

# Opportunities to create pathways to assist disadvantaged children in the Mornington Peninsula, Victoria

(Dr Peter Brain)

*This article was prepared for the George Hicks Foundation as part of a background paper for a meeting of philanthropists interested in work on the Mornington Peninsula. A more detailed social geography of the Peninsula is provided in a separate posting.*

The Mornington Peninsula lies between Port Phillip Bay and Westernport Bay, with an ocean frontage to Bass Strait. The Peninsula is administered by the Shire of the same name and the Shire's boundaries are used in this article. The Shire is included within the Melbourne metropolitan area but since its closest point is roughly 60 kilometres from the CBD and its furthest is over 110 kilometres, it ranges from outer suburban to peri-urban or semi-rural.

Fifty kilometres long and 25 kilometres wide, the Peninsula has plenty of room for internal variation. The high-priced real estate of Mount Eliza and Portsea contrasts with tracts of fibro cottages on the flat behind Rosebud; the busy commercial centre of Mornington contrasts with the paddocks of Boneo while quiet seaside resorts like St Andrews Beach contrast with the industrial port of Hastings and the naval depot at HMAS Cerberus.

## The incidence of poverty and disadvantage in Mornington Peninsula shire

The Commonwealth Department of Education has documented the variety of the Peninsula with its Index of Community Socio-Economic Advantage. This index is calculated from factors such as parents' occupations and education. The more professional the parents' occupation and the better their education, the more likely it is that their children will do well at school. The index is constructed to average out at 1000 for all of Australia, and the Mornington Peninsula is above average with a 2015 result across all its primary schools of 1037. However, the range from most advantaged to most disadvantaged is unusually wide across the Peninsula. There are with advantage ratings nearly as high as any in the country and even some of the state primary schools of the peninsula serve school advantaged communities. At the other end of the scale, one primary school is in the running for the most disadvantaged school in the state and there are several other schools with advantage ratings in the low 900s. These disadvantaged schools concentrate in two areas, both of which lie beyond commuting range of the metropolitan area.

Similarly for the incidence of poverty. Since the inquiries of Professor Henderson in the 1970s poverty lines have been used to identify households whose incomes are low in relation to their needs – so low as to require careful budgeting for survival and so low as to hinder social participation. This can be done with various degrees of intrusion into the household’s affairs – the more the intrusion, the more careful the estimation. At the Census the ABS tries to limit intrusion and accordingly Census-derived measures of poverty are fairly rough – a poverty line set at \$330 a week for an adult living alone (2015 prices) is translated into a line of \$495 a week for a couple without children, \$429 a week for a single parent with one child, \$693 a week for a couple with two children and so on for various household combinations. Greater intrusion into household budgets would have permitted the poverty line to be set more accurately in terms of disposable income, with more careful allowance for need – for example, taking housing costs into account. However, the Census definition has the great virtue of covering most households (not all households – some fail to fully complete their Census forms) and provides an indicator of the incidence of poor families across Australia.

Applied at the 2011 Census, the suggested poverty line identifies very poor households. These households had incomes lower than they would have received had they been eligible for, and receiving, Age Pension or Disability Support. Some of them would have been receiving low-rate social security benefits such as Newstart or combinations of such benefits and low-paid part-time employment; others may have been waiting for social security or in some way not eligible for it.

At the 2011 Census, 8.6 per cent of households in Mornington Peninsula had incomes below this austere poverty line, a little higher than the national proportion of 7.9 per cent. Around half these very poor households comprised lone adults – typically either a young person out of luck on the labour market or an older man or woman marking time before becoming eligible for the Age Pension. However, poverty was not confined to adults; 8 per cent of families with dependent children living on the peninsula had incomes under the austere poverty line. This percentage was similar to that reported nationally. These very poor families accounted for 7.3 per cent of the children living in the shire.

For many purposes, the \$330 a week poverty line is excessively austere. If poverty is defined to include all households with incomes less than \$<sub>2015</sub> 440 a week, the proportion of Mornington Peninsula households considered poor rises to nearly a quarter, many of which are single adults (the Single Age Pension rate in 2011 was below this poverty line). The proportion of families with dependent children living below the poverty line becomes 17 per cent, accounting for 15 per cent of all children in the shire.

As with the measures of school advantage and disadvantage, these estimates place the peninsula at around Victorian average. Children living in poor families are distributed more or less evenly across the three main population nodes in the peninsula – the inner Port Phillip shore (Mornington, Mt Eliza and Mt Martha), the middle Port Phillip shore (Safety Beach to Tootgarook) and the inner Westernport shore (Baxter to Crib Point). Though there are poor children in most parts of the peninsula, the proportion of children who come from poor families rises to around 30 per cent, double shire average, in two areas: around Rosebud and around Hastings. Both these concentrations of poor children coincide with the areas served by disadvantaged schools, and both have high proportions of rental housing. Compared to Mornington and to other suburbs close to the northern (Melbourne) boundary of the shire such as Baxter, they are relatively isolated from the metropolitan labour market.

The circumstances of poor children who live in areas where a high proportion of families are poor militate against the children’s educational and subsequent workplace progress in that they are less likely to be caught up with high or even moderately achieving classmates; more likely to internalise low aspirations and to regard low workplace competence as the norm. Opportunities for intervention to improve these children’s life prospects arise at all stages of their education – pre-school, in-school and at that vital transition, school to work. Work on the geography of the Mornington Peninsula, summarised in the above paragraphs and provided in detail in a companion article, shows that the Peninsula includes two school catchments with concentrations of disadvantaged households.

Calculation of the costs and benefits of improving the probabilities of households changing status from disadvantaged to advantaged can be illustrated by focusing on children aged 3 to 5 who find themselves in disadvantaged households, defined as those which had equalised household income below \$ 400 a week or \$ 20,800 a year in 2011 prices as identified in the Census. The topics requiring investigation include the reasons for the positive correlation between children in economically disadvantaged households and their poor labour market performance as adults, the types of programs available to reduce the correlation, the potential benefits of introducing such programs in the Mornington Peninsula and the number of children likely to benefit from such programs.

