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Before and after school care: costs and usage of formal child care services for school age children, 1999 and 2002

Rebecca Cassells and Justine McNamara

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Abstract

The provision of before and after school care services, and the subsidy of these services through the Commonwealth Child Care Benefit, provide substantial support to many women in combining and balancing work and family. Relatively little analysis has been done in an Australian context, however, about the types of families who are using these services, and in particular, about usage and cost trends across time. We use unit record data from the 1999 and 2002 Child Care Surveys conducted by the Australian Bureau of Statistics to analyse formal child care usage and cost trends for school age children under 12 years of age. This period covers the introduction of the Child Care Benefit in July 2000, and our analysis allows us to draw some tentative conclusions about the possible impact of this new subsidy on real out-of-pocket costs of formal child care for school age children, and the use of such care. We use multivariate statistical techniques to examine factors that predict the use of formal care for school age children, and to examine the statistical significance of changes in usage patterns over time.

Author note

Rebecca Cassells is a Senior Research Officer at the National Centre for Social and Economic Modelling (NATSEM), University of Canberra, and Justine McNamara is a Senior Research Fellow at NATSEM.

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1 Background

Before and after school care for school age children is a neglected area of research. Little has been done to analyse the benefits of this care to families and society as a whole, with much of the existing research on child care focused on care for children who are not yet at school as this age group inherently requires more care for longer periods.

Existing research has shown that child care affordability and availability problems are less prevalent for families with school age children than for families with children who are not yet at school (Cassells et al, 2005). Research has also shown that increases in child care fees for school age children have a much smaller effect on labour force participation of women than increases in fees for children not yet at school (Doiron & Kalb, 2002). However, this same research has shown that there still is a reduction in labour supply for households with school age children when child care fees are increased.

Much of the research about the possible benefits of child care for child development has focused on the first five years of a child's life (see for example, Anderson et al, 2004; Burchinal et al, 1996) with little research being conducted into the benefits that a quality, caring environment will provide for school age children. Aizer (2004), has found that school age children with adult supervision are less likely to skip school, use alcohol or marijuana, steal something or hurt someone, than children without adult supervision after school.

As women remain the most common primary caregivers for children, and as many women choose to combine work and child-rearing, it is essential that they have access to services that facilitate a balance between work, life and family. In addition, the government's recent welfare-to-work reforms mean that single parents of school age children will increasingly be required to juggle the substantial demands of sole parenting with paid work. Quality child care provides women (and men) with the ability to organise many conflicting life responsibilities - not just workforce participation, but also participation in community and volunteer activities, health-related tasks, and the need to care for other family members. Many families now live apart from extended family and social support networks that can help with caring for children, making formal child care arrangements for children of all ages a necessity.

The Australian government subsidises child care through the Child Care Benefit (CCB). CCB was introduced in July 2000 to replace the two existing forms of child care subsidy (Child Care Assistance and Child Care Cash Rebate). CCB is a means tested payment available to families who have children in approved or registered care. The amount of Child Care Benefit available to families is dependent on a

number of variables, including type of care, number of children in care and family income. The extent to which the CCB has lowered costs of child care for parents in comparison to the old system is not clear, although, some research indicated improved affordability after its introduction (AIHW 2003; FaCS 2003; Moyle et al 2001).

We examine the use and costs of child care for school age children under 12 years of age, and the demographic characteristics of families using care, focusing on changes between 1999 and 2002. This period is of interest as it allows us to focus on possible changes in usage patterns and costs after the introduction of CCB, and thus draw some tentative conclusions about the possible effects of this subsidy. It should be noted that in addition to changes in subsidy arrangements, other changes took place between 1999 and 2002, which may have also influenced any changes in access to or costs of care and which cannot be controlled for in this analysis. Most importantly, an additional 5,000 outside school hours care places were funded in the 2001 budget. (FaCS 2003).

While it is not possible to directly test the effects of the introduction of the CCB using the data available from the Child Care Surveys, examination of the nature of changes in use and costs between 1999 and 2002 is possible, and the use of multivariate statistical analysis allows us to draw some preliminary conclusions about the possible impact of the change.

If CCB improved affordability over the 1999 to 2002 period, we would expect out-of-pocket costs to parents to fall, or to rise less than average fee increases over the period, and that parents' use of formal care would rise as it became more affordable. It might also be expected that any effects on child care use and costs would be likely to be stronger for children living in lower income families, as greater amounts of benefit are payable to the families of these children.

