

# Economic Evaluation of the Preparing for Life Home Visiting Programme Cost Analysis Preliminary Results

DEIRDRE COY

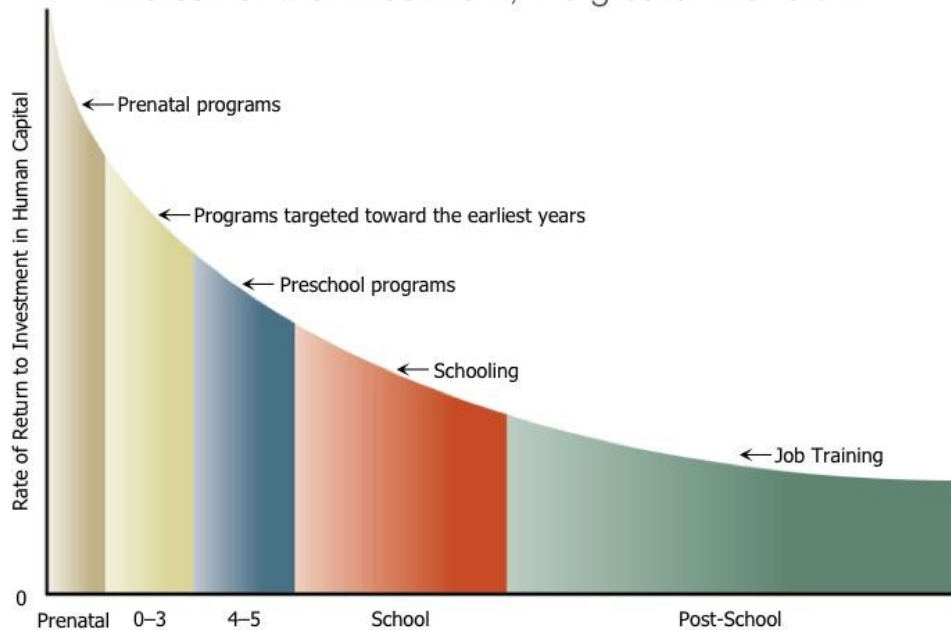
PEIN 24 SEPTEMBER  
2020

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# Economic Evaluation in Early Childhood

## EARLY CHILDHOOD DEVELOPMENT IS A SMART INVESTMENT

The earlier the investment, the greater the return



Source: [heckmanequation.org](http://heckmanequation.org)

Belfield et al (2006)

CBA

Perry Pre School

\$12.9 BCR

Charles et al (2011)

CEA

Conduct disorder

Cost £629 – 3839

Complex approach needed

Comparison needed

# Economic Evaluation in Early Childhood

Program name	Benefit to cost ratio \$
Nurse Family Partnership for low-income families	2.73
Triple P Positive Parenting Program (All levels)	8.80
Incredible Years: parent training	0.85
Parents as Teachers	0.66
Healthy Families America	0.68
Parent Child Home Program	0.27
Early childhood education for low income 3/4yrs	3.16
Head Start	2.63
Early Head Start	0.16
K-12 tutoring by peers	13.08
Class size: reducing class size by one student in kindergarten	9.07
Teacher performance pay programs	7.19
Good Behavior Game	84.63
Youth mentoring programs	1.92

Washington State Institute for Public Policy: Economic Return to Early Intervention  
<http://www.wsipp.wa.gov/BenefitCost>

Preparing for Life is  
a complex intervention  
with parents, in homes,  
over the pre-school years,  
evaluated using an RCT.