## Economic disadvantage households: Basic characteristics

A large number of studies of OECD economies (Australia, United Kingdom, United States and Western Europe) have all come to similar conclusions, namely:

- a significant proportion of the population, perhaps the majority, have at some time experienced short spells of poverty;
- as the spells in poverty lengthen the probability of exiting poverty status declines; and
- people who have experienced spells of poverty in the past are at the most risk of re-entering disadvantaged status.

Table 1 describes the basic characteristics of disadvantaged households compared to all households. These households have equalised incomes less than the overall median income (which is similar to the definition adopted in this study), low employment rates, high unemployment rates and high not-in-workforce rates.

	Per cent of households	Median equivalised income (\$2010)	Per cent of total employed	Per cent of total unemployed	Not in workforce
Economically disadvantaged	9	19,600	29	10	61
All cases	100	43,800	72	3	25

Note: Based on households with head no older than 70 years of age.

Source: Michelle Cunningham, David Orsmond and Fiona Price, *Employment Outcomes of the Economically Disadvantaged*, Reserve Bank of Australia Bulletin, March Quarter 2014.

	0 Years	1-2 Years	3-5 Years	6-10 Years	Total
Non-elderly couple	70.8	17.3	8.3	3.6	100.0
Couple with children	71.2	20.4	6.0	2.4	100.0
Lone parent	41.9	29.9	21.1	7.1	100.0

Note: Relative poverty – Persons in households receiving less than 50/60 per cent of household median equivalised disposable income.

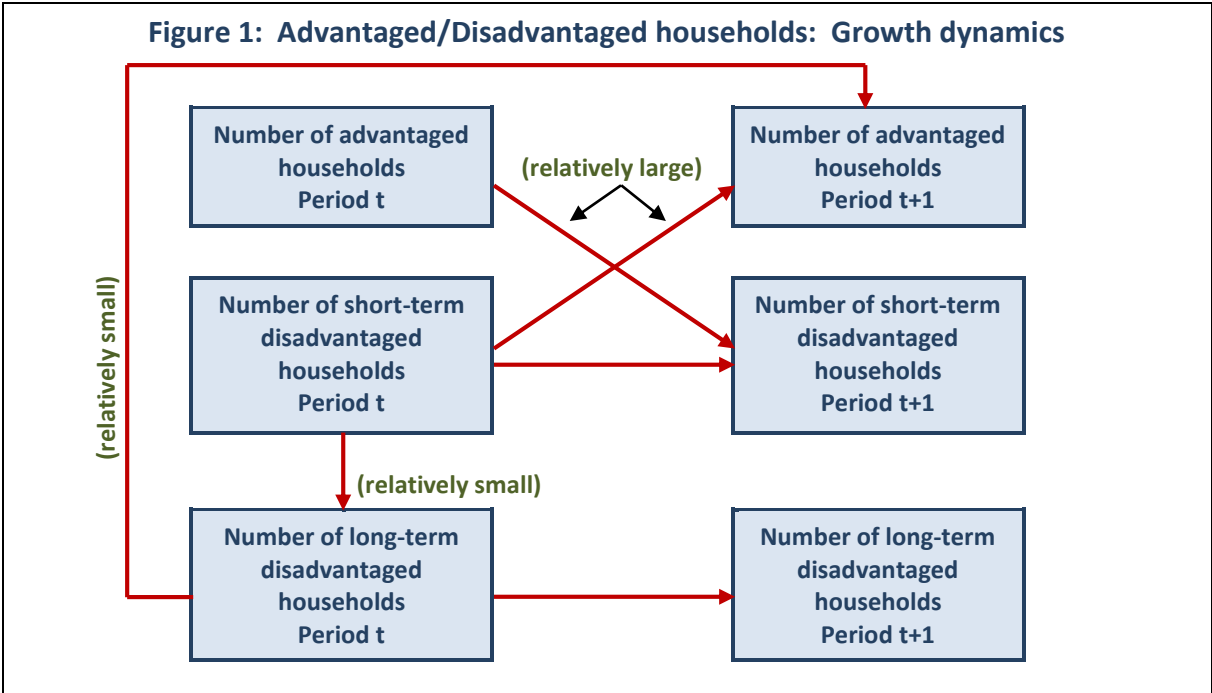
Source: McLachlan R., G. Gilfillan and J. Gordon (2013), *Deep and Persistent Disadvantage in Australia*, Productivity Commission Staff Working Paper, Canberra, Table A.4.

According to the Australian longitudinal HILDA data base, which underlay the estimates in Table 1, and excluding students moving from disadvantage into employment, the probability of remaining disadvantaged in 2011-12 having been disadvantaged in 2005-2006 was approximately 60 per cent. Allowing for deficiencies in employment skills, qualifications and experience as recorded in 2005-2006 considerably raises the probability of remaining in disadvantage. The probability of changing status from disadvantage to advantage depends on employment skills and is strongly associated with employment status and, in particular, full-time employment status. From the same data base, only 5 per cent of those disadvantaged in 2005-2006 who were in full-time employment in that year were disadvantaged in 2011-12.

Table 2 indicates that many households which find themselves disadvantaged endure this status for relatively short periods. The data in Table 22 summarise the HILDA data base probabilities to suggest a flow dynamic between economically advantaged and disadvantaged households. As outlined in Figure 1, between any two years the flow of households which are advantaged in period t to short-term disadvantage in period t+1 is relatively large and substantially neutralised by the contra flow of households with disadvantaged status in period t to advantaged status in period t+1.

The more worrying transition is the relatively small flow from short-term disadvantage in period t to long-term disadvantage in period t+1. This flow is only partly neutralised by flows of long-term disadvantaged households in period t to advantaged households. The inflow into long-term disadvantage from short term disadvantage will be dominated by households whose adult members are intermittently or never employed. Even in an economy free of recession, the pool of long-term economic disadvantage is likely to grow steadily unless intervention either reduces the flow into long-term disadvantage or increases the flow out of it.

If the probability of descent from short-term to long-term disadvantage is constant, the rate at which the stock of long-term disadvantaged households expands will reflect growth in the number of short-term disadvantaged households, which in turn will depend on the demand for labour (the rate of employment growth and the rate of growth in earnings per hour in locations accessible to households) in relation to growth in labour supply (the rate of population growth).



## Economic disadvantage and childhood development

The focus here is not on disadvantaged households per se but on the children of disadvantaged households and the obstacles they face in becoming employable adults.

