

Chapter 12

ECONOMIC ANALYSIS

A number of recent literature reviews of early intervention, prevention and promotion programs for young children and their families, described earlier in this report, have emphasized the importance of including economic analyses of costs and benefits in evaluations of the quality of programs. Although few reports in the literature report such economic analyses, they seem to be particularly valuable when attempting to draw conclusions about social policy implications from research.

The purposes of this chapter are to present an analysis of the costs of the Better Beginnings, Better Futures Project, and to begin to explore the question of whether the program model is economically viable whether it has the potential for translating the larger good of society by avoiding costs of remedial action later in life.

COSTS OF THE BETTER BEGINNINGS, BETTER FUTURES PROJECT

Costs represent the value of the resources used to deliver the Better Beginnings, Better Futures programs in the various sites in Ontario. Costs of the programs comprise the direct expenditures necessary to run the programs, which include resources consumed by them as well as expenditures borne by clients participating in the programs. The resource requirements for programs are known as their ingredients, and it is the social value of those ingredients that make up the overall cost of the Better Beginnings, Better Futures model.

The key elements in early childhood interventions are labour (of varying levels of skill and expertise), facilities, equipment, materials, and any other items that are necessary to the successful implementation of the interventions. Donated volunteer time is an essential other item, particularly for community-based interventions such as those in Better Beginnings. The reason for capturing volunteer time is that, even if government did not have to pay for this time, it does represent a *cost* to someone. The dollar value of services-in-kind volunteer time can be determined by estimating the cost of having to hire someone to do the job.

The analysis of costs takes on two dimensions. The first relates to how costs are compared to the outcomes of the interventions (which will be dealt with in the latter part of this chapter). Briefly, the analysis here can take the form of cost-effectiveness, cost-benefit, or cost-savings analyses. The second dimension relates to who actually pays the costs of the interventions. The decision-maker who is paying for part of the overall cost of implementing the intervention is not likely to be interested in the costs of volunteers. Yet if the more successful interventions include significant contributions that are paid for by organizations and people external to that decision-maker, the policy-maker should be aware of these cost distributions. Otherwise, decisions about which interventions to replicate or implement on a larger scale might be based on an erroneous foundation.

Useable financial data are available for the eight Better Beginnings demonstration sites for various years from 1992/3 through 1997/8. Data on volunteer time have been provided by the sites for the years 1994/5, 1995/6 and 1996/7. Both types of cost data have been broken down by major programs; that is, Home Visiting, Child-Focused Programs, Family/Parent-Focused Programs, Community Development Programs, and Classroom Enrichment. For Walpole Island, an additional program, Community Healing, was included in the analyses.

Complete direct government costs and volunteer time are available for all eight sites for two years: 1995/6 and 1996/7. These are the two years that will be reported in this chapter. In many ways, these two years are those which best represent the ongoing costs of the Better Beginnings, Better Futures Project. All site programs had been operating at full funding levels for two years (1993/4 and 1994/5). Programs had been finetuned, staff were experienced in their positions, and the programs were well-known in the local neighbourhoods and beyond. The demonstration phase was due to end in December 1997, so no serious staff or cost reductions had yet been undertaken. Thus, the maximum annualized costs for operating the local Better Beginnings programs are accurately reflected in the 1995/6 and 1996/7 budget figures presented in this chapter.

Direct Government Costs

Younger Cohort Sites. Programs funded directly by the Ontario government in the five younger cohort sites were implemented and operated under four major categories: Home Visiting, Other Child-Focused, Family/Parent Focused, and Community Development, plus Community Healing at Walpole Island.

As shown in Table 12.1, approximately \$2.8 million was spent on these programs by the five sites combined each year. Of the total amount invested in all five sites for the two years combined, Kingston and Toronto accounted for about 25% each, followed by Ottawa and Guelph (18% each) and Walpole Island (13%). Close to half of these expenditures were for the Home-Visiting programs, followed by Family/Parent-Focused programs (about 21%), Community Development programs (20%), Other Child-Focused programs (11%) and Community Healing (1%). This general trend was observed in three of the five sites, with Guelph and Walpole Island being the exceptions. In Guelph, resources were more evenly distributed among the four program areas: Home Visiting (33%), Other Child-Focused (26%), Family/Parent-Focused programs (25%), and Community Development (16%). In Walpole Island, Community Development programs used almost half of the resources.