Because CCB is only paid for registered and approved care¹, we would expect to see the possible impact of the subsidy most clearly in the types of care most likely to be eligible for Child Care Benefit: for this age group, before and after school care. While parents can receive Child Care Benefit for other informal care where the care provider has been registered, in reality most CCB is paid in relation to formal care services. The use of vacation care, which also frequently attracts CCB, is not recorded

¹ Approved child care is care provided by a service provider that has been approved to receive Child Care Benefit payments on behalf of eligible families. Most long day care, family day care, before and after school care, some occasional care and some in-home care are approved child care providers. Registered care is care for work related purposes that is provided by grandparents, relatives, friends or nannies that are registered with the Family Assistance Office.

in the Child Care Surveys due to the timing of the surveys at non-school holiday periods. Very small numbers of school age children are reported using formal care other than before and/or after school care.² Extremely small sample sizes for this type of care make analysis of this data unreliable, but these children are included in our overall group of children using formal care, and we thus refer to our formal care variable throughout this paper as “CCB formal care”, as it captures all those types of care most likely to attract CCB and for which data is available – before and after school care, long day care and family day care. Our primary focus in the paper is on changes in the use and costs of CCB formal care, although we also discuss trends in the use of informal care (care by relatives, friends, babysitters and so on).

2 Methodology

The data used in this study comes from the Expanded Confidentialised Unit Record File (CURF) of the ABS Child Care Survey 1999 and the ABS Child Care Survey 2002, available through the ABS Remote Access Data Laboratory (RADL). Further information about the is available in the CURF Technical Papers (ABS 1999; ABS 2002), and in the Appendix to this paper.

The first part of the results section of this paper presents descriptive statistics, including cross tabulations of care usage and costs by demographics such as family type and family income.

The second part of the results section discusses multivariate statistical models which were used to determine whether there was any statistically significant change between the two periods in relation to the likelihood of using CCB formal care and the costs of such care, controlling for sample selection effects and other variables likely to influence the use of formal child care. Additional covariates in these multivariate models are based on the variables used in our descriptive tables, and include the amount and source of parental income, parental work hours, age of children and reason for using care. We use ordinary least squares regression for the model predicting costs of care, and a probit model to predict the likelihood of using any formal care. Both these models are adjusted for sample selection bias using a Heckman correction procedure (Heckman, 1979).

² In 1999, 20 children in our sample were using long day and 54 family day care, out of a total of 5850 children attending school in that year. In 2002, 10 children of a total of 6033 attending school were using long day care, and 60 were using family day care.

A detailed description of the variables used in this analysis, and some further discussion of the econometric procedures, can be found in the Appendix.

3 Results

3.1 What proportion of all children of school age use child care?

When we examined the numbers of children using child care of any sort (formal or informal) as a proportion of the total population of children of school age, we found that in the three years between the two Child Care Surveys, the percentage of school age children using any formal care rose slightly from 9.3 per cent of all children in 1999 to 10.1 per cent in 2002. The fall in the number of school age children using any informal care was larger than the rise in the use of formal care, falling from 33.4 per cent in 1999 to 30.2 per cent in 2002 (see Table 1).

Table 1 Proportion of all children of school age using any before and after school care and any informal care, 1999 and 2002

	1999		2002	
	N	%	N	%
	(‘000)		(‘000)	
CCB formal care	171.2	9.3	183.3	10.1
Informal care	612.2	33.4	546.2	30.2

Note: Population analysed is all children attending school.

Data source: ABS Child Care Survey, 1999 and 2002

Thus, the increases in formal care use did not completely offset corresponding decreases in informal care use. This finding suggests that, in 2002, either more parents were caring for school age children without any type of formal or informal child care arrangements or that more school age children were caring for themselves.

We examined the labour force status of the parents of these children across the three years, expecting that there might have been a move towards fewer two-income couples among families in the survey, to explain the decrease in informal care, but found no movement in this direction. Single parents, also, were more likely to be employed in 2002 than they had been in 1999. It may be that the fall in informal care use among school age children reflects increasingly flexible working arrangements of

