

Australia has a complex system of early childhood education and care (ECEC) provision and complex patterns of attendance. Access to ECEC, especially for children at risk of poor outcomes, is a major national issue. So too, is the quality of ECEC provision because it matters to children's development. Four-year-old kindergarten is moving towards a standardised national provision of 15 hours per week, though at the time of commencement of this study in 2010 most children attended four-year-old kindergarten programs in Victoria but only a minority of children (30%) attended in Queensland.

The research challenge is to better understand the impact on child outcomes of participation in this complex system of ECEC provision. Although there are many studies of ECEC, only a few studies have analysed the quality and usage patterns of typical ECEC arrangements experienced by children. The twin policy challenges are to improve access, especially for children at risk of poor outcomes, and ensure high quality programs across the diversity of ECEC services that families choose for their children.

We believe that E4Kids will make an important contribution to answering the research challenge, whilst at the same time identifying priorities for further research.

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## Usage patterns of formal and informal education and care

This bulletin describes the patterns of ECEC encountered by children in the E4Kids study.

### Comparison with the Longitudinal Study of Australian Children (LSAC)

E4Kids and LSAC are longitudinal studies of young Australian children but with different purposes and designs targeted at different policy outcomes. LSAC provides an important source of information about children's lives and development. This includes data on broad patterns of formal and informal care arrangements in Australia, and how these map onto different family characteristics and circumstances. LSAC reports on two nationally representative cohorts of children, one commencing at birth and the other at 4 years. Key findings from an analysis of wave 1 data from both LSAC cohorts is provided as an inset in this bulletin for background information on what we already know.

In contrast to LSAC, E4Kids has as its focus the study of the effectiveness of licensed ECEC programs. E4Kids draws a randomised sample of ECEC centres but with an over-representation of centres with high and low SEIFA (Socio-Economic Indexes for Areas) scores, from communities in four locations: Brisbane, Melbourne and Shepparton in Victoria as well as all ECEC centres in Mt Isa, Queensland. The study sample of ECEC services includes all the major types of formal program: Long Day Care, Kindergarten programs, Family Day Care, Limited Hours Care, and in 2011 and 2012 these children were followed into school.

All children in rooms within the selected centres, in which there were five or more children of the required age range (3-4 years), were recruited to participate in the study and are being followed over a period of five years (2010-2015). Thus E4Kids is primarily a representation of children in two states who attended a sample of ECEC settings. E4Kids contrasts with LSAC which is a national representative study of all children. In order to be able to compare the circumstances and outcomes for children not attending ECEC settings a separate sample of 160 children not enrolled in ECEC services in 2010 was drawn through Commonwealth records.

### Other relevant research

Two other pieces of relevant research are briefly presented as inserts in this bulletin because of their relevance to further analytical work in E4Kids: ABS data on patterns of Australian provision of kindergarten programs in 2012 and a DEEWR commissioned research paper on access to early childhood education in Australia.

### INSIDE THIS ISSUE

- Where does E4Kids 'value add' to current understandings of patterns of formal and informal care and education in Australia prior to school?
- What data does E4Kids collect in relation to family use of formal and informal care and education?
- How is E4Kids data being analysed?
- What are the key findings?
- What additional analyses will be undertaken?

### NEXT BULLETIN:

Measuring children's learning and development

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## Where does E4Kids ‘value add’?

E4Kids value adds to current understandings of the elements of ECEC programs that make a difference to children’s learning and development outcomes. The structural elements of ECEC that contribute to improved child outcomes are well understood: teacher qualifications, staff-to-child ratios, group size, continuity of staff working with children and the amount of exposure to or ‘dosage’ of ECEC programs. Both LSAC and E4Kids collect these data. What E4Kids does in addition is make direct and repeated observational measures of the quality of educator-child interactions.

