum of four early childhood teachers for centres with 80 or more children.[24]

Table 2: Changes to staff-to-child ratios under the NQF[22]

		Before	After
Long Day Care	**0–2 year olds**	1:5	1:4 (from Jan '12)
	2–3 year olds	1:8	1:5 (from Jan '16)
	3–6 year olds	1:10	1:10 (not superseded by national ratio of 1:11)
Family Day Care	**Overall**	1:7	1:7
	Under school age	1:5 (under 6 years)	1:4 (from Jan '14)

Table 3: Changes to staff qualifications under the NQF[‡23]

	Before	After
Long Day Care	Certificate III in Children's Services	From January 2014: 50% of staff require a diploma 50% of staff require a Certificate III
Family Day Care	No qualifications required	From January 2014: Educators require a Certificate III Coordinators require a diploma

‡ Here, 'require' means to either hold on to be working towards.

Costs and benefits: what the official reports tell us

Prior to implementing the new reforms, two main reports were issued on regulatory impact and cost. One was an economic analysis by Access Economics, which was then used in part to inform the Regulation Impact Statement. Both reports are conservative in their assessment of the costs, estimating that cost increases over the baseline (if there were no subsequent policy changes) will be relatively minor—in the order of $4.43 on average per day for a child in long day care. It should be noted that this average disguises the much higher costs for younger children compared with older children.

It is important to consider, however, what these studies do not take into account in their assessment of the costs.

Both the Regulatory Impact Statement and the Access Economics analysis assume that all increases to operating costs (mostly incurred through the higher requirements for staffing) will be passed down to the price of providing services. They estimate that under current policy settings, at least 47% of these price increases will be borne by governments and the rest by households and providers.[25] Yet there are four kinds of costs that these commissioned reports do not adequately take into account: administrative costs, impacts on supply, impacts on female labour force participation and dead weight loss.

Administrative costs

Administrative burden, defined as "costs of complying with information requirements, such as the time spent keeping records, reporting to regulatory authorities, or preparing for or taking part in inspections"[26] was not taken into account by the initial Regulation Impact Statement which accompanied the National Quality Agenda reforms. Instead, a separate report commissioned by ACECQA focused on the administrative burden costs incurred as a result of the National Quality Framework.

The ACECQA report, released in 2013, revealed that a majority of providers (65%) felt that administrative burden had increased, rather than decreased, as a result of the National Law and National Regulations.[27] One of the most burdensome of the new requirements, the Quality Improvement Plans, was estimated to cost each service on average 181 hours, or $4,835, annually.[28]

ACECQA and Deloitte have some estimates of how much the new requirements can add to service providers' operating costs. One case study for a LDC service estimates $2000 per child in ongoing costs, and one case study for a FDC service estimates $900 per child. This undoubtedly impacts on prices, both for families and for the government.[29]

There are non-pecuniary costs as well. Submissions and comments made to the Productivity Commission expressed the view that these requirements were taking away from time spent with the children.[30] This raises the question: if bureaucratic requirements come at the cost of compromising the ability of staff to deliver the kind of care they want to, is this an acceptable outcome? No estimates yet exist on how the costs to services could be passed down, either in terms of higher prices or in terms of compromised quality of care.

The other assumption is that administrative burden will not represent a barrier to entry for new services, and that the growth in new services will continue as normal. This is not very well substantiated.

Potential impacts on supply

The basis for Access Economics' assumption that most services can pass on costs incurred by the reduction of staff-to-child ratios is a survey undertaken by Booz and Co (now Strategy&) on behalf of the NSW Department of Community Services (DOCS). The survey indicated that 95.3% of services affected by a change in the ratio of carers to children under 24 months (from 1:5 to 1:4) would increase staff rather than reduce the number of childcare places.[31]

However, this survey did not include FDC providers, who have gone from a 1:5 ratio for children under school age to a 1:4 ratio in some jurisdictions, with an overall 1:7 ratio.[32] The RIS states that "supply impacts as a result of changes to FDC ratios" have not been modelled.[33] Though FDC usage is not as high as LDC usage (Figure 6), it is an important part of the childcare sector and this omission is significant.

The Access Economics analysis, which forms the basis of part of the RIS, also does not include costs that are not part of increased staffing requirements—like the aforementioned administrative costs—and how these may affect both the viability of existing services and the potential growth of new services to meet ever-increasing demand. There have been a few reported cases of community-run services, mostly in rural and regional areas, having to close their doors due to the burden of the new system.[34]

The authors of a US study that examined the effects of state regulations in childcare supply stated "we do find rather consistent evidence that, *on average* (emphasis included), imposing minimum requirements on the educational qualifications of centre staff reduces the availability of centres in local markets."[35]

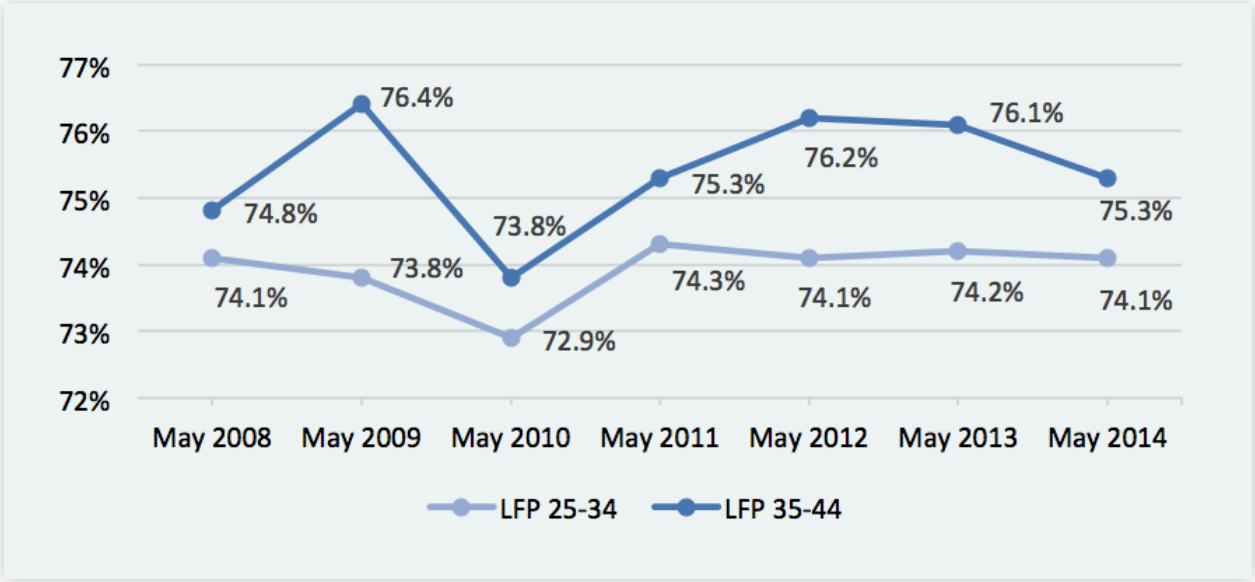
In effect, not all of the potential costs relating to supply impacts have been accounted for in the official cost figures, and the true cost increases due to the new regulations may be considerably higher.