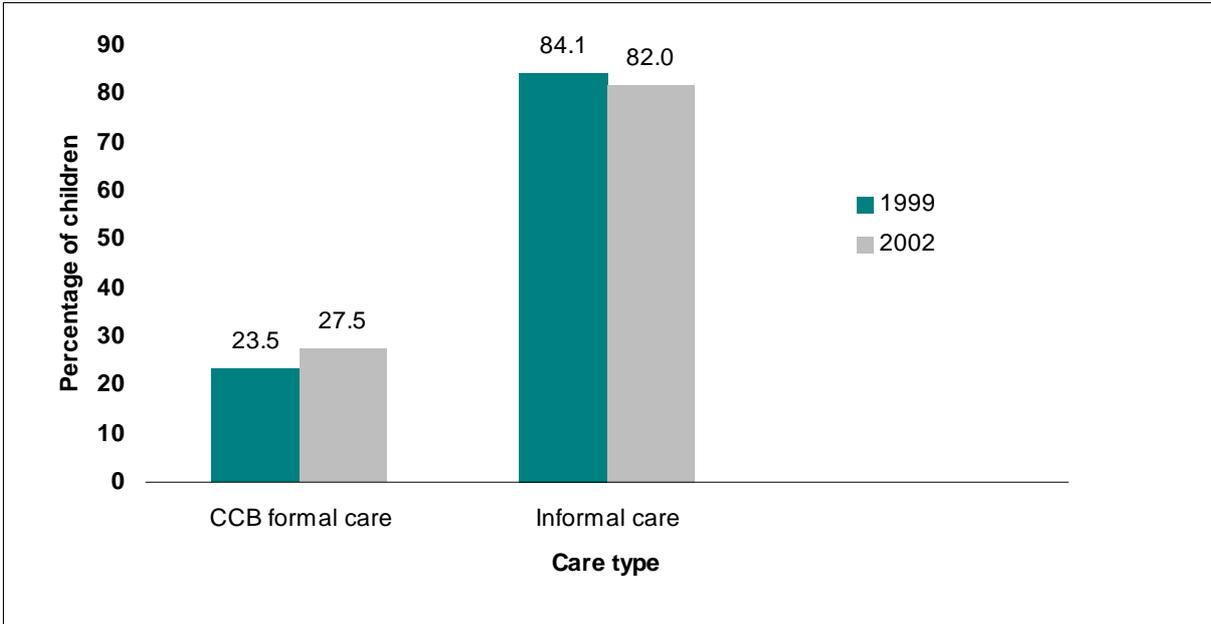
parents, allowing families to share child care between parents, and reducing the need for additional arrangements. Alternatively, it could reflect a decreasing availability of informal carers, perhaps due to the changing nature of support networks. For example, more families may be living at a distance from grandparents and other family helpers.

3.2 Children of school age using child care: usage patterns and trends

In contrast to our description of overall patterns of child care use among school age children provided in the previous section, the remainder of this paper describes the use and costs of care among those school age children using any type of formal or informal child care. Thus the percentage of children using formal care, for example, is the number of children using formal care expressed as a proportion of all those children using either formal or informal care.

Usage of care (both in terms of the percentage of children using care and average hours of care) by school age children is shown in Figures 1 to 3. Figure 1 shows a rise in the use of formal care for school age children between 1999 and 2002, but Figure 2 shows a slight fall in the average hours of formal care used. Overall, school age children were much more likely to use informal care than formal care, and average hours of informal care used were longer than those for formal care, rising slightly between 1999 and 2002. The most common type of informal care arrangement reported for school age children is with grandparents (see Figure 3), who were somewhat more frequent care providers for this group in 2002 than they were in 1999. Care by a non-resident parent also rose slightly between the two periods.