The basic statistics are clear cut. Child development scores of children the same age are qualitative benchmarks which are used to explore the link between educational attainment and economic disadvantage. Development scores of a child measure:

- physical development – ability to walk, manipulate the body, manipulate objects;
- social and emotional development – ability to be responsive to others;
- cognitive development – ability to solve problems through intuition, perception and verbal or non-verbal reasoning; and
- speech and language – expressive language ability.

For Australian children aged 4 to 5 the overall development score for children with neither parent working was 94.3 compared to 100.6 for children with at least one person working. This was lower than for indigenous children. For severely financially distressed families, that is, families unable to pay rent or going without meals, the difference was 8 to 9 points (Productivity Commission, 2013 op. cit., see also section 9.2 above).

The Australian National Assessment Program – Literacy and Numeracy (NAPLAN, discussed in the companion article on the social geography of the Peninsula) shows that for 15 year old students the gap between students from the highest and lowest socioeconomic background was:

- more than two years schooling in reading and literacy skills;
- more than two years schooling in mathematical literacy; and
- one year schooling in scientific literacy.

Children living in the top 20 per cent of households enjoy three times the access to economic resources available to children living in the poorest 20 per cent of households.

However the international findings suggest household resources are but one factor in children's achievement. Another important factor is good parenting and a supportive community. In summary, the international evidence suggests the factors which contribute to failure to complete schooling or to finish school with performance levels which limit post school opportunities are:

- attitudes of parents towards education and expectation of education attainment of the child;
- the number of disadvantaged children in school; and
- the concentration of disadvantaged children in the neighbourhood.

Children from disadvantaged families, schools and neighbourhoods who graduated to educational achievement and life employment cycles similar to what would be expected from advantaged households had the following characteristics:

- personal resilience encompassing a positive outlook, openness to new experiences and the ability to absorb negative shocks;
- at least one parent who read to them and took an interest in their education;
- a strong performance in early education up to year 5 or year 6; and
- attending schools with high achieving/high expectation peers.

Family support, in terms of a close relationship with at least one caretaker (grandparent, sibling) as a role model is also important.

Nevertheless, even when these non-financial factors are taken into account, there remains a strong inverse link between children from economically disadvantaged households and childhood development. This is because disadvantaged households have difficulty in creating a supportive environment conducive to childhood development.

The inability of economic disadvantage households to provide a supporting environment is linked to the following risk factors:

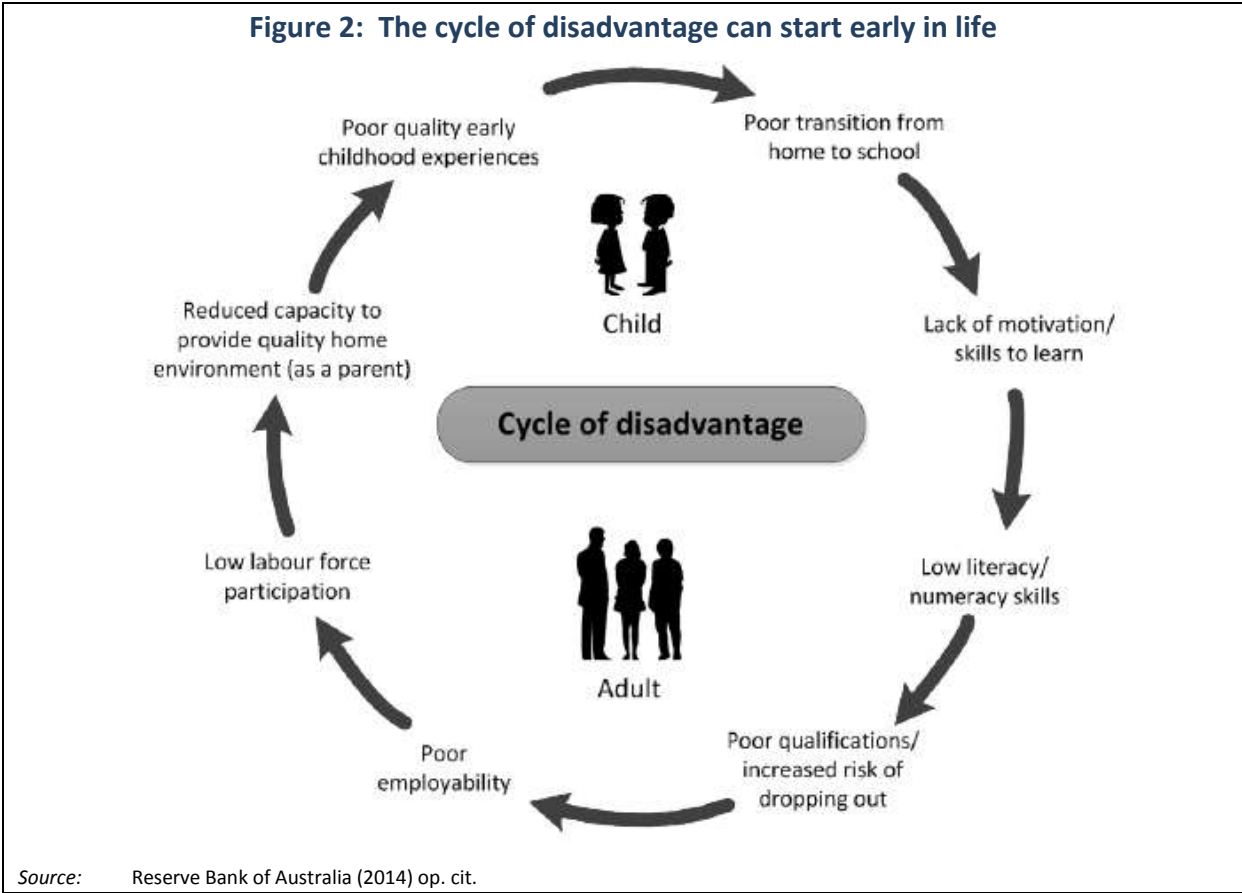
- father absent;
- father unemployed;
- mother unemployed;
- mother less than 22 years of age at birth;
- mother having completed less than 12 years school education;
- mother born overseas and having poor English;
- maternal psychological stress;
- parenting style (lower warmth, higher hostility);
- family educational environment (reading to the child less than 3 days per week);
- fewer than 30 children’s books in the home;
- high levels of television watching; and
- neighbourhood high socioeconomic disadvantage indexes.