Potential impacts on female labour force participation

Another assumption made in the Access Economics analysis and the RIS is that female labour supply will remain unchanged, so neither report provides estimates of any potential changes to female labour supply. COAG's assumption is based on research commissioned by the National Early Childhood Development Steering Committee (NECDSC) that showed female labour supply is not significantly impacted by childcare quality, cost, and availability.[36]

That research has since been superseded. A 2013 study conducted by Canberra economists Robert Breunig, Xiaodong Gong and Declan Trott uses various cost estimates of the NQF to model impacts on partnered

Figure 8: Change in labour force participation of women of childbearing age



women's labour supply and household income. Their results show that workforce participation decreases by just over one half of 1%, an effect the authors described as 'small'.[37]

To put that into context, Figure 8 shows that in the absence of external shocks such as the GFC, year-on-year change in female labour force participation is generally less than this 'small' decrease of just over half of 1%.

Breunig et. al.'s modelling also shows not only a participation decline, but a reduction in hours worked by 20 minutes per week, a household disposable income decrease of $12.50 a week (or 0.6%), and an increased cost to the government — in increased childcare fee costs and lower tax revenues — of $10.82 a week on a per-household basis.[38]

The authors judge these costs to be "relatively small"[39] based on their review of the literature on the benefits of regulating childcare to improve quality. This judgement is also based on a number of assumptions about the benefits of childcare that accrue to the whole population, assumptions that will be examined later in this report.

Deadweight loss

When the government taxes people to pay for a program, it reduces their disposable income and dampens incentives to work and invest. This is a hidden cost of government programs that is not reflected in the quoted expenditure for the program, and is referred to by economists as 'deadweight loss'.

The costs incurred by deadweight loss were not included in the modelling that was used to determine the impact of the National Quality Agenda reforms. This is in spite of the fact that the reforms are often sold as an 'economic' package.

Dr. James Heckman, perhaps the foremost authority on the economics of investing in early childhood, explicitly notes the role that deadweight loss plays in any rigorous assessment of the costs of a particular program in his work estimating the rate of return to the HighScope Perry Preschool Program.[40] If the benefits of the program do not outweigh these costs, then society as a whole is not better off — and there is thus no real 'return' on investment.

The rationale behind early childhood programs

Early childhood has come into sharp focus over the last couple of decades as a period in which many of the crucial foundations are laid for flourishing future cognitive and socio-behavioural development. In a review of the literature on childcare quality, Leone Huntsman states:

> It is now clear that brain development occurs during the first five years of life and the complexity, number and strength of neural pathways is a function of the quality and range of early experiences in interaction with genetic predisposition. Depending on the nature of these experiences, children will be provided with 'sturdy' or 'fragile' foundations for future development. Although the brain continues to make new connections throughout life, new learning does not take place with the same rapidity as it does during early childhood.[41]

According to this logic, appropriate dedication to early childhood programs for all children, but particularly those who are disadvantaged, means governments can improve outcomes for children when they grow into teenagers and then adults, and reap a variety of benefits that manifest over various time horizons.

This is a weighty and complex hypothesis. Testing it requires investigation of many different assumptions.

The evidence for critical and sensitive periods

The first question that needs to be answered is whether the attention dedicated towards early childhood — that is, up to five years of age — is warranted.

Broadly speaking, the literature does support the idea that crucial foundations for children's later socio-behavioural and cognitive development are laid in the early years. This happens through 'gene x environment' interactions, where a child's genetic potential can be influenced — be hampered or be allowed to flourish — depending on the environment in which the child is raised.[42]

Typically, low socio-economic status (low household income; low levels of parental education) is associated with a lower-quality home learning environment (HLE). HLE is a way of describing the attitude to early learning within the home: the number of early learning resources and the magnitude of parental practices that facilitate cognitive and socio-emotional skill acquisition.[43] Put another way, the evidence suggests that children from higher socio-economic status backgrounds have their achievement limited only by their innate potential; children from more disadvantaged backgrounds can have their potential constrained by their socio-economic status.[44]

While the evidence for early childhood as a critical period in neurological and psychological development is strong, it does not necessarily lead to the conclusion

that all children should be provided with early childhood education in a formal setting. To accept that there is a consensus on the scientific evidence of a particular phenomenon is not to accept that this evidence necessarily prescribes a particular public policy response.

Much of the discourse surrounding critical and sensitive periods goes beyond positing early childhood education as a way to mitigate 'gaps' in cognitive achievement which arise as a result of disadvantage. Neuro-scientific evidence that purports to show the significance of early childhood brain development is used by advocates as a way to bolster the case for an expanded government role in ECEC.[45] A close reading of the evidence instead suggests that the benefits of formal early childhood education are strongest for children from disadvantaged backgrounds.[46] In terms of policy, this means that if more money is to be spent on early childhood education the focus should be on ensuring access for these children, rather than spreading the expenditure to achieve marginal increases in quality for all children. This is especially so given that the effects of public, universal childcare for advantaged children are mixed at best.