Figure 1 Percentage of school age children using care by care type and year ^a

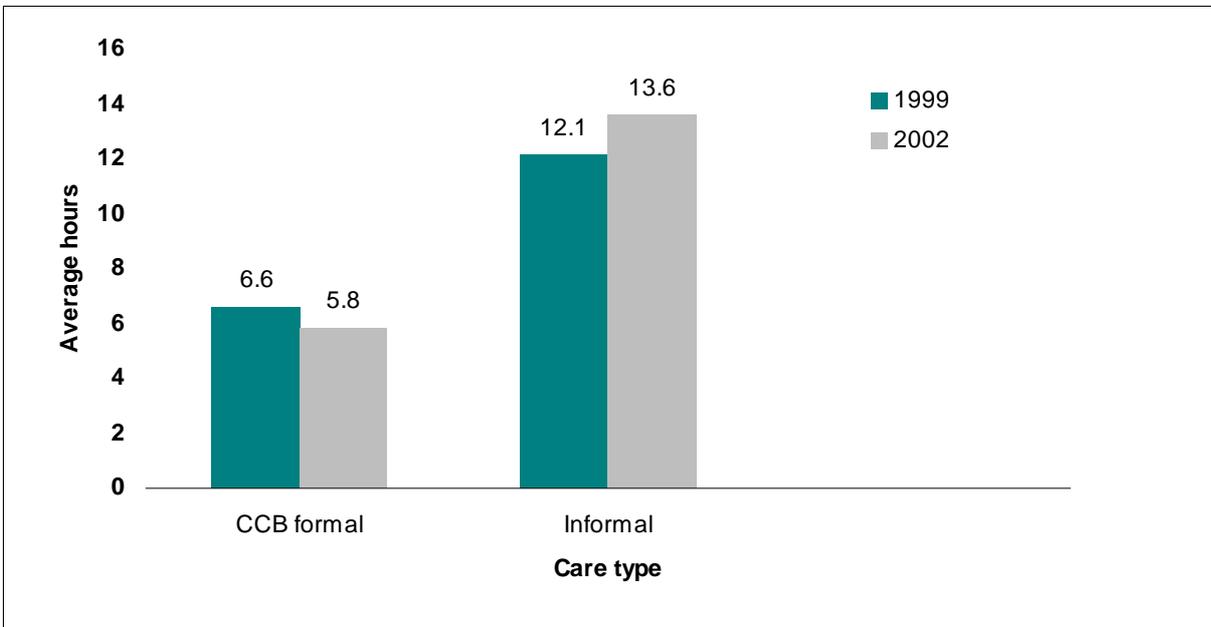


^a Children using any of the specific type of care.

Note: Population analysed is where total hours of care is greater than zero.

Data source: ABS Child Care Survey, 1999 and 2002

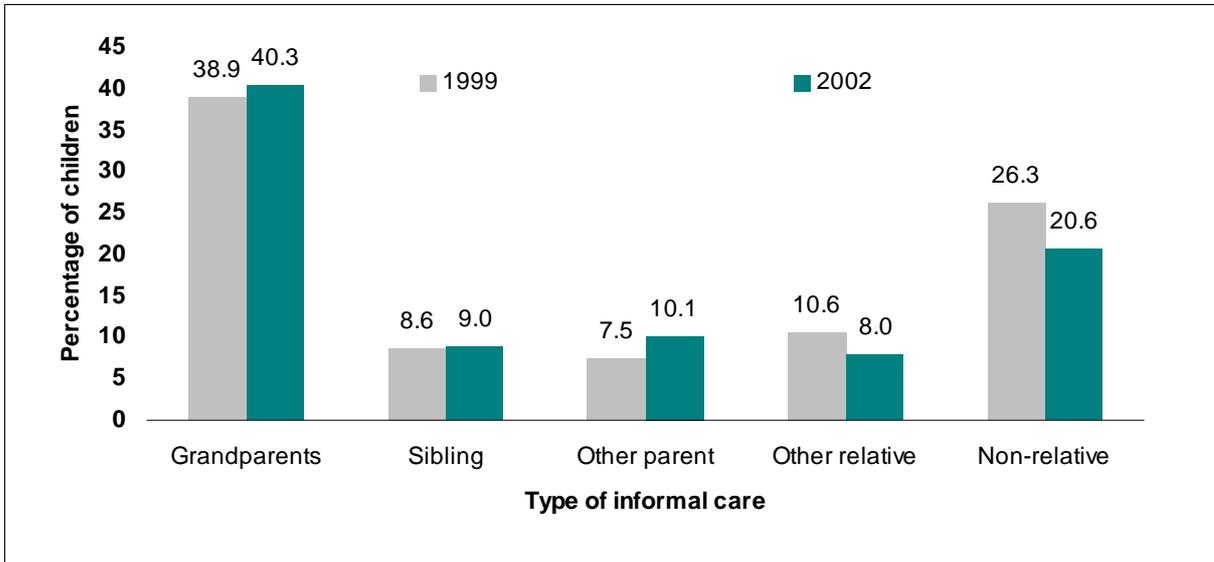
Figure 2 Average weekly hours of care by care type and year –school age children



Note: Population analysed is where total hours of specific care type is greater than zero.

Data source: ABS Child Care Survey, 1999 and 2002

Figure 3 **Percentage of school age children using informal care by care type, 1999 and 2002^a**



^a Children using any of these types of care

Note: Population analysed is where total hours of care is greater than zero.

Data source: ABS Child Care Survey, 1999 and 2002

In Table 2 the use of care by school age children is broken down by demographic characteristics. The percentage of school age children using any formal care rose most sharply in families where the mother was not working, or was working relatively few hours. This trend is particularly strong for mothers working between 1 and 16 hours per week, where the percentage of children using any CCB formal care rose from around 11 per cent in 1999 to over 20 per cent in 2002. The percentage of children using CCB formal care also rose more substantially for single parent families than for couple families. We also analysed changes in average hours of care by demographic characteristics across the period, but total hours of care were too low to meaningfully interpret changes, and there were few demographic differences in the overall trend. There was very little movement within demographic groups in regard to the percentage of school age children using informal care across the two years.