Older Cohort Sites. In the three older cohort sites, programs funded directly by the Ontario government were implemented and operated under four major categories: Classroom Enrichment, Other Child-Focused, Family/Parent-Focused, and Community Development. As shown in Table 12.2, just over \$1.7 million was spent on these programs by the three sites combined each year. Of the total amount invested in all three sites for the two years combined, Sudbury accounted for about 37%, followed by Cornwall (33%) and Highfield (29%). Resources were roughly evenly distributed among the four program areas: Classroom Enrichment (30%), Other Child-Focused (25%), Community Development (23%) and Family/Parent-Focused (22%). In Cornwall, Classroom Enrichment/Primary School Programs accounted for about 48% of total costs, followed by Community Development (26%), Family/Parent-Focused Programs (15%) and Other Child-Focused Programs (11%). In Highfield, Classroom Enrichment/Primary School programs accounted for about 38% of total costs, followed by Family/Parent-Focused programs (33%), and Community Development programs (29%). In Sudbury, about 58% of expenditures were for Other Child-Focused programs, followed by Family/Parent-Focused programs (18%), Community Development programs (16%), and Classroom Enrichment/Primary School programs (8%).

Table 12.1 Direct Government Costs for Younger Cohort Sites, by Program and Year (1995/6 to 1996/7), Ontario Better Beginnings, Better Futures

Site and Year	PROGRAM					
	Home Visiting	Other Child-Focused	Family/Parent-Focused	Community Development	Community Healing	Total
- \$ -						
<u>Guelph</u>						
1995/6	163,119	135,304	124,849	77,633	0	500,905
1996/7	165,396	129,052	125,304	80,240	0	499,992 ¹
Total	328,515	264,356	250,153	157,873	0	1,000,897
<u>Kingston</u>						
1995/6	376,589	159,136	99,077	66,230	0	701,032
1996/7	393,751	157,465	107,270	65,073	0	723,559
Total	770,340	316,601	206,347	131,303	0	1,424,591
<u>Ottawa</u>						
1995/6	300,282	12,773	128,978	74,494	0	516,527
1996/7	311,558	7,160	127,431	69,830	0	515,979
Total	611,840	19,933	256,409	144,324	0	1,032,506
<u>Toronto</u>						
1995/6	397,870	0	161,593	172,444	0	731,907
1996/7	390,509	0	159,217	160,786	0	710,512
Total	788,379	0	320,810	333,230	0	1,442,419
<u>Walpole Island</u>						
1995/6	63,933	0	73,232	183,377	56,389	376,931
1996/7	67,694	0	70,665	160,878	26,620	325,857
Total	131,627	0	143,897	344,255	83,009	702,788
<u>All Sites</u>						
1995/6	1,301,793	307,213	587,729	574,178	56,389	2,827,302
1996/7	1,328,908	293,677	589,887	536,807	26,620	2,775,899
Total	2,630,701	600,890	1,177,616	1,110,985	83,009	5,603,201
Average Cost/Site:						\$560,320

Notes:

¹ Annual data estimated from third-quarter figures for 1996/7.

Table 12.2 Direct Government Costs for Older Cohort Sites, by Program and Year (1995/6 to 1996/7), Ontario Better Beginnings, Better Futures

Site and Year	PROGRAM				
	Classroom Enrichment	Other Child-Focused	Family-Parent Focused	Community Development	Total
- \$ -					
<u>Cornwall</u> ¹					
1995/6	228,424	69,502	86,564	191,953	576,443
1996/7	321,593	62,934	92,327	104,084	580,938
Total	550,017	132,436	178,891	296,037	1,157,381
<u>Highfield</u>					
1995/6	200,761	0	165,520	143,711	509,992
1996/7	186,292	0	175,669	150,205	512,166
Total	387,053	0	341,189	293,916	1,022,158
<u>Sudbury</u>					
1995/6	44,172	395,636	105,631	94,748	640,187
1996/7	63,820	355,289	125,009	113,824	657,942
Total	107,992	750,925	230,640	208,572	1,298,129
<u>All Sites</u>					
1995/6	473,357	465,138	357,715	430,412	1,726,622
1996/7	571,705	418,223	393,005	368,113	1,751,046
Total	1,045,062	883,361	750,720	798,525	3,477,668
Average Cost/Site:					\$579,611

Notes:

¹ The program costs in Cornwall are based on functional budgets which, though unaudited, were carefully reviewed by the financial person at the site for reasonable accuracy. The total figures for Cornwall are based on audited statements.