A Canadian example of universal childcare: the Quebec Family Policy

The Quebec Family Policy (QFP) is a public (extensively subsidised by government), universal (for all children, not just those who are disadvantaged) childcare program that was introduced in 1997, with a cost of $5 per day. It was expanded in stages to younger children until all children, from under-twos to five-year-olds were eligible to participate. Providers of care are mixed, but increased quality was emphasised through regulations, and increased qualification requirements and wages for staff were phased in.[†47]

Three studies have assessed the impact of the QFP on child outcomes, using data from Canada's National Longitudinal Study of Children and Youth.

The findings of these studies are summarised in Table 4.

Table 4: Summary of studies investigating the Quebec Family Policy in Canada

Study	Outcome Type	Age of exposure	Outcome measured at age	Finding
Universal Childcare, Maternal Labor Supply and Family Well-being (Baker et. al., 2008)	Behaviour and health; positivity of parenting	0–4 years	2–4 years	Negative: children worse off across all dimensions and parental quality decreased
Childcare Policy and Cognitive Outcomes of Children (Lefebvre et. al., 2008)	Cognitive (PPVT)	4–5 years	4–5 years	Negative: policies did not reduce social 'gaps' in school readiness and in fact the negative impacts were worse for children of mothers with low education
Reinvestigating Who Benefits and Who Loses from Universal Childcare (Kottelenberg and Lehrer, 2011)	Cognitive (PPVT); behaviour; motor and social development	0–4 years	2–4 years	Negative impact on average; positive impact for disadvantaged children

Baker, Gruber and Milligan's study found negative outcomes across all behavioural measures, but the authors cautioned that the effects could be short-run, and not necessarily have a lasting impact over children's life course.[48]

Kottelenberg and Lehrer attempted to replicate the findings of Baker, Gruber and Milligan using the data collected by more waves of the NLSCY. They found negative impacts on cognitive, behavioural and social development outcomes overall, but a positive impact on the test scores of disadvantaged children. They state that "these results point to targeting methods at the low end of the distribution as the most effective way to promote the well-being of children",[49] repudiating the notion that investing these resources in all children is worthwhile.

Lefebvre et. al. in their study found that the policy did not help to narrow the pre-existing gaps in school readiness. In fact, there were substantial negative effects on cognitive development for both four- and five-year-olds, with the authors comparing the effect size to "the impact of a mother with a university diploma rather than a high-school diploma."[50]

The findings from these studies were mostly negative — any positive effects were for children from disadvantaged backgrounds — challenging the notion that universal childcare results in benefits for all children and that it constitutes an investment.

† Two-thirds of staff in centres required an early childhood degree or diploma; staff in home-based care had increased training and professional development requirements

Box 2: What are 'early childhood interventions'?

Dr. James Heckman's work on the economics of early childhood is commonly invoked by early childhood advocates as a justification for large-scale public investment in early childhood. But Heckman himself says the key contribution of his work is to suggest that interventions targeted at disadvantaged young children are more effective and efficient than intervening when they are older — not that early education for all children aged 0–5 yields benefits.[51]

Interventions of this kind are usually on a spectrum from 'targeted' (e.g. the bottom 20% of children by parental income) to 'tightly targeted' (e.g. a stricter parental income test and/or other forms of disadvantage). The design of these programs varies. Some, like the tightly targeted Perry Preschool Project and Carolina Abecedarian Project, have both an in-home component and a formal educational component. A broader program, the US Head Start, also combines the two with what is referred to as a 'whole of child' approach.[52] In Australia, there is the Home Interaction Program for Parents and Youngsters (HIPPY), which is about helping parents be their child's first teacher and does not have a formal educational component.[53]

The Australian Institute of Family Studies in 2005 conducted an in-depth review of the literature on early childhood interventions from across the world that includes cost-benefit analyses.[54] This review found that many of these interventions resulted in improvements across various domains and there was also some limited evidence suggesting they produced returns on investment.[55]

Even so, these programs are not comparable to publicly-subsidised universal childcare which all children are meant to benefit from (likely in addition to the facilitation of female labour force participation). Therefore, the effects of these programs cannot be generalised to a broader population cohort such as that which characterises our current childcare system.

The durability of childcare effects

Durability, also 'endurance' or 'persistence', in the context of early childhood education and care refers to the extent to which the positive (or negative) effects of a program remain significant later in life.

Several studies of both specific programs and childcare generally have examined outcomes at the end of, or shortly after, childcare and into the primary school years. Some studies (often using older data) track participants beyond this into adolescence and sometimes even adulthood. Life-cycle studies are most common for demonstration programs and early childhood interventions (see Box 2) where the amount invested in each child is large, but they can and should also be done for more broad-ranging programs.

Outcomes for school readiness and primary school

'Head Start' is a US federal government program for disadvantaged children that consists of components across cognitive, socio-emotional, health and nutrition, and parent-child relationships domains. The Head Start Impact Study (HSIS) has been ongoing, and the most recent report in the series follows the study's children through to third grade to determine where Head Start has had the most lasting impact and for whom. It is a randomised controlled trial, where the control group is free to engage in any form of ECEC that is not Head Start. This is because the goal of HSIS is not to determine the impact of ECEC, but to determine the impact of the specific intervention that is Head Start.[56]

In spite of initial positive impacts on children from Head Start, very few impacts were found across the four domains by the end of third grade. There was also no clear pattern established by the impacts that did remain.[57]

The Effective Provision of Preschool Education (EPPE) project examined the impact of preschool education on child development recruited at age three through to age seven.[58] In contrast to Head Start, the EPPE project found that the positive effects on cognitive abilities and socio-emotional outcomes had faded out only slightly by the end of Year 2 and were still generally evident for the EPPE group (in contrast to the comparison group where children did not attend preschool).[59]

Jay Belsky and others examined the results from the NICHD longitudinal study to see if the positive impacts of early childcare (in the cognitive domain) evident when children were younger persisted into fifth and sixth grades. In this study, childcare quality was measured by observations of the interactions between carers and children, not staff ratios or qualifications. Belsky et. al. found that, overall, childcare attendance had no significant relationship with the cognitive outcomes measured by fifth grade, but that hours in care and childcare quality were mediating factors for some measures. Vocabulary scores were positively associated with higher quality care, and negatively associated with hours in care; and these relationships persisted through to fifth and sixth grade. The extent to which childcare quality predicted reading skills decreased over time, however, fading out in significance from first grade to become quite small by the fifth grade. Externalising and conflict behaviour problems were significantly higher for children in longer hours of long day care who had started childcare at an earlier age, and these effects were also persistent. There was no relationship between the behavioural outcomes and childcare quality.[60]