Table 2 Percentage of children using care by care type and demographic characteristics, 1999 and 2002, school age children^{a b}

		<i>Percentage of children using CCB formal care</i>		
		1999	2002	% point change
Family type	Couple family	23.1	26.5	3.4
	One parent family	24.8	30.1	5.3
Hours of work of mother	Mother not working	11.4	17.3	5.9
	Mother worked less than 16 hours	10.8	20.1	9.3
	Mother worked 16 - 34 hours	30.4	34.2	3.8
	Mother worked 35+ hours	36.3	37.5	1.3
Family income	\$1 - <400	19.0	20.0	0.9
	\$400-<\$800	18.6	27.9	9.3
	\$800-<\$1200	19.1	25.5	6.4
	\$1200+	31.8	33.2	1.4
Total		23.5	27.5	4.0
<i>Percentage of children using informal care</i>				
Family type	Couple family	83.5	81.3	-2.2
	One parent family	86.1	83.6	-2.5
Labour force status of mother	Mother employed	81.1	80.3	-0.8
	Mother not in labour force	93.1	87.6	-5.5
Hours of work of mother	Mother not working	91.2	86.2	-5.0
	Mother worked less than 16 hours	93.6	85.0	-8.5
	Mother worked 16 - 34 hours	80.8	76.8	-4.0
	Mother worked 35+ hours	74.9	81.1	6.2
Family income	\$1 - <400	87.7	87.5	-0.2
	\$400-<\$800	87.6	81.9	-5.6
	\$800-<\$1200	86.3	81.2	-5.1
	\$1200+	78.7	79.8	1.1
Total		84.1	82.0	-2.2

^a Children using any of these types of care ^b Family income data based on smaller sample due to missing values for income variables. All income values in 2002 dollars. Patterns for unemployed mothers were also examined, but results are not reported here due to small sample sizes.

Note: Population analysed is where total hours of care is greater than zero.

Data source: ABS Child Care Survey, 1999 and 2002

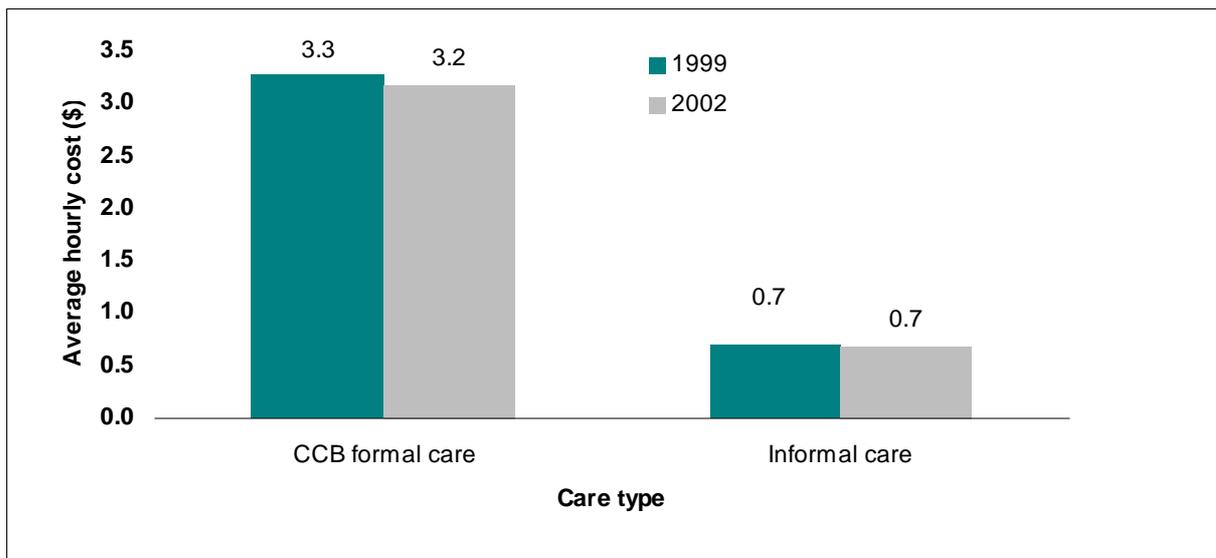
Child Care Costs

As explained in our methodological appendix, we were unable to accurately allocate costs to particular care types (formal or informal) in 1999. Therefore data is presented here as the average hourly cost of CCB formal care for children using **only** that care, (Table 3), and average **total** costs of all care for families using a mixture of care. (Figure 4).

Figure 4 shows that average total hourly costs for **all care** fell very slightly in real terms for parents with school age children using any formal care between 1999 and 2002. Average hourly cost of **all care** for families using any informal care remained unchanged from 1999 to 2002. These results can be compared with information about actual fees for before and after school care services, which rose slightly in real terms (by around 2 per cent) over the period (FaCS 2002, 2003; authors' calculations).

When looking at the demographic characteristics of families that **only** used formal care (Table 3), it can be seen that more substantial cost reductions in percentage terms for the use of formal care **only** occurred for low income families, whose average hourly cost of care fell from \$2.80 per hour in 1999 to \$1.30 per hour in 2002. The difference in the out-of-pocket expenses to the lowest income and highest income families widened over the period, with an average difference of over three dollars per hour in 2002.