Aims to affect school readiness  
Many outcomes and timepoints

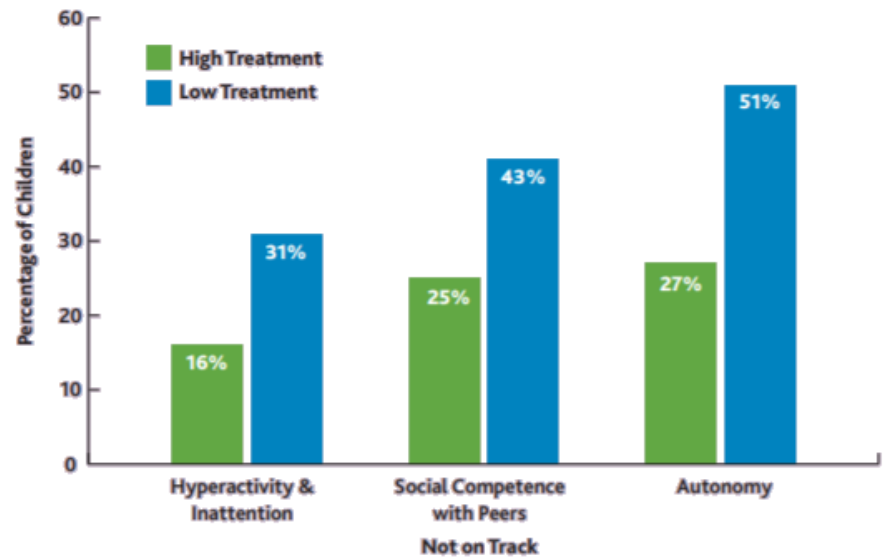
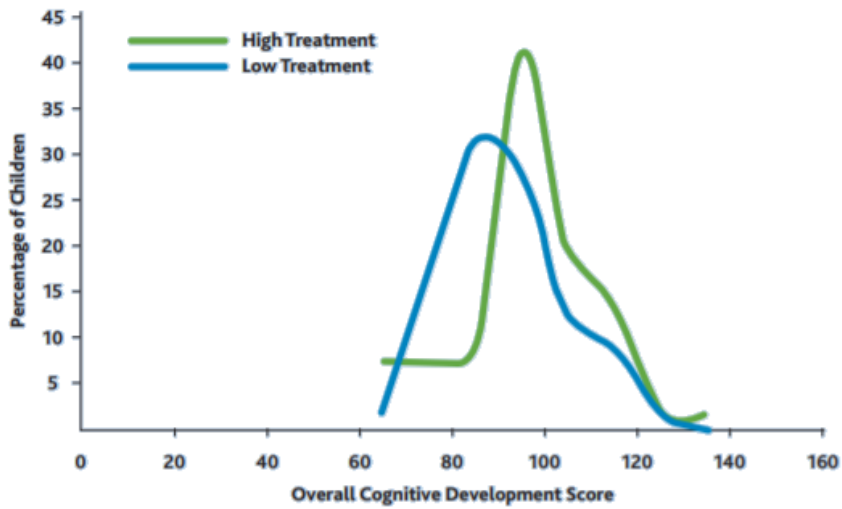
Remove barriers to participation  
Allows repeated, long-term contact  
Public health and education

Pregnancy to school  
Years: 2005 – 2017  
Active: 2008 – 2015

RCT in low SES Dublin community  
n = 233, recruited over 2.5 years  
Positive effects on cognition, social-  
emotional skills, health

# Preparing for Life – Final Report

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# Preparing for Life - Economic Evaluation

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## Perspective

Governmental: Costs & returns to public health, education initiative

### 1. Cost analysis

Programme costs, by activity, treatment, and dosage  
Overall and in steady state

#### 1.B Cost analysis incorporating immediate ROI

~Easily monetiseable returns such as health and educational service use

### 2. Cost-effectiveness analysis

Useful units that are not easily monetiseable, eg CBCL and IQ  
Disaggregation allows cross-programme comparison

### 3. Cost-benefit analysis

Forecasting labour market participation, criminality, and health  
Get an idea of long-term unit and monetary returns

# Cost Analysis Literature

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Drummond et al (2015)

Methods for the economic evaluation of healthcare programmes

Ramsey et al (2015)

ISPOR best practice in economic evaluations of clinical trials

O'Neill et al (2013)

Economic Evaluation of the Incredible Years Ireland programme  
Single outcome, longer follow-up  
Cost: €1,463 / patient, 11% rate of return  
Yardstick

***Estimate costs.***

***Prioritise***

***Isolating the treatment arm***

***And large costs.***

***Build on others.***

# Challenge: Data Availability

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## Costs

Programme complexity  
Irish unit costs (financial returns)  
Aligning data sources

## Returns

Teasing out correlated outcomes (not a data availability issue!)  
Assigning value  
Deciding a forecasting method

## Overall

Answering as many pertinent questions as possible ~accurately  
Best versus useful practice



# Data Sources

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## PFL Accountancy Records, 2015 - 2017