Edwards, *et. al.* (2009), as per Table 3, found that children from financially disadvantaged homes had significantly more of these risk factors than children from financially advantaged homes.

<b>Table 3 Childhood development risk factors by Australian household financial status</b>		
	<b>Financially advantaged households</b>	<b>Financially disadvantaged households</b>
<b>Per cent of households with risk factors equal to or less than</b>		
1	18	3
2	41	11
3	61	25
4	76	40
5	86	57
6	92	70
7	96	81
8	98	91
9	99	96
10	100	98
11	100	99
12	100	100

Source: Derived from data in Productivity Commission (2013) Figure 4.2.

The evidence suggests that young children from disadvantaged households are at risk of entering a vicious life cycle in which initial low achievement leads to disadvantaged household status in adult life and, if they have children, the risk that a significant proportion of these children will have the same life cycle experience. This mechanism is captured in Figure 2.



United States studies of school performance outcomes indicate the catchment proportion of disadvantaged households is perhaps a better predictor of outcomes than student pupil ratios.

**Early intervention programs: Design and benefits**

The argument for investing in young children from disadvantaged households is incontestable. The children from these households are more likely to fail to complete school, more likely to commit crime and to have a poor quality commitment to the labour market in terms of low productivity employment paying low wages and/or lengthy periods of unemployment. Early interventions that offset the negative influences of disadvantaged household environments will have a high rate of economic return if they create pathways so that these children can participate in the economy in the same way as children from advantaged households.

The United States evidence suggests that the most effective intervention strategies in returns per dollar of investment are those that are targeted at the very young. This is because improved early childhood learning disproportionately increases the child’s overall capacity for learning throughout life. If intervention is left till older ages it is much more difficult close the gap with peers.

The best intervention programs are designed to offset the risk factors noted above as commonly present in economically disadvantaged households. These programs, although with a design element to increase cognitive skills, also emphasise non-cognitive skills such as learning appreciation, focus, persistence and self-control, all which are all essential for long-term educational success and skills accumulation.

The design features of successful early intervention programs can only be identified if there is evidence of long-term success. Evidence of success, unfortunately, requires a comparison between program participants and a control group which did not go through the program collected over the long term – perhaps over 40 to 50 years. The only programs which have this status were implemented in the United States, the oldest and most cited being the Perry Pre-school Program.

## The design of benchmark pre-school programs

The Perry Pre-school Program implemented in the 1960s was directed at 3 and 4 year olds with an average age of entry of 42.3 months. The children mainly came from traditional black disadvantaged areas/homes with half of them from lone parent households. The average mother had completed less than ten years of schooling. The program was of two year's duration and consisted of:

- weekly 2.5 hour classroom sessions held on weekday mornings and a weekly 90 minute home visit by the teacher one afternoon a week to involve the mother in the educational process over a 30 week school cycle; and
- an average child-teacher ratio of 5.7 with all teachers qualified in elementary, early childhood or special education.

Another program that has been studied in terms of outcomes was the Abecedarian Project that was based on 111 children over the 1970s. The children were relatively more disadvantaged than those in the Perry Program with the parents having low levels of cognitive ability and income and high levels of pathological behaviour. Four fifths of the children lived in lone parent households with an average mother who was less than 20 years old and of low IQ. These children were assigned to four groups, namely:

- those who received no intervention at all;
- those who received intervention when they were young as per the Perry School Program;
- those who received intervention in the early school grades; and
- those who received intervention throughout their pre-school and school years.

The children were followed until they were 21 years old. The program was more intensive than the Perry Program, at least for the comparable pre-school intervention with a pupil-teacher ratio of 3 to 1. Parents also received help in minimising the risks of day to day life.

The longer term outcome for participants in both programs was significantly better than for the control group of non-participants (Table 4). The benefit cost ratios in Table 5 for the programs including the larger scale Chicago program over the 1980 decade are impressive.

It should be noted that interim evaluations of three later large-scale programs have not been as favourable. Indeed, the benefit-cost ratio has been negative. However, the actual data available from participants in these later programs is limited to between three and five years and two of the three programs were implemented at relatively low costs of between US\$6,000 to US\$7,900 per child (2011 prices). The lower the cost the higher the child/teacher ratio and the less likely the program will capture the “atmosphere” of an advantaged household and so counter the negative factors for child development arising from the environment of disadvantaged households. Another factor which may



be an important in explaining the relatively poor performance of these later programs is the extent that the non-participant control group were allowed to access pre-school education. Greater access to pre-school education by the non-participant control group will reduce the benefit/cost ratio. This indicates that targeted intervention works best when the targeted group has limited alternative options to the intervention program and that adequate program resourcing and parent involvement are necessary conditions for success.

Table 4 The Perry and Abecedarian Programs: outcomes for participants as adults		
	Program group	Non-program group
<b>The Perry Program</b>		
IQ at age 5	94.9	83.5
Graduation from high school	66%	45%
Earn US\$2,000 monthly	29%	7%
Own home	36%	13%
Never on welfare	41%	20%
Number of arrests by age 27 (number)	2.4	4.6
Per cent of males employed aged 40	70%	50%
<b>The Abecedarian Program</b>		
IQ at age 8	97.8	93.3
Reading achieved scores at age 15	94	87
Maths achievement score at 15	94	87
High school graduation	67	51
Four years at college	36	13

Source: James J. Heckman and Dimitriz V. Masterov, "The Productivity Argument for Investing in Young Children", Lecture given at the Allied Social Sciences Association Annual Meeting, 5-7 January, 2007.

Table 5 Early childhood intervention programs: Summary of cost-benefit outcomes						
Program	Length of program (years)	Program cost per child (US\$ <sub>2011</sub> ) <sup>(a)</sup>	Number of participants	Benefit-cost range <sup>(b)</sup>	Age at last year of actual data of participants	Number of studies
Perry Pre-school	2	22,000	123	2.0 – 16.1	40	4
Abecedarian	2	43,189	104	3.8	21	1
Chicago Child Centre	1.6	9,000	1,539	4.8 – 10.8	21	4

Notes: (a) Average of studies.