Figure 4 **Average total hourly costs of care for school age children by any care type used, 1999 and 2002**



Note: Population analysed is where total hours of specific care is greater than zero. Sample size for cost analysis smaller than for other data due to effects of missing income data (see methodology section). All cost values in 2002 dollars.

Data source: ABS Child Care Survey, 1999 and 2002

Table 3 Average hourly costs of CCB formal care by demographic characteristics, 1999 and 2002, school age children using only CCB formal care^a

<i>Average hourly cost CCB formal care only</i>	Mean hourly cost 1999	Mean hourly cost 2002	% change
<i>Family type</i>			
Couple family	4.5	4.0	-9.7
One parent family	2.8	2.3	-18.9
<i>Area of residence</i>			
Capital city	4.3	3.8	-11.5
Balance of state	3.4	3.1	-10.0
<i>Family income</i>			
\$1 - <\$400	2.8	1.3	-54.0
\$400-<\$800	2.4	2.4	-2.1
\$800-<\$1200	3.9	3.8	-3.3
\$1200+	4.8	4.5	-6.7
<i>Main source of income</i>			
Wages and salary	4.2	4.1	-2.4
Government transfers	2.3	2.0	-14.5
<i>Main language spoken at home</i>			
English	4.1	3.5	-14.5
Other language	3.1	3.8	22.7
<i>Total CCB only</i>	4.1	3.5	-12.6

Note: Population analysed is where total hours of CCB formal care is greater than zero. Sample size for cost analysis smaller than for other data due to effects of missing income data (see methodology section). All cost values in 2002 dollars. Costs for children using informal care only not shown due to very low average costs.

Data source: ABS Child Care Survey, 1999 and 2002

4 Multivariate Analysis

From the descriptive statistics presented above, it is clear that there was a small increase in the proportion of school age children using formal care between 1999 and 2002, however average weekly hours of care in formal care did not increase over the period. At the same time, costs of formal care fell. Increases in the use of formal care were stronger for some types of children (particularly for families where the mother was working part-time), and some types of families also experienced greater than average falls in costs of care (especially low income and single parent families).

In this section of the paper we examine these trends further, in order to see if the apparent effects of time revealed in the descriptive data persist once a range of other factors are controlled for, and whether these effects are statistically significant. As noted earlier, there are a range of factors not controlled for in the models we present here (because they are not available in the data) which are also likely to influence care usage and cost. The presence of additional children in the family, the availability

of alternative caregivers, personal preferences about care arrangements, and the availability of additional child care places, for example, are not included in our models. Also, any conclusions we draw about the effects of the Child Care Benefit are preliminary only, as, from the data we have available, we cannot make firm conclusions about whether the patterns evident in the data are due to the impact of the Child Care Benefit, or to other factors beyond the scope of the models.

Use of care

As discussed above, we corrected for the effects of selection bias by using a Heckman selection model, and found (as expected) a significant sample selection effect ($p < .0001$) into the use of any formal or informal care for school age children. Children living in a capital city, children living in families where English is the main language spoken at home, and families whose main source of income is wages and salaries (compared with transfer income) are more likely to use any type of care than children without these characteristics. On the other hand, couple families are less likely to use any care for their school age children than single parent families, and children whose parents work less than full-time are less likely to use child care than those whose parents are both (or one in the case of a single parent) in the full-time work force. Lower income groups were less likely to use any type of care than the highest income category, and the older the child, the less likely any care would be used.

The results of our main model predicting the use of formal care are shown in Table 4, and demonstrate that, after correction for sample selection bias, the year of the survey continued to have an independent positive effect on the likelihood of using formal care for school age children. That is, in 2002, school age children were more likely to use some formal care than in 1999, even when other factors likely to affect the use of formal care were controlled for. We also found that children residing in a capital city were more likely to use CCB formal care than children in other areas, possibly reflecting fewer formal care services for this age group in rural areas, and that younger school age children were more likely to be using formal care than older children. While no significant differences were found in the likelihood of using formal care for most of the income categories in our model, we found that children of families in our second-highest income group were significantly less likely to use formal care services than those in our highest income group (the excluded group in our probit model).