Table 5: Summary of overseas studies investigating the durability of impacts from ECEC programs

Study	Outcome type	Age of exposure	Outcome measured at age	Dataset/study type	Finding
USA: Third grade follow-up to the Head Start Impact Study (OPRE, 2012)	School readiness (cognitive and socio-emotional development); health status; positive parenting	3 and 4 years	Third grade	Head Start is a program for disadvantaged children. HSIS used a representative sample of participants; randomised trial	Fade: Improvement in preschool outcomes relative to the control; but by third grade very few impacts across all domains remained, none of which established a clear pattern
UK: Effective Provision of Preschool Education (Sylva et. al, 2004)	School readiness and related outcomes	3+	Year 2	Longitudinal study; observational	Positive: improved cognitive and socio-behavioural outcomes that were lasting (if not to the same extent) above the baseline
USA: Are there long-term effects of early childcare? (Belsky et. al., 2007)	Cognitive and socio-behavioural	Birth to 4 ½ years	Fifth and sixth grades	NICHD longitudinal study; observational	Mixed: persistent, positive findings for cognitive skills; but persistent, negative findings for problem behaviour
USA: Do effects of early childcare extend to 15 years? (Vandell et. al, 2010)	Cognitive-academic; risk-taking; impulsivity; externalising problems	Birth to 4 ½ years	Age 15	NICHD longitudinal study; observational	Positive: early childcare is a reliable predictor of cognitive-academic skills at age 15
Norway: Child care subsidies and academic performance (Black et. al, 2011)	Junior high academic performance	5 years	Junior high	Administrative data, with cohorts and unique identifiers, from entire population	Positive: the additional income as a result of subsidies is posited as the cause
Norway: (Havnes and Mogstad, 2011)	Educational attainment; earnings	3–6 years	30–40 years	Administrative panel data covering entire population	Mixed: low-SES children main beneficiaries; but negative for high income children

Outcomes in adolescence and beyond

Deborah Lowe Vandell and others prepared the age 15 follow-up to the NICHD longitudinal study and tested for a range of outcomes specific to 15-year-olds, some of which are not comparable to the kinds of factors which were examined when the children were younger (see Table 5). This later analysis collapses vocabulary, reading and maths scores into one 'latent' variable called 'cognitive-academic achievement'. Vandell et. al. reported that childcare quality continued to predict cognitive-academic achievement at age 15 to a similar degree as it did at 4½ years, but did not report whether there were separate effects for the different cognitive measures. Likewise, Vandell et. al. found that the higher incidence of 'problem behaviours' among children who had spent longer hours in long day care from an early age was still evident at age 15, with these children significantly more likely to exhibit 'risk-taking' and 'impulsive' behaviours. They describe the childcare effects on cognitive and behavioural outcomes as "small by conventional standards" but argue they should not be dismissed.[61]

Sandra Black and others used the detailed administrative data collected in Norway to examine the effect of childcare subsidies on children's academic performance in junior high school. They found a positive relationship, but they suggest that the impact on children came not from the childcare itself, but from the extra income that was freed up within the household as a result of more generous subsidies.[62]

Tarjei Havnes and Magne Mogstad used Norwegian data to estimate the long-run effects of public, universal childcare in Norway for children aged three to six years on the earnings of the participants in adulthood to see whether the program levelled the playing field. Their findings were positive in that access to relatively high-quality childcare during the early years substantially increased the adulthood earnings of lower-SES children, somewhat increased adulthood earnings for children at the median of the SES distribution, and had a negative

impact on the adulthood earnings of children at the top of the distribution; that is, a levelling effect.[63]

Given that the outcomes were measured well into adulthood, the effects of the program were durable but clearly did not result in benefits accruing to all children. This does not suggest universal childcare will provide benefits to all children; just that lower-income children potentially have a lot to gain from a well-designed early education program.

Durability and investment

Examining durability is particularly important when specific policies are justified on the basis that they constitute an investment. For example, if participation in high-quality early childhood programs increases literacy scores in a way that is still evident at school age, the effects of this program can be said to be 'durable'. If this same policy reduces the likelihood of more expensive remedial education programs during school by a significant margin, it can be said to be an 'investment'.

It is rare that policies are justified on the basis of yielding a quantifiable benefit for a particular group at a particular stage in the life-cycle. More often these benefits are said to materialise over an indeterminate period of time, for an unspecified group of people, and have amorphous 'spill-over effects' for the community at large.

Most of the studies discussed above are not accompanied by an assessment of the costs associated with the programs that generate the (generally mixed) findings. Whether the National Quality Framework regulatory changes, aimed at increasing quality, will mean more durable outcomes in terms of child development is certainly open to question.

Defining childcare quality

'Quality' is often invoked as a counter to these mixed results in the impacts of public, universal childcare. According to this logic, if childcare were of sufficiently high quality there would be greater positive effects for all children.

But childcare quality has no concrete or universally-accepted definition. As scholarship in this area has evolved, different conceptions of quality have been put forward.

The Organisation for Economic Co-Operation and Development (OECD), which has published a series of papers on early childhood policy under the banner 'Starting Strong', focuses on these seven aspects:[64]

- **Orientation quality:** the type and level of commitment governments make towards early childhood policy
- **Structural quality:** aspects of a child care service that can be regulated, such as number of staff, staff qualifications, and physical environment. This is the most widely accepted form of quality
- **Educational concept and practice:** the curriculum and goal-setting of a service, including pedagogy
- **Interaction or process quality:** the depth and warmth of the interactions between staff and children, and between children, in the ECEC environment. This is thought to be generated by structural quality and also thought to generate higher levels of outcome quality
- **Operational quality:** the effectiveness of management and the relationships between staff
- **Child outcome quality or performance standards:** the tangible benefits that can be derived from an ECEC service. This consists of measurable factors such as literacy/numeracy skills or interpersonal skills. Outcome quality can be observed at the time, or with regards to a specific milestone such as school starting age. Some studies even measure outcomes across the life course
- **Community involvement:** the nature and strength of the relationship between a service and the broader community

Out of these seven aspects, the National Institute of Child Health and Development (NICHD) considers structural quality, process quality and outcomes to be the most important — and as one of their studies suggests, the most mutually-reinforcing — aspects of quality.[65] Given that the majority of the focus of the National Quality Agenda reforms is on ensuring structural and process quality with the end goal being improved outcomes, the following discussion will focus on them when answering the question: does quality matter?