In E4Kids two measures were used to directly assess quality in ECEC classrooms: the Early Childhood Environment Rating Scale-Revised

(ECERS-R) and the Classroom Assessment Scoring System (CLASS). ECERS-R is one of the most frequently used measures of quality in early childhood settings and was designed to assess group programs for children of preschool through kindergarten age, 2½ through 5. There is growing evidence that the strongest predictor of child outcomes in ECEC environments is the quality of interactions that occur in an ECEC classroom. This includes the emotional, organisational and instructional features of the interactions. To obtain measures of these dimensions of classrooms we conduct observations using the CLASS observation measure - as reported on in Research Bulletin 2. This is a measure that assesses the emotional organisational and instructional

climate of the classroom in much greater detail than ECERS-R.

E4Kids also looks at the effects of the ECEC environment on children’s learning and development. Again, in contrast to the LSAC study, E4Kids does not rely solely on parental reporting to obtain these outcomes. Children are directly and individually tested using selected elements of the Woodcock-Johnson (WJ-III) assessments of verbal and non-verbal cognitive functioning and early achievement. While LSAC provides a much larger national sample, E4Kids is specifically focused on how ECEC affects children’s development and uses a smaller, but nevertheless substantial, sample with more focused and detailed measures of ECEC environment and child outcomes.

## What data does E4Kids collect on ECEC usage?

Three main waves of data collection on ECEC usage have been completed across three years: 2010-2012. These

data include annual parent surveys, educator/teacher and centre director/school principal surveys.

Table 1 summarises the types of data collected from 2010 to 2012 and the data collection activity in 2013.

Table 1: Types of data collected on informal and formal patterns of care in E4Kids

Year of data collection	Data collected
2010	<ul style="list-style-type: none"> <li>• Number of days and number of hours in a typical week of informal care of child by grandparent, other relative or friend/other adult for 2010, 2009, 2008, 2007 &amp; 2006 -if child born in 2006 or earlier) (parent/main caregiver survey)</li> <li>• Number of days and number of hours attendance in a typical week in a child care centre, kindergarten program, family day care, playgroup or nanny for 2010, 2009, 2008, 2007 &amp; 2006 -if child born in 2006 or earlier) (parent/main caregiver survey)</li> <li>• Attendance records from formal settings</li> </ul>
2011	<ul style="list-style-type: none"> <li>• Number of days and number of hours in a typical week of informal care of child by grandparent, other relative or friend/other adult for 2011.</li> <li>• Number of days and number of hours attendance in a typical week in a child care centre, kindergarten program, family day care, playgroup or nanny or attendance at school for 2011 (parent/main caregiver survey)</li> <li>• Attendance records from formal settings and schools</li> </ul>
2012	<ul style="list-style-type: none"> <li>• Number of days and number of hours in a typical week of informal care of child by grandparent, other relative or friend/other adult for 2012.</li> <li>• Number of days and number of hours attendance in a typical week in a child care centre, kindergarten program, family day care, playgroup or nanny, outside school hours care or attendance at school for 2012 (parent/main caregiver survey)</li> <li>• Attendance records from formal settings and schools</li> </ul>
2013	<ul style="list-style-type: none"> <li>• Number of days and number of hours in a typical week of informal care of child by grandparent, other relative or friend/other adult for 2013.</li> <li>• Number of days and number of hours attendance in a typical week in a child care centre, kindergarten program, family day care, outside school hours care or attendance at school for 2013 (parent/main caregiver survey)</li> <li>• Attendance records from formal schools</li> <li>• Seeking parent survey completion where there is missing data from earlier parent survey</li> </ul>