Table 4 Likelihood of school age children using any CCB formal care, 1999 and 2002, probit model with selection

Variable	Coefficient (standard error)	Significance
Year=2002 (reference: year=1999)	.19 (.04)	0.000
Area of residence capital city (reference: balance)	.21 (.05)	0.000
Age of the child (in years)	-.05 (.01)	0.000
Main language spoken at home English (reference: other language)	.00 (.13)	0.984
Parental work force participation moderate*	-.15 (.08)	0.040
Parents not working (reference: high work force participation)*	-.19 (.13)	0.163
Main source of income wages	.09 (.08)	0.285
Main source of income other (reference: main source of income government transfers)	.00 (.10)	0.989
Family income between \$1 and \$400**	-.07 (.10)	0.473
Family income between \$400 and \$800	-.09 (.06)	0.130
Family income between \$800 and \$1200 (reference: income over \$1200)	-.14 (.06)	0.025
Intercept	.18 (.18)	0.333
Number of observations	4124	

* Moderate work force participation = couple: less than both full-time; single: less than full-time; high workforce participation = couple: both full-time; single: part-time. **Families with income less than or equal to zero were also included in the model, but results are not presented here.

Note: Population analysed is where total hours of any care is greater than zero.

Data source: ABS Child Care Survey, 1999 and 2002

Costs of care

We also ran multivariate models (results not shown) examining changes in the cost of all care for those children with any care costs, and the cost of CCB formal care for children who used only this type of care. In both cases we ran a Heckman selection model to control for the effects of selection into our sample of care users. In both models, there was a significant selection effect. Selection effects were similar to those reported for the use of care model. The year variable (1999 versus 2002) did not have a significant coefficient in either of our main models, a finding that could be due in part to the relatively small sample sizes available.

5 Conclusion

Our multivariate results show a small and significant increase in the use of formal care services for school age children between 1999 and 2002, and the descriptive statistics show a small fall in average costs to parents, occurring across a period

when fees for before and after school care rose slightly. It is particularly interesting that children in relatively low income families, and children of single parents showed sharper rises in care use, and more substantial falls in cost, providing some tentative evidence that Child Care Benefit may have had a redistributive effect in relation to costs of child care for school age children, and that the changes we see in use patterns may be due at least in part to the introduction of CCB.

Our findings about the relatively strong increases in care use among families where mothers are working relatively few hours may suggest that families are increasingly using formal child care to facilitate the return to work of mothers who, without affordable school age care, might have otherwise remained out of the labour force. It may also be that families are increasingly using outside school hours care to creatively manage a range of non-work activities that help build human and social capital, such as study, community volunteering, and caring for younger children and older family members.

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Appendix

A1 Data source

The 1999 Child Care Survey CURF contains 9,381 records, and the 2002 CURF contains 10,159 records. Each record represents one child age under 12, and no more than two children in each family are included in the CURFs. The absence of data about additional children in the family does limit our analysis, as the presence of other children is likely to affect care usage patterns and costs of care. All the information presented in this paper is reported at a child level, and use of the child weights provided in the CURFs for all our analyses means that our results reflect child care usage among all Australian children under 12 years of age attending school. Child care arrangements covered by the survey include both work-related and non-work related child care, and all information about child care use relates to the arrangements in the week prior to the survey interview. We have adjusted all costs and income values to 2002 dollars, so that meaningful comparisons can be made across the two periods.

A2 Variable Descriptions

Most of the variables in the 1999 CURF were also available in the 2002 CURF (exceptions noted below), so variable descriptions apply to both survey years.

Child care use variables

In this study “type of child care used” is broadly divided into formal and informal care. Formal care is defined in the survey as regulated care away from the child’s home, and for school age children this includes most formal outside school hours programs. However, data about vacation care is not available in the surveys, so for this analysis formal care for school age children is limited to before and after school care programs, as well as long day and family day care, which are used in both years by a small number of children attending school. Informal care is paid or unpaid non-regulated care either in or away from the child’s home, and includes care from friends and relatives (including a parent living elsewhere), and paid sitters or nannies. For the purpose of this study we generally group together all types of informal care, although we provide some descriptive statistics with informal care

broken down by care provider type (for example, grandparent, sibling). Many families use a combination of formal and informal care, and this is reflected in some of our analyses.

We measure care usage in two ways. First, we examine the number and percentage of children using particular types of care. Secondly, we measure the average hours of care used by children in various settings.

Child care cost variables

The main set of variables that differ between 1999 and 2002 are those that relate to government cash assistance for child care costs. In the 1999 survey, which preceded the introduction of the Child Care Benefit in July 2000, questions relate to whether parents received assistance from the Child Care Assistance Scheme, and if they claimed or intended to claim the Child Care Cash Rebate for child care costs. In 2002, questions relate to the Child Care Benefit, and ask whether the providers of care receive the Child Care Benefit, and also whether parents claimed or intend to claim the Child Care Benefit (a question aimed at parents who might claim the benefit as a lump sum through the Family Assistance Office, rather than have it paid to the provider). The costs of child care reported by parents in 1999 are costs net of Child Care Assistance but not net of the Child Care Cash Rebate (ABS, personal communication). In 2002, on the other hand, costs provided in the CURFs are net of all Child Care Benefit. In order to be able to compare costs across the two periods, we decided to impute the amount of Child Care Cash Rebate that families received in 1999, and used this imputed value to calculate the costs of child care net of all government child care subsidy, including the cash rebate. Families have had the child care rebate deducted from their net costs (net of any child care assistance) in 1999 if they claimed or intended to claim the child care rebate and met other eligibility criteria including paying the minimum amount of child care fees per week. Full details about the imputation procedure used are available from the authors on request.