Structural quality features describe the inputs that aim to improve quality in care; they do not guarantee it. Structural quality assurance is an appropriate public policy goal only insofar as it has a proven and meaningful bearing on process quality and outcome quality.

Even if governments can achieve higher levels of process quality by regulating for structural quality, the net benefits of the endeavour still have to be assessed in line with the *marginal* social benefits that could be achieved. Undoubtedly, having happier and less stressed children as a result of high process quality is of interest to most parents, but what kind of social benefits are there that warrant governments' involvement, in a sector where 'involvement' usually means some kind of subsidy?

Given that there are significant private interests involved in ensuring high levels of process quality, there is a defensible case for government involvement in reducing the information asymmetry for families when they assess whether a service delivers the kind of process quality they think is important. The most compelling case for government involvement in ensuring high levels of process quality would be if the improvements in child well-being led to behavioural and socio-cognitive improvements over the short- to medium-term which, when quantified, represent a return on investment. However, this is an issue of outcomes, not process.

Outcome quality is the form of quality in which governments have the biggest legitimate stake, but caution is needed even here. Even if outcomes matter

to the government and to the public, the cost of the investment must be justified, with evidence, by what kind of return it will generate society and taxpayers at some point in the future.

To assess this properly, several questions must be answered. Which children benefit from a childcare program relative to how they would have progressed without it? Are the effects durable, i.e. do they continue to be evident at points throughout the life course? What is the relevant outcome: should it be measured by better school achievement, or whether better school achievement materialises into reduced welfare payments and a higher tax take/lower social spending?

Existing research has answered many of these questions, though not all. Identifying the ideal strategy for early childhood policy is, therefore, difficult. But at the very least, the available evidence does call into question the notion that current childcare policy (and the subsequent government and private expenditure) represents the kind of 'investment' in all children it is often claimed to.

Table 6: Does quality matter?

Quality Type	Does it matter?	Is it relevant to public policy?
Structural (what can be regulated by governments)	Only insofar as it leads to positive outcomes and/or prevents negative ones	Yes, if the salience of structural quality is overstated for actual outcomes then the case for expensive investment is undermined
Process (the depth, warmth etc. of interactions in the childcare environment)	Yes, if it has a significant impact on immediate child well-being Yes, if it leads to positive outcomes and/or prevents negative ones	Yes, if governments both: a) value immediate well-being over and above what parents are willing or able to invest in it and b) can effectively regulate for process quality
Outcome (the extent to which measurable outcomes in behaviour or cognitive skills are improved)	Yes, because it means children are better equipped to handle the school transition and may have longer-lasting impacts as well	Yes, if the outcomes represent quantifiable future savings made over time — pecuniary and non-pecuniary alike. Also provided that governments can regulate for it

Analysing the evidence for the National Quality Agenda reforms

The reforms to regulatory and ratings systems under the National Quality Agenda are essentially aimed at ensuring structural quality and process quality, with the end goal of better outcomes for children.

This section will assess the evidence relating to the association between the regulatory mechanisms of structural quality — in this case, lower staff-to-child ratios and minimum qualifications for staff — and positive carer-child relationships, as well as child outcomes in the socio-behavioural and cognitive domains.

The Regulation Impact Statement for the Early Childhood Education and Care Quality Reforms states that:

> While the available evidence suggests that the most important aspect of quality is the nature of the interaction between the teacher and the child, this is difficult to define and regulate. However, well-qualified staff and low staff-to-child ratios are two elements which provide the context in which quality is likely to occur.[66]

Studies using longitudinal data cannot be used to draw conclusions specifically about the *marginal* effects of new standards for childcare. But there are Australian and overseas studies that shed some light on the relationship between specific types of structural quality, process quality, and child outcomes in early childhood settings.

There are a limited number of rigorous quantitative studies of how Australian children fare in childcare. The Longitudinal Study of Australian Children (LSAC), which began in 2004, has been collecting data on a representative sample of children and their families, including data on childcare.[67] As longitudinal studies provide the best quality information from which to draw conclusions about effects (short of experiments), the four Australian studies discussed here (described in Box 3) all draw on LSAC data.

One further Australian study that uses LSAC data examines the effect of large-scale preschool on Year 3 NAPLAN scores. This study, by Warren and Haisken-DeNew in 2013, also looks at the role of the qualifications of teachers on these outcomes. They find

that after controlling for sociodemographic variables, pre-school attendance was significantly associated with higher NAPLAN scores in Year 3.[68] In some domains (writing and grammar), the preschool effect was no longer significant when prior achievement was controlled.[69] There were differential effects on NAPLAN scores according to preschool teacher qualifications, but there was no significant difference between diploma-level and degree-level qualifications in any domain.[70] The strongest positive effect was for preschool teachers with qualifications specialising in early childhood (as opposed to primary teaching).[71] Since this report is about childcare, not preschool, this study is of limited relevance and will not be discussed further.

Given that the new reforms began to be implemented only from January 2012 and are being phased in over a longer period of time, none of these studies can say anything specific about the National Quality Agenda or any associated marginal improvements. Furthermore, two of the studies use a baseline of 'no formal care' to measure effects, which can only distinguish between parental/informal care, and formal care. This does not yield any information about the significance of marginal impacts of changes in policy surrounding formal care settings.

However, many of the measurements used to approximate quality in these studies are also areas where the NQA extends the previous regulations, most notably in staff-to-child ratios and staff qualifications.

Staff-to-child ratios

Australian Studies

- **Leigh and Yamauchi (2009)**

This study's main findings are a) that non-parental care is on average associated with worse behavioural outcomes and b) that this association is more negative in high-SES families and less negative in centres with a higher staff:child ratio.[75] Although it is statistically significant, the difference in behavioural outcomes between children in centre-based care and others is described as 'small' and the authors caution that there could be a selection effect.