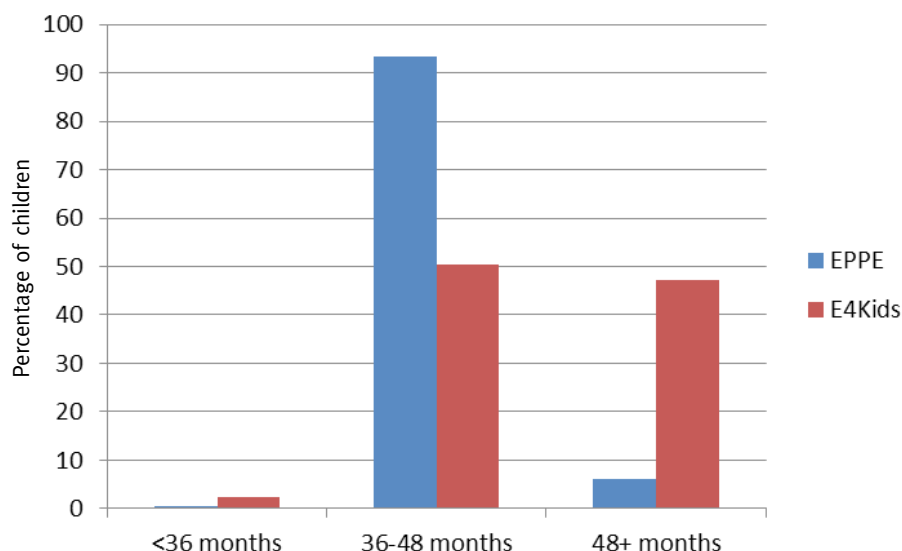
As a technical note, early childhood education and care (ECEC) refers in the Australian context to the following services: long day care, family day care, occasional care and kindergarten programs. The term ‘child care’ refers to all these services other than kindergarten.

## Comparing EPPE and E4Kids samples

The Effective Provision of Preschool Education (EPPE) study in the UK was one of the major national early childhood studies reviewed in developing the research design for E4Kids. EPPE was the most similar in method of these international studies to that of E4Kids and will provide the most comparable international findings. For these reasons a comparison of the two samples are of interest and are provided in Figure 1 to the right. EPPE recruited 3-4 year-old children from the range of ECEC service types, with participant children mostly being either one or two years before school at their point of entry into the study. Figure 1 compares the age of children at entry point to the EPPE and E4Kids studies.

As with the EPPE study, children in E4Kids were recruited in the 3-4 age groups. Overall the children in E4Kids are older than in EPPE.

Figure 1: E4Kids and EPPE studies compared on age of child entry to study



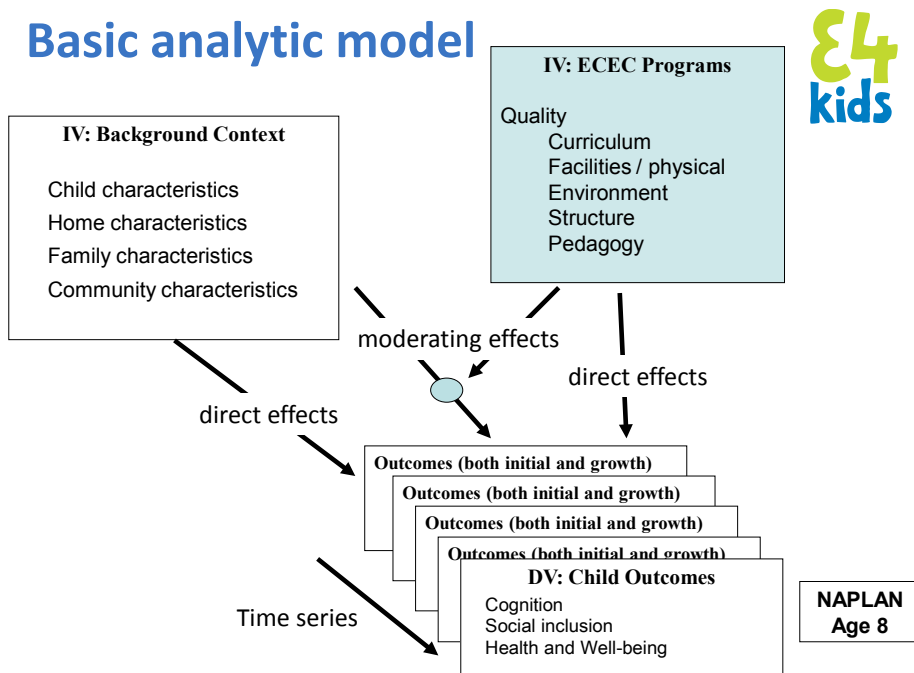
NB As a technical note, the age of children is taken as the time of the initial testing of children in both the EPPE and E4Kids studies

## Disentangling influences on child outcomes

Because the study's main research question is about the impact of ECEC on child outcomes there are a range of influences to disentangle. Following ecological theory (Bronfenbrenner & Morris, 2006), these influences include the nature or temperament of the child, immediate family influences, any involvement of extended family including informal care arrangements and community influences. All this takes place within a broader societal and early childhood policy context. The mapping of patterns of informal and formal care arrangements from the child's birth is an important aspect of the study's analytic approach to disentangling influences on child outcomes.