Direct Costs Per Child and Family

Since the intent of Better Beginnings, Better Futures programs is to be available to and potentially accessed by *all* children in the respective site locations, the cost of the programs has been related to the total number of children in each of these areas; that is, we have calculated a cost per capita .

Younger Cohort Sites. The 1996 Census has been used to calculate a cost-per-child of the overall programs in each site. Census data report the number of children age 0 to 4 living in a particular area; this age range directly corresponds to the main programming focus of the younger cohort sites. Since not all children did in fact, participate, this cost figure will be too low.

Therefore, another way to examine the costs is by relating them to the users of, or participants in, the services. Each of the younger cohort sites (with the exception of Walpole Island) collected program participation information from the families in the community attending Better Beginnings programs and meetings for at least one year. No site collected program participation data on all of their programs: three sites collected participation data on approximately one third of their programs, and one site gathered data

on approximately half of its programs. Still, these site-provided program participation data do offer some insight into the degree of contacts families made with the Better Beginnings programs, although they certainly *underestimate* family involvement.

Table 12.3 shows the distribution of program expenditures per child and per family in the five younger cohort sites for 1996/7. Obviously, the larger the number of children in each respective location, the smaller will be the cost per child. In 1996/7, Toronto, with the highest number of children, had the lowest cost per child (\$632) and Walpole Island, with the fewest children, had the highest cost per child (\$1,303). The average cost per child for the five sites combined is \$733 per year. When looking at the costs per *family*, the average cost per family for the four sites combined is \$1,390 per year, with a range from \$882 in Ottawa to \$1,947 in Toronto.

Since the cost-per-child estimate is likely too low and the cost-per-family too high, the true average cost might best be viewed as lying somewhere between the two. This yields an estimate of approximately \$1,100 per family per year.

Table 12.3: Total Number of Children in Younger Cohort Sites, and Direct Cost per Child and Family in 1996/7 Year, Ontario Better Beginnings, Better Futures

Sites	Direct Costs 1996/7	Number of Children ¹	Cost/Child	Number of Families ²	Cost/Family
Guelph	\$ 499,992	625	\$ 800	279	\$1,792
Kingston	\$ 723,559	1,095	\$ 661	533	\$1,358
Ottawa	\$ 515,979	690	\$ 748	585	\$ 882
Toronto	\$ 710,512	1,125	\$ 632	365	\$1,947
Walpole Island	\$ 325,857	250	\$1,303	na	na
ALL SITES	\$2,775,899	3,785	\$ 733	1,762	\$1,390 ³

Notes:

¹ 1996 Census tract data for areas served by Better Beginnings for children ages 0-4.

² This number reflects the number of families participating in Better Beginnings programs/meetings as recorded by the programs. This number is an underestimate of the total number of families participating, as not every program recorded attendance (program attendance was only recorded for approximately 20% to 50% of programs offered at each of the sites). Walpole Island did not collect any program participation information.

³ This figure was calculated by using the summed budgets for 1996/7 for all the younger cohort sites, excluding Walpole Island as no program participation figures are available (\$2,450,042 divided by 1,762 families).

Older Cohort Sites. For the older cohort sites, school records were used to obtain estimates of the number of children from 4 to 8 years old attending schools served by Better Beginnings; Census data were not specific enough because data were reported for the age group 5 to 14 years. In Highfield and Cornwall, many of their programs were classroom-based, so that all children attending school would have access to the programs. In Sudbury, the site-provided program participation data on 3 of their 18 programs revealed that over 80% of the cohort participated in programs, and it is very likely that almost all of the remaining children would have been involved in one of their classroom-based programs. Therefore, we are confident that using the school records to estimate the number of children in the sites between 4 to 8

years old will provide us with a realistic estimate of program participation. Table 12.4 reveals that the cost-per-child in the three sites combined for 1996/7 was \$1,130 and ranged from \$991 in Highfield to \$1,308 in Sudbury.