Leigh and Yamauchi's findings for staff-to-child ratios were that where children were in non-parental care, children had fewer behavioural problems in centres with a higher staff-to-child ratio, but most of the correlations were not statistically significant.[76]

- **Harrison, Ungerer, Smith, Zubrick and Wise (2009)**

This study does not separate the effects of staff-to-child ratios from carer qualifications — the variable used in its analysis is 'ratio of qualified staff to children'. It looks at the childcare experience of children aged four to five years, and therefore the findings cannot be generalised to younger children. The comparison ratios are 1:<8, 1:8-15, and 1:>15.

Box 3: Four Australian studies

Leigh and Yamauchi (2009): Dr. Andrew Leigh (now the shadow Assistant Treasurer) and Dr. Chikako Yamauchi, both then economists at the Australian National University's Research School of Social Sciences, used LSAC data in 2009 to find out which children benefitted from non-parental care, specifically focusing on behavioural outcomes. They tested four 'proxies' for childcare quality: staff-to-child ratios; share of staff with relevant qualifications; accreditation status; and quality as judged by NCAC.

Harrison, Ungerer, Smith, Zubrick and Wise (2009): This paper by Linda Harrison from the Australian Institute of Family Studies and others, published by the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) as part of their Social Policy Research Paper series, was a significant analysis of early childhood education and care data in LSAC.

The complex and detailed report was broad in its scope and examined the association between eight different indices of quality and child socio-behavioural and cognitive outcomes (controlling for confounding factors) as well as 'no childcare'.[72]

Houng, Jeon and Kalb (2011) is a study from the Melbourne Institute of Applied Economic and Social Research that uses data from LSAC. It looks at the relationship between early childhood education and care and child outcomes (socio-behavioural and cognitive) but is limited in interpretation as all 'effects' are expressed relative to a 'no childcare' baseline.[73]

Gialamas, Mittinty, Sawyer, Zubrick and Lynch (2014) differs from the other three as it focuses specifically on the relationship between childcare quality and child outcomes, but it does not use structural factors as a proxy for quality. Rather, 'quality' in this context is constituted by two domains: activities in childcare and the carer-child relationship.[74] This study analyses the relationship between process quality and child outcomes in the receptive vocabulary, academic proficiency and internalising/externalising behaviour spheres. It also examined the bearing of structural quality on process quality.

It found that lower ratios were consistently associated with better outcomes for children only in the behaviour domain. Children in childcare classrooms with lower qualified staff-to-child ratios had higher pro-social behaviour and lower problem behaviour incidence, as rated by both teachers and mothers. The effects were stronger for children in the year before school.

The results for cognitive outcomes were weak. Lower carer ratios were not correlated with literacy/numeracy outcomes, and vocabulary scores were significantly higher for the 1:8-15 group than the 1:>15 group, but not the lowest ratio group (1:<8). [77]

Overall, the findings of this study suggest that when all carers are qualified, staff-to-child ratios have a measurable impact on child behaviour, but even large differences in ratios have a negligible effect on cognitive outcomes.

- **Houng, Jeon and Kalb (2011)**

This study finds no statistically significant effect of staff-to-child ratios on learning outcomes of children, but does find a 'modest' statistically significant effect of higher staff-to-child ratios on socio-emotional outcomes—"when there are more children per staff member, the positive effect of day care use is reduced."[78]

In summary, all three Australian longitudinal studies that examined the effects of staff-to-child ratios in childcare, found small to modest statistically significant relationships between lower ratios and better socio-emotional/behavioural outcomes. Only one of the three studies—Harrison et. al.—found a small significant relationship with cognitive outcomes, however because the subjects of the study were older children, the positive effect cannot be generalised to infants.

Overseas Studies

- **De Schipper, Riksen-Walraven and Geurts (2006)**

De Schipper et al. examined the differences in caregiver-child interaction quality in two structured play episodes in the Netherlands, one where the carer-child ratio was 1:3 and the other where it was 1:5.[79] It is an experimental study, and the only one conducted in the last 15 years that looks especially at ratios.[80] It examined both caregiver-level and child-level effects. The main findings were: a) caregiver behaviour was of higher quality when the number of children was lower and the effect of ratio was stronger for younger children; and b) cooperation and well-being of younger children was positively affected by the lower ratio when children were younger, but higher levels of well-being were not found for older children when ratios were lower.[81]

- **Duncan and NICHD (2003)**

Duncan and NICHD constructed a range of models using the NICHD longitudinal study data to explore the extent to which the exclusion of some variables influenced the degree of influence childcare quality has on child cognitive outcomes. One component of the quality measure they used for childcare environments was staff-to-child ratio, for which they found no consistent pattern of association with cognitive outcomes across the various models.[82]

Staff qualifications

Australian Studies

- **Leigh and Yamauchi (2009)**

This study observed "virtually no systematic pattern" in the relationship between qualifications and child behavioural outcomes.[83]

- **Harrison, Ungerer, Smith, Zubrick and Wise (2009)**

The carer qualification variables in this study were 'university qualifications' compared to 'diploma/certificate qualifications or less'. Children whose carers had university qualifications had significantly lower 'problem behaviours' as rated by their mothers, but not by their teachers. There was no effect of carer qualifications on mother or teacher ratings of pro-social behaviour. There was no significant difference in behaviour outcomes associated with carers having qualifications in early childhood or another field of study (for example, primary education).

Similarly, there was no significant relationship between the level of carer qualifications and the cognitive outcome measures —vocabulary and literacy/numeracy. However, there was a relationship with the field of carer qualifications, with significantly higher vocabulary scores associated with carers who had an early childhood/child care qualification.[84]

- **Houng, Jeon and Kalb (2011)**

This study found no statistically significant relationships between staff qualifications (separated into 'degree', 'diploma' and 'certificate' categories) and either learning or socio-emotional outcomes.[85]

- **Gialamas, Mittinty, Sawyer, Zubrick and Lynch (2014)**

This study reports a positive relationship between the carer-child relationship aspect of quality, and improved outcomes across receptive vocabulary, academic proficiency and internalising/externalising behaviour areas. Their findings can be summarised as follows:[86]

Children who experienced higher quality carer-child relationships had higher receptive vocabulary scores

There was a positive association between higher quality carer-child relationships and children's literacy and maths proficiency

A higher-quality carer-child relationship was associated with lower internalising/externalising behaviour scores.