(b) The benefit-cost range largely reflects the number of benefits taken into account. For the benefit calculations the core benefits included were the impact on lifetime earnings and lower crime rates.

Source: Kim M. Dalziel, Dale Halliday and Leonie Segal, "Assessment of Cost-Benefit Literature for Early Childhood Education for Vulnerable Children: What the findings mean for policy", Sage Olen, January-March 2015: 1 – 14.

Further studies of alternative school programs have led to the conclusion that the design of the curriculum played a significant role in the success of the two programs. Curriculum based on the so-called "High/Scope Model", as was the case for the Perry school, has a classroom routine where the children are allowed to design and implement their own active learning experiences either individually or collectively. This is not dissimilar to the traditional nursery school model, where teachers respond to children's self-generated activities. These models in pre-school intervention strategies are more effective than the traditional school model focused direct instruction in formal skills complemented by

testing. The other important dimension may be scale. The earlier programs may have worked because they were of small scale. Large scale programs, because of greater need for control and accountability, may gravitate towards the standard school model and lose the important quality of intimacy between teacher and child.

## The Mornington Peninsula: Labour market status and children in disadvantaged households

Table 6 shows the flow of children by age between disadvantaged and advantaged households between 2006 and 2011 in Mornington Peninsula shire. Disadvantaged households are defined as having equalised incomes below \$20,800 a year in 2011 prices or \$400 a week. In 2006 1,941 children aged 0 to 4 were living in disadvantaged households or 30 per cent of children in this age group resident in the Mornington Peninsula. In 2011 788 of these children remained disadvantaged but 1,153 children had changed their status to advantaged households. However, in 2011 630 children who had been in advantaged households in 2006 were living in disadvantaged households. Balancing these estimates, there was a net flow out of poverty: by 2011 the share of children, now aged 5 to 9, living in disadvantaged households in this cohort had fallen from 30 to 22 per cent. An important reason for the net flow out of disadvantage would have been the mother returning to work. Similar flows can be assessed for the other age groups.

This is not entirely a good news story. First, it does not adjust for geographic mobility to and from the peninsula. Some of those who became advantaged may have done so by moving from the peninsula to areas with better labour market prospects – and perhaps been replaced by disadvantaged households moving into the peninsula in search of low rental housing. Second, if a significant part of the negative influence of disadvantage household status arises when the children are aged 0 to 4, the most important number is the number of children in disadvantaged households aged 0 to 4.

	<b>0 to 4</b>	<b>4 to 9</b>	<b>10 to 14</b>	<b>15 to 19</b>
Number in disadvantaged households – 2006	1941	2024	1694	1261
Number in advantaged households – 2006	4527	4798	4382	4168
Percentage of children in disadvantaged households – 2006	30.0	29.7	27.9	23.2
Number of children in disadvantaged households in 2006 in advantaged households in 2011		1153	1397	1069
Number of children in disadvantaged households in 2006 in disadvantaged households in 2011		788	627	625
Number of children in advantaged households in 2006 in disadvantaged households in 2011		630	438	388
Number of children in advantaged households in 2006 in advantaged households in 2011		3897	4360	3994
Total children in disadvantaged households 2011 given 2006 base		1418	1065	1013
Total children in disadvantaged households 2011 given 2006 base – per cent of total children		21.9	15.6	16.7

Source: Australian Census Longitudinal Data Base, 2006-2011.

Table 8a shows the relationship for 3 and 4 year olds between education, the employment status of their parents and disadvantaged household status at the Victorian level in 2011. The table shows that 52 per cent of children in disadvantaged households were in lone-parent households or in two-parent households with the father (or both parents) unemployed. The corresponding percentage for advantaged households was 7.4 per cent. Among children in advantaged households, 92 per cent were in households with the father, or both parents, employed. The corresponding share for disadvantaged households was 47 per cent. To make matters worse, children from disadvantaged households had lower pre-school participation rates and higher not-in-education rates than children from advantaged households.

Table 7 indicates that in the Mornington Peninsula there was a greater gap between attendances at pre-school for children from disadvantaged households compared to children from advantaged households.

## The Mornington Peninsula market for early childhood intervention strategies

The starting point for estimating the potential for early childhood intervention strategies would be the number of 3 to 4 year olds. Assuming that the number of 3 and 4 year olds is uniformly distributed between years 0 and 4, the peninsula would have approximately 450 disadvantaged 3 or 4 year olds (Table 6, after allowing for population growth). It can be further assumed that the number that would move out of disadvantage would be balanced by the number that would move from advantage to disadvantage. To allow for such adverse movements, the screening for potential children to take part in intervention programs should be widened from household equalised incomes of \$400 a week to \$500 a week.

To further segment the market an additional simple filter could be the share of 4 year olds unlikely to participate in pre-school. From Table 7, this would reduce the eligible children to 60 per cent of the total, or 270. Removing those with long-run health issues, or issues more suitable to other available programs, would reduce the number to approximately 220 a year.

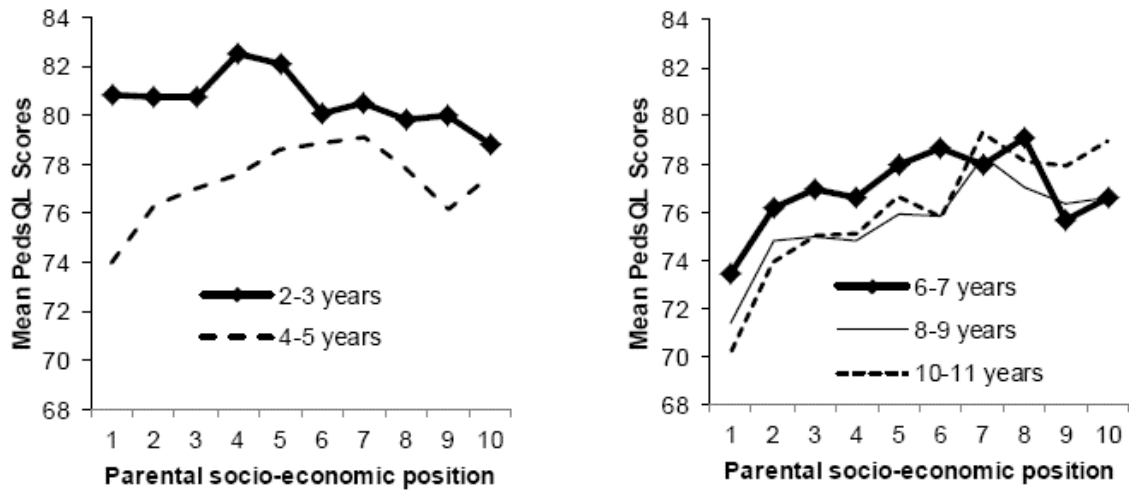
An alternative filter could be based on the information in Table 8. The intervention program could be restricted to children in economically disadvantaged households with

- females employed – males not employed;
- sole parent either employed or not employed; and
- households with neither parent employed.