The original design for disentangling influences on child outcomes is summarised in Figure 2.

Figure 2: Basic analytic model: E4Kids



## How is E4Kids usage patterns data being analysed?

The obvious approach of analysing usage patterns according to the age of children presented a number of problems: the entry ages of children into preschool and school are slightly different for Queensland and Victoria, there were some differences in the age profile of study children between these two States and the fact that some children complete a second year of preschool further complicates this issue. Instead, the year that children entered school is identified, obtained directly from the schools, and then the data are analysed moving backward and forward from that year. For example, the data reported later in this bulletin includes usage patterns for the year prior to school, two years to school and so on, regardless of the children's ages.

## What are the key findings?

Set out at right is some early analysis undertaken on patterns of informal and formal early childhood education and care in the years before school. Note that the analysis is based on up to 1,025 children rather than the full sample of 2,653, as these were the children for whom we had full and 'clean' data at the time of this analysis.

### Usage patterns two to four years before school in E4Kids

Figure 3 examines the use of formal ECEC and informal care from relatives and friends in the periods two to four years prior to school. A contrast is provided of those children enrolled in formal early childhood settings and/or in informal care arrangements with the children who were solely in the care of parents and therefore not reported as attending formal ECEC programs or receiving informal care. The source of this data is parents who were asked to identify both formal and informal arrangements in a typical week in 2010, 2011 and 2012.

Nearly all the study children attended an ECEC program two years prior to

Figure 3: Use of formal ECEC and informal care 2-4 years before school in E4Kids

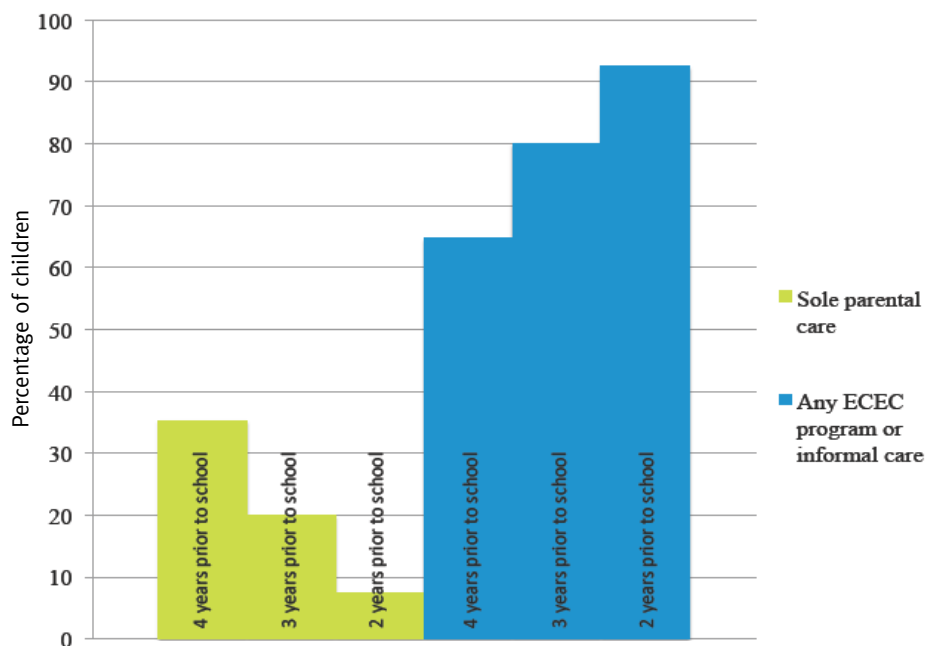
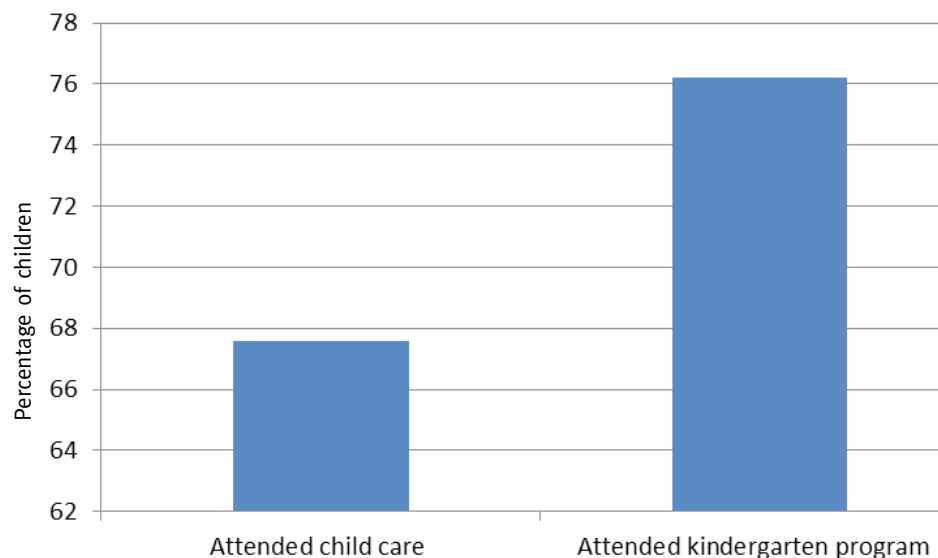