- Most incoming and outgoing expenditure
- Varying levels of detail
- 2005, 2006: Missing data
- 2015- 2017: Missing data
- Difficult to differentiate treatment arms, shared resources

## Report to Atlantic Philanthropies, 2011 Report to Centre for Effective Services, 2013

- Time use for staff
- Different sub-categories for costs

## Deep Blue Implementation Data

- Unruly, enormous data dump
- Visits, phone calls, meetings, transfers, tip sheets etc – participants & staff

## Implementation and Evaluation Records

- Correspondence, reports, databases, notes, etc
- Workshop dates, value of individual transfers, etc

# Data Sources

<b>MDC 14-PREGNANCY, CHILDBIRTH AND THE PUERPERIUM</b>									
O01A	S	CAESAREAN DELIVERY +CCC	472	11,097	2.21	12.87	3	30	504
O01B	S	CAESAREAN DELIVERY +SCC	2,216	6,755	1.34	7.34	3	16	493
O01C	S	CAESAREAN DELIVERY -CSCC	14,669	5,234	1.04	4.99	3	8	515
O02A	S	VAGINAL DELIVERY +OR PR +CSCC	277	4,638	0.92	4.17	2	9	612
O02B	S	VAGINAL DELIVERY +OR PR -CSCC	612	3,350	0.67	3.37	2	8	553
O03Z	S	ECTOPIC PREGNANCY	620	4,802	0.95	3.02	1	10	608
O04Z	S	POSTPARTUM & POST ABORTN+OR PR	229	2,827	0.56	3.09	1	10	418
O05Z	S	ABORTION+ OR PROC	4,991	1,568	0.31	1.33	1	2	483
O60A	M	VAGINAL DELIVERY +CSCC	2,311	3,561	0.71	4.86	2	13	546
O60B	M	VAGINAL DELIVERY -CSCC	35,084	2,365	0.47	2.95	1	7	613
O60C	M	VAGINAL DEL SINGLE UNCOMPL	12,212	1,795	0.36	2.16	1	5	646
O61Z	M	POSTPARTUM & POST ABORTN-OR PR	1,680	1,636	0.33	2.35	0	8	532

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AR DRG	Partition	Description (Inpatient)	All HIPE Inpatients Cases	Inpatient Casemix Cost per Case (€)	Relative Values	Average Length of Stay	Low	High	Multi High Per Diem (€)
O63Z	M	ABORTION-OR PROC	3,140	1,433	0.28	1.33	1	3	822
O64A	M	FALSE LABOUR <37 WK/+CCC	2,374	1,296	0.26	1.34	0	4	732
O64B	M	FALSE LABOUR >=37 WK -CCC	4,627	692	0.14	0.77	0	2	501
O66A	M	ANTENATAL&OTH OBSTETRIC ADM	21,973	1,457	0.29	2.12	1	6	522
O66B	M	ANTENATAL&OTH OBSTETRIC ADM,SD	11,625	438	0.09	0.5	0	3	

# Treatment Arms – Data Availability

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## Intervention Group

Home visits, 1 – 2 / month

Triple P, optional

Baby massage

Cost	Implementation
Good	Excellent
Good	Good
Poor	Poor

## Both Groups

Access to enhanced preschool

~€125/a in toy and book packs

Access to support worker

Public health workshops

Social events

Good	Fair
Good	Fair
Fair	Fair
Good	Fair
None	None

# Activities and Example Costs

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## Development (2005 – 2006)

Research  
Recruitment

### Improving Parenting

Mentors & HSE specialists  
Programme materials

### Improving Childcare and Agency Services

Workshops  
Centre investment

### Programme Evaluation

Research  
Parental involvement

### Impacting Policy

Communications officer  
Conferences

## Shared Costs

Management  
Administration  
Overheads  
Capital

## Hidden Costs

Transfers, Northside  
Transfers, Phase II  
Parental  
Opportunity

# Methodology

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## Outcomes

- Total cost
- Steady state year
- Cost per home visit
- Cost per child

## Parameters

- Intention to treat & by dosage
- Funder perspective
- 2011 €
- Capital depreciation – 5% straightline discount, resale value of zero by 2014
- Opportunity cost 0.04PV
- No development, evaluation, communications, or shared treatment costs
- Wages assigned to activity using 2011 and 2013 timeuse reports
- 80% overheads & capital (ex transport) assigned to A1 Improving Parenting