At the Victorian level, adoption of these criteria would restrict the proportion children eligible for intervention to 52 per cent of 3 and 4 year-olds living in disadvantaged households. Assuming that this rate applies at the Mornington Peninsula level, the potential market size for early childhood intervention policies would be around 234 or 200 after the deduction of those unqualified for health or other grounds.

Allowing for the uncertainty surrounding these calculations, it can be concluded that the target market for early childhood intervention policies in the Mornington Peninsula is between 200 and 250 a year.

**Figure 3: Outcomes for Australian children aged 2-3 to 10-11 year olds by socioeconomic position<sup>(a)(b)</sup>**



Notes: (a) MeanPedsQL scores – Pediatric Quality of Life inventory or model which measures the extent of physical, emotional, social and school functioning of children.  
 (b) Socioeconomic position (SEP) – ranging from 1 (the lowest decile) to 10 (the highest decile).  
 Data source: Data provided by Australian Institute of Family Studies, based on LSAC, Waves 1, 2, 3 and 4.

**Table 7 Mornington Peninsula: Percentage of children in pre-school by household income status – 2006 (per cent)**

	Disadvantaged	Advantaged
In pre-school aged 3 years	33.5	31.7
In pre-school aged 4 years	39.2	65.9
Not in pre-school aged 3 years	66.5	68.3
Not in pre-school aged 4 years	60.8	34.1

Source: Australian Census Longitudinal Data Base, 2006-2011.

**Table 8a Children aged 3 and 4 years, disadvantage, education and parent employment status, Victoria 2011**

			Male parent	Employed	Employed	Employed	Not Employed	Not Employed	Not Employed	Sole parent	Sole parent	Not applicable	Total
			Female parent	Employed	Not Employed	Sole parent	Employed	Not Employed	Sole parent	Employed	Not Employed	Not applicable	
<i>Children aged 3 and 4 years in disadvantaged and advantaged households by education status; distribution of parent employment status</i>													
Disadvantaged	Pre-School	Victoria	3 & 4 years	18.4	32.0	0.4	2.6	13.7	0.3	9.5	23.1	0.0	100.0
Disadvantaged	School	Victoria	3 & 4 years	26.0	27.1	0.0	0.0	31.6	0.0	0.0	15.3	0.0	100.0
Disadvantaged	Other education	Victoria	3 & 4 years	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0
Disadvantaged	Not in education	Victoria	3 & 4 years	14.2	31.3	0.4	3.2	13.8	0.3	10.9	26.0	0.0	100.0
Disadvantaged	Total disadvantaged	Victoria	3 & 4 years	16.3	31.4	0.4	2.8	14.4	0.3	10.0	24.4	0.0	100.0
Advantaged	Pre-School	Victoria	3 & 4 years	54.9	37.6	0.6	1.1	1.0	0.0	3.8	0.9	0.0	100.0
Advantaged	School	Victoria	3 & 4 years	65.2	34.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Advantaged	Other education	Victoria	3 & 4 years	71.7	28.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Advantaged	Not in education	Victoria	3 & 4 years	56.8	34.6	0.3	1.8	0.9	0.0	3.5	2.1	0.0	100.0
Advantaged	Total advantaged	Victoria	3 & 4 years	55.9	36.2	0.4	1.4	1.0	0.0	3.6	1.5	0.0	100.0

**Table 8b Children aged 3 and 4 years, disadvantage, education and parent employment status, Victoria 2011 (continued)**

			Male parent	Employed	Employed	Employed	Not Employed	Not Employed	Not Employed	Sole parent	Sole parent	Not applicable	Total
			Female parent	Employed	Not Employed	Sole parent	Employed	Not Employed	Sole parent	Employed	Not Employed	Not applicable	
<i>Children aged 3 and 4 years in disadvantaged and advantaged households by parent employment status; distribution of education status</i>													
Disadvantaged	Pre-School	Victoria	3 & 4 years	50.8	45.8	50.7	40.4	42.8	49.4	42.7	42.7	0.0	45.0
Disadvantaged	School	Victoria	3 & 4 years	3.6	1.9	0.0	0.0	4.9	0.0	0.0	1.4	0.0	2.2
Disadvantaged	Other education	Victoria	3 & 4 years	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.3
Disadvantaged	Not in education	Victoria	3 & 4 years	45.7	52.3	49.3	59.6	50.3	50.6	57.3	55.9	0.0	52.5
Disadvantaged	Total disadvantaged	Victoria	3 & 4 years	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0
Advantaged	Pre-School	Victoria	3 & 4 years	53.1	56.1	73.7	43.1	56.0	0.0	57.1	35.3	0.0	54.0
Advantaged	School	Victoria	3 & 4 years	1.5	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
Advantaged	Other education	Victoria	3 & 4 years	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Advantaged	Not in education	Victoria	3 & 4 years	45.2	42.5	26.3	56.9	44.0	0.0	42.9	64.7	0.0	44.5
Advantaged	Total advantaged	Victoria	3 & 4 years	100.0	100.0	100.0	100.0	100.0	0.0	100.0	100.0	0.0	100.0