Table 12.4: Total Number of Children in Older Cohort Sites and Direct Cost-per-child in 1996/7 Year, Ontario Better Beginnings, Better Futures

Sites	Direct Costs 1996/7	Number of Children ¹	Cost / Child
Cornwall	\$ 580,938	529	\$1,098
Highfield	\$ 512,166	517	\$ 991
Sudbury	\$ 657,942	503	\$1,308
ALL SITES	\$1,751,046	1,549	\$1,130

Notes

¹ Based on the school records for areas served by Better Beginnings for children in Junior Kindergarten through to Grade 2 in 1996/7.

Services-in-Kind Expenditures

While direct government expenditures on early childhood interventions are essential, they represent only part of the story. Another major component of successful community-based interventions in health, education, and social services is the other direct program contribution that comes from volunteers (of unpaid time). In order to account for the total *real* cost of these interventions, these unpaid donations, or services-in-kind (SIK as referred to in Better Beginnings, Better Futures), have to be documented and costed. Through significant effort by staff at the Better Beginnings program sites, complete data on this volunteer effort were captured for the major program areas in the younger and older cohort site locations for the years 1994/5, 1995/6, and 1996/7. The volunteer contributions encompassed *unpaid* work provided by community members, program staff, service providers, and student placements/training programs in each of the major program areas. For the most part, this involvement included work on various committees, provision of program services, and general administration.

As was done for the direct government expenditures component, SIK are shown for the younger cohort and older cohort sites (see Table 12.5) for the years 1995/6 and 1996/7. To estimate the value of contributed hours, different hourly wages were allocated for the various types of volunteers, based on a code book generated by Ms. Angela Mione, Dr. Sheila Neysmith, and Dr. Marge Reitsma-Street (1995). Sites recorded volunteer hours separately for Better Beginnings staff, community members, service providers / secondments, and student placements / low-paid training programs. The estimated value of staff and community members volunteer time was \$14 per hour. This figure was suggested by Statistics Canada and by the Seniors Issue Group (ARA Consulting Group, 1994) to estimate the value of housework, caregiving or volunteer activities; this average hourly wage of \$14 is derived from the average wage of all occupations in 1992. For service providers and secondments, the estimated market value is \$25 per hour. For student placements / low paid training programs, the estimated value used was \$6.85 per hour, the minimum wage for Ontario, effective January 1, 1995. No adjustments were made for inflation, even though hours were contributed over time, between 1994 and 1997.

Younger Cohort Sites. Table 12.5 shows that the estimated value of unpaid volunteer time at the five younger cohort sites for the two-year period 1995/6 to 1996/7 amounted to just over \$1.1 million per year which is approximately \$230,000 per site. Overall for the five sites combined over the two years, the greatest proportion of volunteer hours was found in the Community Development programs (55%), followed by Administration/ General and Family/Parent-Focused programs (19% each).

Older Cohort Sites. With respect to the older cohort sites, the total value of these unpaid volunteer hours for all three sites combined was approximately \$500,000 per year which is approximately \$175,000 per site. When program distribution across sites was considered over the two years, the greatest proportion of volunteer hours was consumed by the Community Development programs (37%), followed by Classroom Enrichment programs (21%), Other Child-Focused programs (19%), Family/Parent-Focused programs (16%), and Administration/General (7%).