Though 'treatment' was at age two to three, effects were measured at age four to five and were found to be persistent at age six to seven as well, albeit the magnitude of the effects was somewhat reduced.

Crucially, this study also examined the role of 'programme characteristics of care'—here defined as "carers' highest educational qualification, professional development, work experience, currently working towards a qualification that would expand their skills and knowledge in child care or early childhood education and number of children in the group"[87]—in producing these outcomes.

The study finds no association between these characteristics of care and any of the child development outcomes studied. The study's authors state that "the results from the present study suggest that the characteristics of the carer including qualifications do not strongly influence the quality of the carer-child relationship or children's development."[88]

In summary, three of the four Australian studies investigating the effects of carer qualifications in childcare—Leigh and Yamauchi, Houng et. al. and Gialamas et. al.—reported no relationship between carer qualifications and child outcomes or between carer qualifications and process quality (in the case of Gialamas et. al.). Only one study—Harrison et. al.—found a relationship between higher carer qualifications and better child outcomes but again only for behaviour and for children aged four to five years (who are more likely to be in a preschool program than childcare).

Overseas Studies

Two meta-analyses and one longitudinal study examine the influence of staff qualifications on child outcomes in early childhood settings.

- **Fukkink and Lont (2007)**

This study examined the role of specialised training on the competency (here, "professional knowledge, attitudes, and skills that are related to teacher-child interaction"[89]) of caregivers. They assumed, following the structure ➔ process ➔ outcome (SPO) paradigm, that training would result in better interactions with children and positively influence child development.[90] Fukkink and Lont found that while specialised training makes caregivers more competent, the effects of caregiver training on children was not well-substantiated, saying "there is no straightforward relation between caregiver-level and child-level effects."[91]

- **Early, Maxwell and Burchinal (2007)**

Also following the SPO paradigm, this study considered the links between teacher education (specifically focusing on degree and major), teaching quality and children's academic skills across seven preschool programs for four-year-olds.[92] They found that these studies "do not provide convincing evidence of an association between teachers' education or major and either classroom quality or children's academic gains", stating that there were null findings and no clear patterns even when associations were statistically significant.[93] They specifically tackle the policy question of whether increased educational attainment for preschool teachers would improve classroom quality or academic gains, concluding that "such policies alone are unlikely to have such effects."[94]

- **Duncan and NICHD (2003)**

Unlike the lack of significance that was found for the impact of staff-to-child ratios, Duncan and NICHD found "relatively consistent associations" between teacher education and children's achievement outcomes in some of the models used in that study.[95]

Structure ➔ Process ➔ Outcome?

The studies described thus far yield mixed findings about the strength of the relationships between structural quality and process quality, process quality and child outcomes, and structural quality and child outcomes. Gialamas et. al. in particular emphasised that while process quality influenced children's outcomes, there was no clear or consistent relationship between structural quality and process quality, or between structural quality and child outcomes. That is, it is not at all clear that the aspects of childcare provision usually considered to be markers of quality, and targeted by regulation, necessarily lead to better outcomes for children.[96]

One study purports to "prove empirical support for policies that improve state regulations for caregiver training and child-staff ratio."[97] It finds small but statistically significant indirect relationships between carers' childcare training and children's cognitive competence, and a weaker indirect relationship between staff-to-child ratios and children's cognitive competence. Both relationships were mediated by aspects of care-giving, such as sensitivity and cognitive stimulation. The authors include the caveat that a causal relationship—that better ratios or better qualified staff lead to better staff-child interactions which lead to better outcomes for children—cannot be inferred as all data used is correlational only.[98]

The findings of studies of Australian childcare about how child outcomes are influenced by structural and process factors are mixed at best, with some positive effects for staff-to-child ratios but only for behavioural outcomes, not cognitive outcomes. These are summarised in Table 7.

Table 7: Summary of Australian studies investigating impacts of public childcare

Study (Author, Year)	Outcome Type	Staff-to-child ratio finding	Staff qualifications finding	Overall finding
Child care quality and children's cognitive and socio-emotional development (Gialamas et. al., 2014)	Cognitive (PPVT and ARS)	n/a	No sig. effect	Small positive effects: higher-quality carer/child relationships were associated with better cognitive and socio-behavioural outcomes, but there were no significant effects found for structural characteristics of care that are said to inform quality
	Behavioural (SDQ)	n/a	No sig. effect	
The effects of childcare on child development (Houng et. al, 2011)	Cognitive	No sig. effect	No sig. effect	Positive: Non-parental care was associated with better cognitive and socio-emotional outcomes, but only one significant effect was found for structural characteristics of care that are said to inform quality
	Socio-emotional	Sig. positive effect	No sig. effect	
Child care and early education: LSAC (Harrison et. al., 2009)	Cognitive (PPVT and Who Am I?)	Mostly no sig. effects	No sig. effect	Lower ratios of qualified staff to children (an indication of quality) have no statistically significant effects on child cognitive outcomes and only some significant effects on socio-emotional/behavioural outcomes
	Socio-emotional	Some sig. positive effect	Mostly no sig. effect	
Which Children Benefit from Non-Parental Care? (Leigh and Yamauchi, 2009)	Behavioural (STSI; four indices)	Mostly no sig. effect	Mostly no sig. effect	Negative: association between negative outcomes and non-parental care highest for high-SES households; mitigated somewhat by higher staff-child ratios. No evidence that other quality attributes affected outcomes

Note: 'n/a' means that the study did not examine this factor

The Regulation Impact Statement and the Access Economics analysis also acknowledge that many of the studies done on the impacts of specific quality variables outline correlational relationships only; that findings are often inconsistent across studies; and that results often yield statistically insignificant relationships and small effect sizes.