By imputing the amount of child care cash rebate in 1999, and deducting this amount from parents' stated costs of care, as well as adjusting all cost amounts to 2002 dollars, we are able to compare 1999 and 2002 total costs of care with relative confidence. However, there is insufficient information in the available 1999 unit record data to establish which type of care the Child Care Cash Rebate was received for. While the majority of parents claim the rebate for formal care only, this is not always the case and, within broad "formal" and "informal" care categories, it is impossible to accurately allocate the rebate to particular types of care. Thus we present results for total costs of care and costs of care for those families that used only one broad care type, which are comparable across both years.

Other variables

We present our analysis of child care use and cost in the context of demographic characteristics that might be expected to interact with these outcomes. These characteristics include family type (single parent vs couple families), family income (available only as gross income, which we then divided into categories), labour force status of the parents, hours of work of the parents, main language spoken at home (English vs other language) and area of residence (capital city vs balance of state). Other variables incorporated into our analyses include the main reason parents report that care was used (work related or other), and the age of the child. It is clear from an initial analysis of the data that many parents who report a main reason other than work for using care do in fact work while the child is in care, so that a non-work related main reason for using care does not necessarily mean that neither parent was working while the child was using care.

It should be noted that in the CURF around 12 per cent of responses to the survey question about mother's income, and around 10-11 per cent of responses to the father's income question were "don't know/not stated" in both survey years. Where either the mother or father's income was recorded in this way, we have excluded that child and family record from any family income based analysis, and also from costs-based analysis, as full data on family income was needed to impute net costs of child care for 1999.

A3 Statistical analysis

In order to test our hypotheses about the possible effects of CCB, we use multivariate statistical techniques to examine the effect of survey year (1999 or 2002) on the likelihood of children using CCB formal care, and on the average costs of such care. To run these models, we pool cross-sectional data for 1999 and 2002, and control for a number of other factors which we expect to influence child care use and costs. As there was very little change in average weekly hours of CCB formal care used over the period, we do not model this outcome.

In order to model the effect of year on child care use and costs, we first needed to address sample selection issues. As we can only observe formal care use, or the costs of such care, for children who used some type of care, the sample available for predicting either of these outcome variables is a censored one. The use of a non-randomly selected sub-sample such as this can bias coefficient estimates (Heckman 1979), and we have adjusted our models for this sample selection bias by using Heckman correction procedures with both our models. This technique allows us to control for the effect of selection into the sample of child care users

For the model predicting the use of formal care, we use a probit model, as we have a binary dependent variable, defined as 1 if a child uses any CCB formal care (whether or not the child also uses informal care), and 0 if the child does not use such care. Thus children who only use informal care receive a value of 0 for the dependent variable. Many of the variables that can be expected to explain selection into the sample of child care users (that is, the decision to use any child care) are also important for explaining the decision to use formal care, and the likely costs of care. Thus both our selection model and our main models include family income (defined as a set of dummy variables), parental hours of work (defined as a set of dummy variables), region of residence (capital city versus balance of state), age of the child (in years), main source of income, and main language spoken at home (English versus other). Children of single parents are likely to use both more formal and informal care than children from couple families (due to the much lower likelihood of such children having two adults within the family to share child care responsibilities), and thus single parent status can be seen as a more important predictor of selection into the sample, than of the choice to use formal care, or the amount paid for care. Thus this variable is used in the selection model, but not in the main models. We also included a variable measuring the main reason for using care (work versus other reasons) in our model predicting the use of formal care, but not in our selection model, as this variable was only observed for children using some type of child care. This variable is not as strongly correlated with the hours spent working by the mother as might intuitively be expected, because many working parents report child-related, rather than work-related, reasons for using child care.

For our models predicting the costs of care we ran models separately for the costs of CCB formal care for children using only that care type, and the costs of all care for children using some CCB formal care. In addition, we controlled for the number of hours of formal care used in these models.

All our descriptive and multivariate analyses were conducted using the child weights provided in the CURFs. These weights indicate how many children in the population are represented by children in the survey, and take into account the child's probability of being selected into the sample (ABS, 1999, 2002).