Table 12.5 Services-in-Kind¹ by Program and Year (1995/6 to 1996/7), Ontario Better Beginnings, Better Futures

YOUNGER COHORT SITES							
Site and Year	Home Visiting Volunteers	Other Child-Focused Volunteers	Family/Parent-Focused Volunteers	Community Development Volunteers	Administration/General Volunteers	Community Healing	Total Volunteers
- \$ - ²							
<u>All Sites</u>							
1995/6	47,893	22,526	274,707	646,264	211,116	14,226	1,216,732
1996/7	46,930	17,651	170,413	640,497	242,249	3,248	1,120,986
Total	94,823	40,177	445,120	1,286,761	453,365	17,474	2,337,718
Average Services-in-Kind Per Site Per Year							233,772
OLDER COHORT SITES							
Site and Year	Classroom Enrichment	Other Child-Focused Volunteers	Family/Parent-Focused Volunteers	Community Development Volunteers	Administration/General Volunteers	Community Healing	Total Volunteers
- \$ - ²							
<u>All Sites</u>							
1995/6	136,856	89,939	105,509	167,179	40,005	na	539,488
1996/7	87,311	112,923	61,644	225,839	31,330		519,047
Total	224,167	202,862	167,153	393,018	71,335		1,058,535
Average Services-in-Kind Per Site Per Year							176,423

Notes

¹ Estimates of the value of volunteer hours.

² Dollar values are based on hourly wage rates for the following types of volunteers: \$14/hour for Better Beginnings staff and community members (Statistics Canada and Seniors Issue Group, 1994), \$25/hour for service providers and secondments (estimated market value), and \$6.85/hour (Ontario minimum wage) for student placements/training programs.

DISCUSSION

Direct Government Costs

For the years 1995/6 to 1996/97, government has invested approximately \$4.6 million per year into the Better Beginnings programs across eight sites in Ontario, which is approximately \$570,000 per site. For 1996/7 it was estimated that the cost-per-child or family for the younger cohort Better Beginnings programs was between \$700 and \$1,400, and in the older cohort sites, the cost-per-child was approximately \$1,100.

How reasonable are these costs? That is difficult to answer in any absolute sense, but one way to put these estimated annual costs into perspective is to compare them with the costs of other prevention programs and with other services funded by the Ontario Government. Unfortunately, few programs have reported costs, and many that have, have been small-scale U.S.-based programs which were carried out in the 1960s and 1970s. In order to compare the estimated costs of the Better Beginnings program for 1996/7, costs of several other projects and services, expressed in 1997 Canadian dollars, are presented in Table 12.6 below.

Table 12.6: Comparison of Better Beginnings Program Costs with Other Prevention Programs and Ontario Funded Services

Programs/Services	Costs in 1997 Canadian Dollars ¹
Better Beginnings, Better Futures	\$1,100 - \$1,400 /child or family/year
Perry Preschool Project	\$8,600 /family/year
Elmira (NY) Home Visiting Project	\$4,300 /family/year
U.S. Comprehensive Child Development Project (CCDP: 1989-1994)	\$21,000 /family/year
U.S. HeadStart Program	\$6,400 /family/year
U.S. Infant Health and Development Program	\$14,300 /family/year
Ontario primary school ²	\$7,000 /child/year
Full-time licensed childcare in Ontario	\$8,500 /child/year

Notes:

¹ Canadian dollar worth \$0.70 in U.S. dollars in 1997.

² Lawton, Ryall & Menzies, 1996

These comparisons are instructive. The Perry Preschool Project, costing \$8,600 per family per year for two years, provided half-day preschool five days per week for each child and a weekly home visit to each child's mother during the school year. Short-term improvements were reported on children's IQ performance; no positive short-term effects were reported on children's social, emotional, or health outcomes, or any outcomes for parents. The Elmira Home Visiting project, which provided an average of nine nurse home-visits prenatally and monthly home visits for a maximum of two years postnatally, cost \$4,300/family/year, and the short-term outcomes of that project yielded no effects on children, while maternal outcomes were limited primarily to a group of 38 very high-risk mothers. The CCDP project, which provided low-income families with a home visitor/case manager for up to five years from the birth

of their child to school entry, cost an astounding \$21,000 per family per year, and there were no important outcome effects on either children or parents.

The Better Beginnings project funded a range of programs, including home visiting, parenting programs, child-focused playgroups, and school and classroom programs. Most of these programs were new resources to the local neighbourhoods and schools. However, a few programs, especially preschool and day care programs, were already in existence, and Better Beginnings funding provided enrichments, usually in terms of additional staff. Thus, comparisons of Better Beginnings costs with other more narrowly focused programs that provided entirely new resources (e.g., the Perry Preschool Project) must be made carefully.