Many of the studies that have been examined in this report test for the effects of both staff-to-child ratios and staff qualifications. Most of the studies found no independent significant relationship between these structural aspects of childcare provision and improved outcomes for children. Of the studies that did find a positive impact, some studies found that child outcomes were better predicted by staff-to-child ratios; others found that they were better predicted by staff qualifications. On the balance of the Australian studies, it seems more likely that improvements to staff-to-child ratios are a more effective means of improving outcomes for children, but the evidence is strong only for socio-emotional and behavioural outcomes, not cognitive measures.

That there are so few studies explicitly investigating the effects of the two key structural aspects of the NQF, and that the evidence underpinning the NQF reforms is relatively mixed, is clearly problematic in terms of the expected economic and social benefits. Furthermore, the strength of any positive impacts found in these studies is arguably small compared to the cost to produce them. In sum, there is little evidence to support the notion that the costly NQF reforms to staff-to-child ratios and staff qualifications represent a sure 'investment'.

The likelihood of the National Quality Agenda achieving its aims

The National Quality Agenda reforms are about improving the real educational and developmental outcomes of children who participate in early childhood education and care services.[99] The reforms attempt to achieve this objective in part through regulating the 'inputs' of staff-to-child ratios and staff qualifications in a more stringent and uniform manner across the country.

This report discusses the official estimates of the costs of the NQA reforms, and highlights some areas of cost that were not taken into account by the official estimates. The costs are considerable, both in budgetary terms and for the small negative impact on female labour force participation and labour supply from increased childcare prices.

There could also be unintended consequences from increasing regulation to improve quality. One US study emphasises 'winners and losers' from the regulation of childcare services, concluding that "the improvements in quality of childcare services due to state regulations appear to accrue disproportionately to higher income markets"[100] and that "any quality-assurance effects of imposing regulations are swamped by the effects of the higher costs of quality among the poor".[101] This means that in spite of the wealth of evidence that suggests that resources are best used when targeted to the disadvantaged, it is a real possibility that the parents of disadvantaged children could be priced out of the market — and not benefit at all.

Debates around early childhood education and care policy typically use the language of 'investment', where dedicating more resources can generate savings in other public policy areas — most commonly in reduced social spending and higher tax revenue from higher incomes and higher lifetime employment.

Though this approach has proven fruitful for tightly-targeted interventions it does not necessarily hold true for public, universal ECEC programs. This report — and indeed official government reports — has highlighted the difficulties in clearly estimating the costs of these programs, clearly estimating the benefits, and then applying a formal cost-benefit analysis framework to policy in this area. If the benefits involved are murky or cannot be clearly defined and quantified, it cannot constitute an 'investment' in any orthodox sense of the term.

The costs must be considered in light of the benefits, but the Regulation Impact Statement is circumspect about the benefits of quality reforms. Drawing on the Access Economics analysis, it concedes that while marginal costs can be easily estimated, the marginal benefits cannot be, saying "it is not possible to provide an accurate measure of the benefits of the proposed NQA reforms."[102] Furthermore, the RIS says "this discussion… says nothing about the relative benefits of an improvement in staff-to-child ratios from 1:5 to 1:4 versus a subsequent move from 1:4 to 1:3."[103] In other words, it cannot assess the additional benefits that would accrue to children, families and society from incremental shifts in policy.

The Productivity Commission in its draft report on early childhood education and care, too, says "[t]here is no consensus from the research on the structural aspects

of quality as to the actual threshold effects, the marginal contribution from changes in variables or the optimal balance between them."[104]

The survey of the literature of comparable programs and studies in this report also indicates that there is a dearth of good-quality literature that examines the effects of the key aspects of the NQA reforms. Taken together, overseas studies reveal mixed or no findings on the relationship between staff-to-child ratios and staff qualifications, and improved child outcomes across socio-behavioural and cognitive domains. Australian studies also yielded mixed results, with the only potentially positive finding across the studies being the relationship between lower staff-to-child ratios and better child socio-behavioural outcomes, but the durability of these benefits has not been well-established.

However, in the view of the Productivity Commission, the instigators of the policy failed to answer the most important question: whether Australian childcare prior to the NQA was of low quality. In Appendix C of its 2011 report on the Early Childhood Workforce, the PC offered this: "the first question of evidence-based policy is whether there is evidence of a problem. In the case of the Australian ECEC system, the answer is unclear."[105] None of the studies examined in this report can definitively identify the threshold effects for childcare quality and whether Australian childcare policy needed reforming in the first place.

Conclusion

Families choose to use formal childcare for a number of reasons, mostly work-related. Some form of government subsidy for childcare is a necessary cost of higher levels of workforce participation, but the issue of greater government involvement in early childhood education and care is a different matter.

Though the goals of facilitating female labour force participation and supporting young children's development have in recent years been considered to be equally important, the question of which is more important if the latter should happen at the expense of the former has never been properly answered.

The National Quality Framework reforms are not supported by a strong evidence base and are likely to increase the cost of childcare for families and taxpayers more than has been estimated. Any marginal increases in 'quality' or improvement in child outcomes across the board will potentially come at the expense of pricing out low-income families, whose children gain most benefit from childcare.

This report shows that the case for increased public investment for the purposes of greater institutionalisation of early childhood is weak. The evidence supporting the reforms is strongest for lower staff-to-child ratios being beneficial to children, but then only for their immediate well-being and their socio-emotional and behavioural outcomes. One study also suggests this is only strong for younger children.

There is almost no evidence to suggest that childcare gives children a 'head start' into schooling that is noticeable beyond the early primary school years. Nothing in the Australian context suggests that higher-quality childcare will result in better school retention, lower crime rates, lower rates of joblessness and higher tax revenues. There is no evidence that childcare quality will be improved by reducing staff-to-child ratios or increasing staff qualifications; it will just make childcare even more expensive.

The recent available evidence does not support the contentions of vested interests that any attempt to reconsider the National Quality Framework with a view to easing costs would spell disaster for Australian children. Research pertaining specifically to Australia is limited. It is in itself remarkable that such reforms were embarked upon without proper consideration of the evidence, when comparing the outcomes of children across states where regulation differed using LSAC data could have shed some light on that question. More good-quality research is needed before judgements can be made with any degree of certainty. But for the time being, the evidence that these reforms were needed, that they will bring benefits to children, and that the increased spending represents an 'investment' is simply not there.

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