Figure 4: ECEC usage in the year before school in E4Kids



school. Ninety children (8.6%) were in parental care only two years prior to school and 35% were in parental care only four years from commencing school. Of those children using formal ECEC services or informal non-parental care or education two years prior to school, about half used formal ECEC programs only and about half used a mix of formal and informal arrangements, such as that provided by extended family, friends or neighbours. The trend was for participation rates in ECEC to increase as children get older and closer to attending school.

### Usage patterns of ECEC in the year before school in E4Kids

Figure 4 summarises usage of ECEC programs in the year before school. Kindergarten includes both separate kindergarten facilities and kindergarten programs within long day care settings.

Just over two-thirds of the children participated in formal child care and just over three-quarters of children participated in four-year-old kindergarten programs.

Patterns of ECEC participation in E4Kids (Figure 4) are a direct result of the sampling method and differ considerably from actual National and State rates of participation in ECEC, particularly in kindergarten programs in the year before school. Participation is universal in Western Australia, close to universal in Victoria (estimated at 94% in 2010 in Research Bulletin 1) and lower in other States and Territories. In LSAC data, reported elsewhere in this Bulletin, the national participation rate of 4-5 year-old children in kindergarten

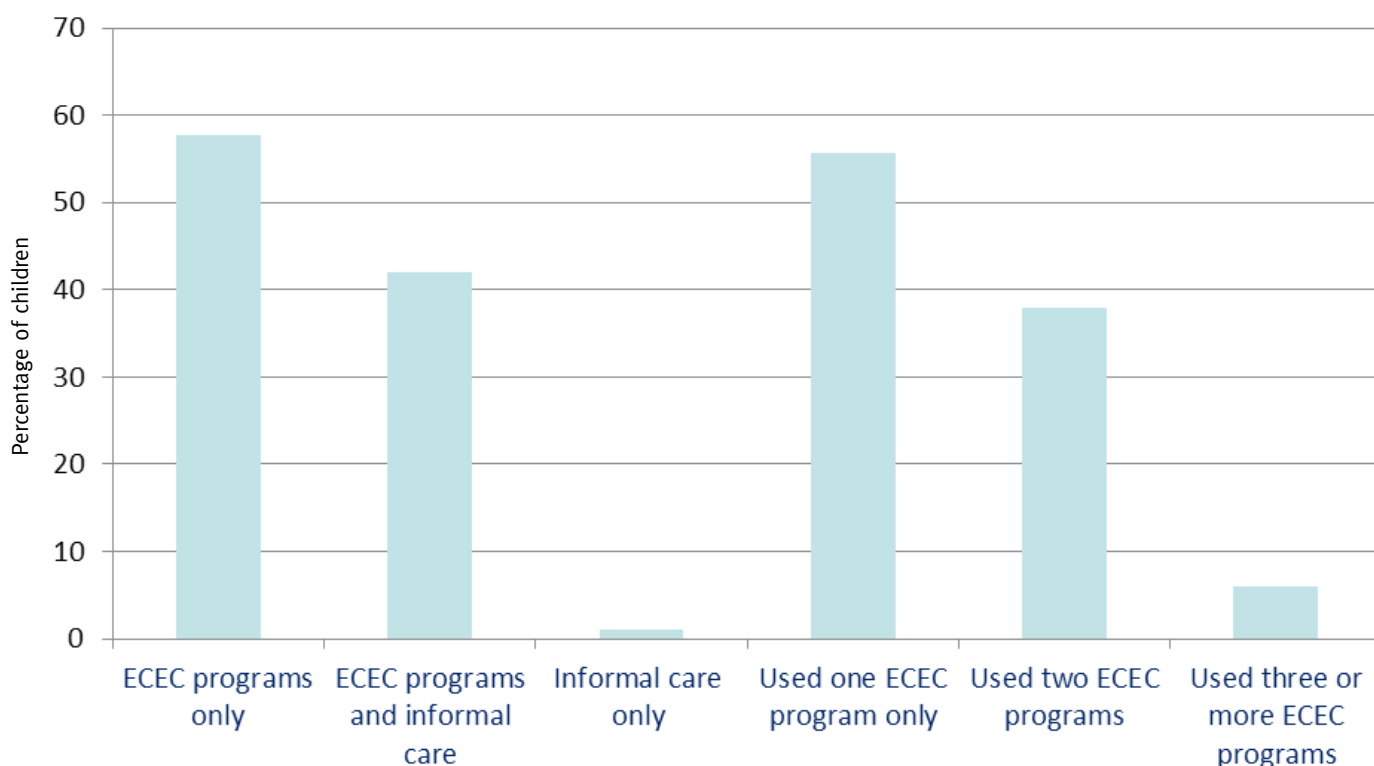
programs was reported in 2009 as being 54.6%. These participation rates are, however, increasing with the Coalition of Australian Governments (COAG) commitment to national universal provision of 15 hours per week of kindergarten programs in the year before school (Source: [http://www.pc.gov.au/data/assets/pdf\\_file/0020/121763/05-government-services-2013-chapter3.pdf](http://www.pc.gov.au/data/assets/pdf_file/0020/121763/05-government-services-2013-chapter3.pdf)).