From these comparisons, however, it appears that the annual costs of operating the Better Beginnings projects are extremely modest, particularly when one considers that many of the programs were new to the neighbourhood, and also that the programs were so broad, i.e., not focused exclusively on either children or parents, but also on the local neighbourhood, on integrating local service and on developing resident involvement in project management and other community development activities.

Services-in-Kind

An important dimension of Better Beginnings is the nature and extent of the volunteer input into the programs. At approximately \$3.4 million for the two years 1995/7, the value of the volunteer services is an important ingredient in the successful implementation and operation of the programs. Without these services-in-kind, either the sites would have had to scale back considerably or government would have had to increase its direct costs. Yet it is not only from the cost perspective that such volunteer services are pivotal to the success of the programs. It is suggested that a high degree of volunteering contributes to increased social cohesion and community capacity. For example, community members (e.g., parents and other family members) providing valuable unpaid services might be expected to develop greater feelings of ownership and empowerment that, in turn, may translate into increased self-assurance and autonomy. Over the long run, it is hoped that this will result in less dependency and reliance on expensive government-funded social and economic programs.

There are important longer-term questions concerning the relationship between direct funding and provision of valuable services-in-kind, including: How much difference (if any) do the extent and variation in services-in-kind make to the impacts of programs? Is there a best practices combination of paid and unpaid resources that would serve as a benchmark and that could be used for the replication and dissemination of similar programs in the future? These issues can be addressed only in relation to the long-term outcomes or effects of the Better Beginnings, Better Futures programs.

Economic Viability of the Better Beginnings Model

The previous discussion of the costs of implementing and operating the programs in the various Better Beginnings, Better Futures sites represents only one important element that must be considered in evaluating the effectiveness of such interventions. Policy makers need to know not only how much they cost, but also whether or not they represent good social investments. In this regard, it is necessary to determine the degree to which programs are providing direct benefits to parents and children, and to ascertain the value of the broader benefits to society at large. It is essential to appreciate, however, that assessment of the broader societal benefits of these programs cannot be estimated until the children are in their mid- to late teens and early twenties.

In the long run, Better Beginnings, Better Futures could produce improvements in such areas as school and educational achievement, economic self-sufficiency, lower levels of criminal activity, and improved

mental and physical health outcomes. For example, children from the Better Beginnings program areas may require fewer special-education programs, less social assistance, and fewer health care services, experience fewer arrests, and earn more income and contribute more tax revenues than would comparison children. It is in these areas that other early-intervention programs have been able to demonstrate that true cost savings resulted, but they began five to ten years after program completion (Barnett, 1993; Karoly *et al.*, 1997).

While the short-term effects and benefits of the Better Beginnings, Better Futures programs reported earlier appear promising, it is far too early to say with certainty that such programs would actually generate such long-term savings.

Furthermore, particular programs at each site appear to be more promising in some outcome areas than others. Again, however, it is impossible to predict differential long-term cost-effectiveness of these programs.

Of course, knowing that Better Beginnings is on track is important in order to assure government that their use of tax revenues can be justified, at least in part, by the potential savings to government they generate. While short-term outcomes may provide useful indicators of such potential cost savings, it must be stressed that long-term follow-up of the subjects is required if savings are to be fully accounted for. Most of the benefits that generate monetizable cost savings occur long after the intervention has been completed (Karoly *et al.*, 1997, p.78). This is the case with the Better Beginnings Project, where the full range of cost benefits and savings resulting from the prevention of emotional problems, for example, are expected to be realized years in the future.

CONCLUSION

True cost-benefit analyses of early-intervention and prevention projects in the literature are few, yet are essential for the ultimate formulation of policy, and adoption and dissemination of intervention programs. More complete and detailed evaluation of interventions is needed and must be built into programs when they are designed, as has been done in the case of Better Beginnings, Better Futures. It is certain that, if continued, the evidence for cost savings (and, in the longer term, cost benefits) will become more robust. In order for this to occur, however, long-term, longitudinal follow-up is essential. Such cost-benefit analyses will make important contributions to social policy formulation in the future.