Table 8c Children aged 3 and 4 years, disadvantage, education and parent employment status, Victoria 2011 (continued)													
			Male parent	Employed	Employed	Employed	Not Employed	Not Employed	Not Employed	Sole parent	Sole parent	Not applicable	Total
			Female parent	Employed	Not Employed	Sole parent	Employed	Not Employed	Sole parent	Employed	Not Employed	Not applicable	
<i>Children aged 3 and 4 years by education status by parent employment status; distribution of disadvantaged and advantaged households</i>													
Disadvantaged	Pre-School	Victoria	3 & 4 years	5.5	12.2	14.1	18.6	36.9	49.4	22.9	37.4	0.0	13.3
Disadvantaged	School	Victoria	3 & 4 years	0.4	0.5	0.0	0.0	4.2	0.0	0.0	1.2	0.0	0.7
Disadvantaged	Other education	Victoria	3 & 4 years	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.1
Disadvantaged	Not in education	Victoria	3 & 4 years	5.0	14.0	13.6	27.4	43.4	50.6	30.7	49.0	0.0	15.5
Advantaged	Pre-School	Victoria	3 & 4 years	47.3	41.1	53.3	23.3	7.6	0.0	26.5	4.4	0.0	38.1
Advantaged	School	Victoria	3 & 4 years	1.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
Advantaged	Other education	Victoria	3 & 4 years	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Advantaged	Not in education	Victoria	3 & 4 years	40.3	31.2	19.0	30.7	6.0	0.0	19.9	8.0	0.0	31.3
<b>Total children</b>		<b>Victoria</b>	<b>3 &amp; 4 years</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>0.0</b>	<b>100.0</b>

Source: ABS Census 2011.

## Mornington Peninsula early childhood intervention – program design

The features of the program design are based on the Perry School Program albeit with a lower child/teacher ratio. The long-run performance in cost indicators are given in Table 9. Given an annual budget of \$1 million for a two year program at any one time, 48 children would be in the program with 24 in each of the two years.

Table 9 Assumed strategy of cost structure	
Total annual budget (\$ <sub>2015</sub> million)	1
Program length (year)	2
Teacher hours per week	20
Number of weeks per year	35
Child/teacher ratio	3
\$/hour cost (including overhead costs) <sup>(a)</sup>	80
Annual cost per child \$ <sub>2015</sub> '000	18.7
Rent (\$ <sub>2015</sub> '000)	100.0
Number of children in program	48
Number of children aged 4	24

Note: (a) \$60 an hour teacher cost. Assume an employment status for teachers is an average of 42 weeks a year.

Before the benefit-cost ratio of early childhood intervention policies is assessed from the national perspective it is necessary to define the benefits that would be generated if early childhood intervention policies succeeded in diverting at least some of the children from a largely disadvantaged life-cycle to the life-cycle that is typically achieved by children from advantaged households.

The benefits accumulate from savings in regrettable expenditures (like prison costs) and in social security support for people who, as a result of their disadvantaged beginning in life, spend lengthy periods in unemployment or not in the workforce.

### Regrettable expenditures: The cost of sustained life-cycle disadvantage

In order to evaluate the cost of disadvantage and the benefits of reducing the costs of disadvantage, we employ the concepts of regrettable expenditures and regrettable components of GDP.

Regrettable expenditures are expenditures which could either be avoided without impacting on the long-run growth potential of the economy, or because the productive capacity of the economy is not affected despite this being the intention of the expenditure. Both types of expenditure arise by allowing disadvantage to persist where it could otherwise have been eradicated.

To the extent that children from disadvantaged households enter into disadvantaged status as adults when a reasonable cost intervention would have prevented this outcome, the expenditure on education services, and also on health services and related infrastructure, that society allocated to prepare them for their adult role can be designated as regrettable; wasted in the sense that they fail to contribute to economic activity (or, perhaps, to successful child rearing in the next generation) and



thereby fail to generate for the community a reasonable return on its investment in them. Further categories of regrettable expenditures include incarceration costs, in so far as these are related to disadvantaged status, and the social security payments necessary to raise disadvantaged households to a minimum income due to their inability to generate a reasonable income from work.

A second round of regrettable expenditure also derives from the failure to change the status of a child growing up in a disadvantaged household to advantaged status in adult life. It arises because the unemployment rate in Australia is reasonably stable at between 5 and 6 per cent, kept there by policy action. When employment demand is growing more rapidly than workforce growth the rate of international immigration is increased by the policy authorities and conversely the rate of immigration is reduced when employment growth is less than the workforce growth. This is how the unemployment rate was reduced following the 1991 recession and how it has been held at between 5 and 6 per cent since the turn of the century. Thanks to this process the failure to exploit opportunities to convert disadvantage background children into normal productive workforce members will result, perhaps after lags in adjustment, in additional international migrants being brought in to substitute for the inability of the locally-born disadvantaged adults to function normally in the workforce. This gives rise to a second round of regrettable expenditures due to the infrastructure expenditures necessary to support the expanded population and current expenditures on health and education for the adult migrants and their children. However, it also means that some of the regrettable expenditures on social security payments due to unemployment and under-employment result from macroeconomic policy decisions and are not, strictly speaking, the result of under-investment in early childhood education. On the other hand, the perpetuation of disadvantage gives rise to further social costs from the existence of a truculent disadvantaged class with potential for antisocial behaviour including, fashionably, recruitment to terrorist causes. In the analysis these two classes of cost are assumed to balance out.

Finally, there is a third round of regrettable expenditures. This flows from the fact that children born into disadvantaged households have a significant probability of following their parents' disadvantaged status and of living in disadvantaged households when they reach adulthood. The current and future infrastructure expenditures spent on these children will also be regrettable.

## **Program outcomes: Benefit cost analysis**

The key assumptions of the benefit-cost analysis are given in Tables 10 and Table 11.

For the sake of argument it has been assumed that a program is launched which targets 24 disadvantaged children aged 3 and 4 at a cost of just over \$<sub>2015</sub> 40,000 each, spread over two years, a total cost of \$1 million a year.

An important set of assumptions is focussed on the labour market attributes of these 24 children, presuming that, in the absence of the targeted intervention, they all become disadvantaged adults. The assumptions are that, in each year after they become adults, 30 per cent of them are in employment with 70 per cent of these in casual or part-time employment. The average hours worked by those in employment are 1,022 per year, giving full-time equivalent employment of 4.7 persons out of the 24.