Figure 5 summarises the data on both formal ECEC and informal care arrangements in the year before school

in the E4Kids sample and also identifies patterns of multiple use of formal care and education settings.

As indicated below, most children were attending a formal early childhood setting, with the most common situation in a typical week being attending one form of an ECEC program and not having informal care arrangements. The figure highlights the complexity of parental care and education arrangements for children in many families.

Figure 5: ECEC program and informal care participation patterns in the year before school in E4Kids



## What additional analyses will be undertaken?

The E4Kids study was designed to study the effects on children of their participation in formal early childhood education and care programs in Australia. Additional analyses of the usage data will be undertaken to answer the following research questions:

- What is the impact of ECEC participation on children's learning and development?
- How do these effects vary with 'dosage' and quality?
- Does the quality of care vary for children from advantaged versus disadvantaged backgrounds?
- What are the differential impacts for advantaged and disadvantaged children?
- What are the differential impacts for children with different temperament and behavioural patterns?

## Key findings on patterns of care from LSAC Study

### Patterns of usage of infant care

The proportion of infants using formal or informal child care was lowest for children 6 months or younger (18%), increasing to 29.7% for children aged 6-9 months, 38.7% for children aged 9-12 months and 48.7 for children older than 12 months.

About three-fifths of parents accessed informal care from relatives or non-relatives, over a third (38.7%) used formal Long Day Care or Family Day Care and one in ten used a combination of formal and informal care.

Long day care centres were more commonly used by mothers with university education, employed full-time and with higher family income. Relative care was less commonly used by older mothers (over 35 years) and was more common when there was only one child in the family.

Weekly hours were higher in formal settings (average of 20-21 hours per week) than informal care (average of 14 hours per week). Longer hours of infant care were more common when mothers were older, more highly educated, employed full-time, and in families who had higher household incomes, fewer children and who spoke a language other than English at home.

Reasons for family use of care were work or study (72.3%), taking a break (9.6%), shopping, sport and social activities (9.4%) and health or other needs (1.7%)

### Early education and care services attended by 4-5 year old children

Almost all 4-5 year old children (96.3%) attended some form of child care or early education service, with 54.6 % attending preschool.

Children who did not attend formal early childhood programs were more likely to be younger or growing up in

families who were more disadvantaged - that is mothers who were less well educated, not employed and who reported higher psychological distress and poorer parenting; families which had a lower income, more financial stress and more children in the household; families which were lone parent, Indigenous, non-English speaking, or from a more economically disadvantaged area.

Most of the parents who used child care did so to enable them to meet their employment responsibilities (69.7%) or personal needs (12.1%).

Longer hours per week of overall care/education were more common when children were older, mothers were employed and more highly educated and families had a higher income, had fewer children, were lone-parent families or spoke a language other than English at home.

(Source: Adapted from Harrison et al. 2009, pp. ix-xi)

## National ECEC service provider information: ABS 2012 data

In 2012, there were 7,594 service providers delivering a preschool program in Australia. Delivery models of preschool were comprised of 'Preschool' service providers and 'Long day care' (LDC) service providers that delivered a preschool program.

A LDC can be responsible for delivering multiple preschool programs within the same location. These multiple programs may be delivered under different management structures even though the programs operate from the same location. In this publication, some government funded preschool programs at LDCs have been classified as 'LDC with a preschool' to better reflect the integrated nature of preschool delivery models that operated in 2012. More information is provided on service provider

classification concepts in the National ECEC Collection: Concepts, Sources and Methods, 2012 (cat. no. 4240.0.55.001).

In 2012, of all service providers that delivered a preschool program, 4,307 (56.7%) were a Preschool (either stand-alone or as part of a school), and 3,287 (43.3%) were a LDC with preschool.

In New South Wales there were 2,128 service providers operating a preschool program (875 preschools and 1,253 LDCs), Victoria had 2,007 (1,164 preschools and 843 LDCs) and Queensland 1,536 (561 preschools and 975 LDCs). There were 495 service providers in South Australia (384 preschools and 111 LDCs) and Western Australia had 927 (881 preschools and 46 LDCs). Of the 232 service providers in Tasmania, 222

were preschools and 10 were LDCs. In the Northern Territory there were 148 service providers (141 preschools and 7 LDCs) and the Australian Capital Territory had 121 (79 preschools and 42 LDCs).

Nationally, 28.0% of total preschool providers were located in New South Wales, 26.4% were in Victoria and 20.2% were in Queensland. Together, Western Australia and South Australia accounted for 18.7% of preschool providers while the remaining 6.6% were in Tasmania, the Northern Territory and the Australian Capital Territory.

(<http://abs.gov.au/ausstats/abs@.nsf/Latestproducts/4240.0Main%20Features32012?opendocument&tabname=Summary&prodno=4240.0&issue=2012&num=&view=>, retrieved 14 April 2013)

# Access to early childhood education in Australia

This commissioned research provides a conceptual analysis of what access to ECEC programs means, how to measure access and what factors influence access, especially for vulnerable or at-risk children.

The broad conclusions include:

- the need to develop additional measures beyond simple participation rates, including notions

of creating new opportunities to participate, ensuring sufficient time to learn and allowing children to benefit fully from their participation through high quality provision

- the lower participation rates in ECEC of vulnerable and at-risk children
- difficulties in identifying the exact influence of factors such as family income and parental work and study

habits, in what is a complex pattern of provision across kindergarten programs and child care

- the need for further work to understand these issues in more depth.

(Baxter & Hand, 2013)

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## Research Collaboration



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