If the disadvantaged group of 24 were to achieve average labour market participation for advantaged households, they would accredit 17 full-time equivalent labour supply positions to the economy. Hence, due to their disadvantaged status, there will be a shortfall of 12 full-time equivalent positions which is in due course offset by the importation of 17 adult migrants, who are assumed to be accompanied by the same number of children.

Table 10 Program benefit-cost estimates – other assumptions		
1.	Average share of employed in full-time employment	30
2.	Average share of employed in part-time or casual employment	70
3.	Share of lone households	50
4.	Share of lone households with two children	50
5.	Average education expenditure per year primary education (\$ <sub>2015</sub> '000)	14.7
6.	Average child education expenditure per year – secondary education (\$ <sub>2015</sub> '000)	17.0
7.	Average health expenditure per annum (\$ <sub>2015</sub> '000)	
	0–4	2.0
	5–14	0.8
	15–24	1.4
	25–44	2.0
	45–54	3.0
	55–64	4.0
	65	8.0
8.	Net whole life infrastructure capital stock per capita <sup>(a)</sup> (\$ <sub>2015</sub> million)	0.11
9.	Total expenditure to age 65 including depreciation expenditure on infrastructure capital stock (\$ <sub>2005</sub> million per capita)	0.35
10.	Minimum income lone households (\$ <sub>2015</sub> '000)	16
11.	Minimum income lone households with two children	32
12.	Evaluation horizon years	65
13.	Year in which additional migrants are taken in – family unit of two parents and two children	26
14.	Average age of migrant children when arriving in Australia (year)	8
15.	Probability of intergenerational transfer in disadvantage status	0.5

Note: (a) electricity, gas, transport, health, education and housing capital stock.

If the labour market experience of the disadvantaged group was better than that assumed, for example, by a higher proportion in employment and a higher proportion in full-time employment, the required level of migration would be lower than 17 and the level of regretted expenditures on both the disadvantaged group and migrants would also be less. Social security payments would also be reduced.

Given these assumptions, total lifetime undiscounted regretted expenditures on the 24 would be \$<sub>2015</sub> 24.3 million. The total regretted expenditures on the descendants of the first cohort of disadvantage (the children of the 24) would be \$<sub>2015</sub> 10.5 million to age 65 of their parents. Further regretted expenditures on immigrants result from the failure of the 24 disadvantaged children to achieve the same workforce status of those from advantaged households. Total regretted expenditures to age 65 of the target group of 24 will be \$<sub>2015</sub> 47.3 million. At a 4 per cent real discount rate this comes to \$<sub>2015</sub> 15.3 million.

The second column of Table 11 assumes a success rate of 20 per cent, not dissimilar to the Perry School outcome in achieving advantaged household status. This removes five people from the disadvantaged pool, reducing the number of migrants to 14. Total regretted expenditures on the target group of 24 are reduced by \$<sub>2015</sub> 4.9 million, \$<sub>2015</sub> 2.1 million is saved on their children and \$<sub>2015</sub> 2.5 million on migrants, giving a total saving of \$<sub>2015</sub> 9.5 million which translates into savings of \$<sub>2015</sub> 2.7 million in discounted terms. The benefit cost ratio is 2.8.

Again from Table 11 the savings in regretted expenditures are \$<sub>2015</sub> 18.9 million with a benefit cost ratio of 5.6 if the success rate is 40 per cent.

The benefits will be less if the program includes children who, in the normal course of events, would have transitioned from disadvantaged to advantaged without intervention; in other words, when a participant is selected who is not a significant of long-term disadvantage. In terms of the benefit-cost calculations this would be the same as reducing the target group to 23 and therefore reducing regretted expenditures by one twenty fourth.

<b>Table 11 The intervention target group – intervention and non-intervention outcome scenarios</b>				
	<b>Unit</b>	<b>Base case – No intervention</b>	<b>Intervention – 20% success rate</b>	<b>Intervention – 40% success rate</b>
Number subject to targeted intervention	Number	24	24	24
Success rate	Per cent	0.0	20.0	40.0
Number remaining in disadvantage	Number	24	19	14.5
Number of children in disadvantage households	Number	24	19	14.5
Average number employed – per annum	Number	8.0	6.4	4.8
Average hours worked	Number	1,022.4	1,022.4	1,022.4
\$ per hour	2015	25.0	25.0	25.0
Full-time equivalent employment	Number	4.7	3.8	2.8
Disadvantaged households – Average income from work	\$ <sub>2015</sub>	25,560.0	25,560.0	25,560.0
Disadvantaged households – Average minimum income	\$ <sub>2015</sub>	24,000.0	24,000.0	24,000.0
Disadvantaged households – Average income	\$ <sub>2015</sub>	36,396.0	36,396.0	36,396.0
Disadvantaged households – Social security income	\$ <sub>2015</sub>	13,164.0	13,164.0	13,164.0
Full time equivalent supply from advantaged persons	Number	16.9	13.5	10.1
Number of adult migrants required to offset labour market shortfall	Number	17.4	13.9	10.4
Number children migrants	Number	17.4	13.9	10.4
Total regretted social and infrastructure expenditures (including social security payments) – first disadvantaged cohort to 65	\$ <sub>2015</sub> million	24.3	19.4	14.6
Total regretted social and infrastructure expenditure – second disadvantaged cohort to age 65 of first cohort	\$ <sub>2015</sub> million	10.5	8.4	6.3
Total regretted social and infrastructure expenditures – substitute adult migrants and their children	\$ <sub>2015</sub> million	12.5	10.0	7.5
Total regretted expenditures	\$ <sub>2015</sub> million	47.3	37.8	28.4
Cumulative discounted regret expenditures	\$ <sub>2015</sub> million	15.3	12.6	9.9
Benefit – cost ratio	Ratio	0.0	2.8	5.6

## The total cost of not removing economic disadvantage on school performance in the Mornington Peninsula

Assuming that a 20 per cent success rate applies to all the aged 3 or aged 4 target group, if the program was scaled up to \$<sub>2015</sub> 10 million annually the number of children shifted to advantage status each year would be 44. This would save \$<sub>2015</sub> 87 million in regretted government expenditures through to the aged 65 for this group or an average savings of \$<sub>2015</sub> 1.4 million per annum. A success rate of 40 per cent would double the annual expenditure savings.