## Considerations

- Prioritise biggest impacts and treatment arms
- Sensitivity analysis
- Limitations here and elsewhere

# Sensitivity Analysis

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## Shared Costs

All wages, overheads & capital assigned to A1 Improving Parenting  
Wages assigned in +/- 20% of reported  
Fix 100% mentor, mentor leader, manager at 100%; vary others  
Overheads and capital: 50 (10) 100 assigned to A1 Improving Parenting

## Capital

Value offset at time zero

## Parent Costs

1 and 1.5 x minimum wage  
Childcare costs already incorporated  
No travel costs

## Excluded Costs

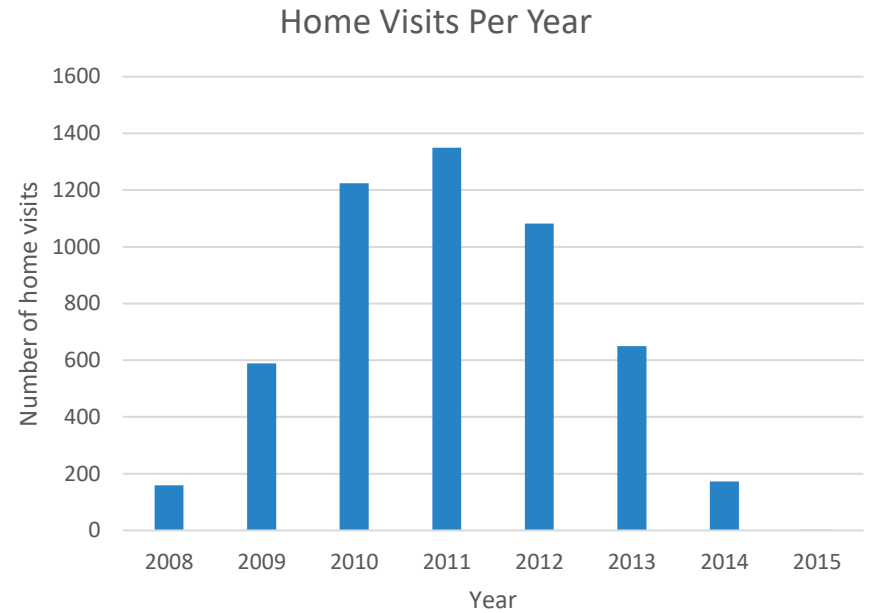
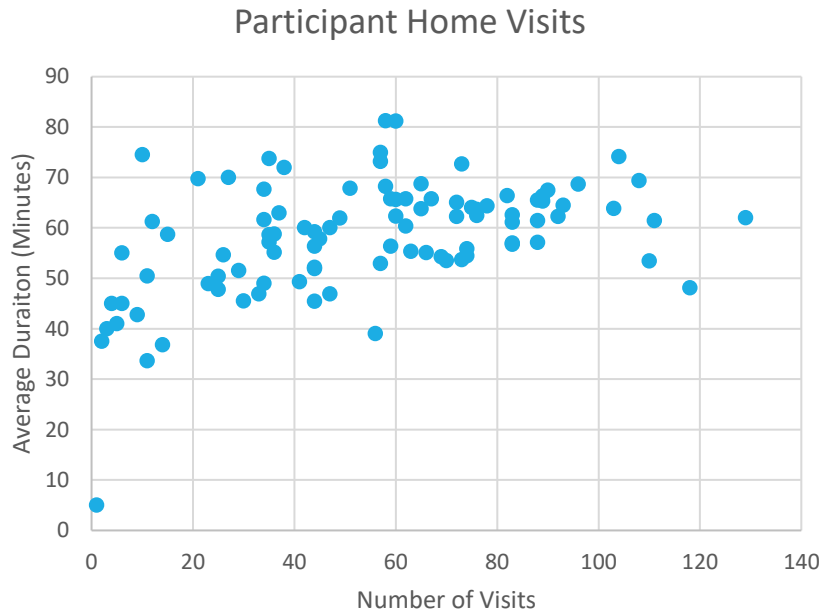
Development, evaluation, policy & shared treatment costs

## Discount Rates

# Implementation

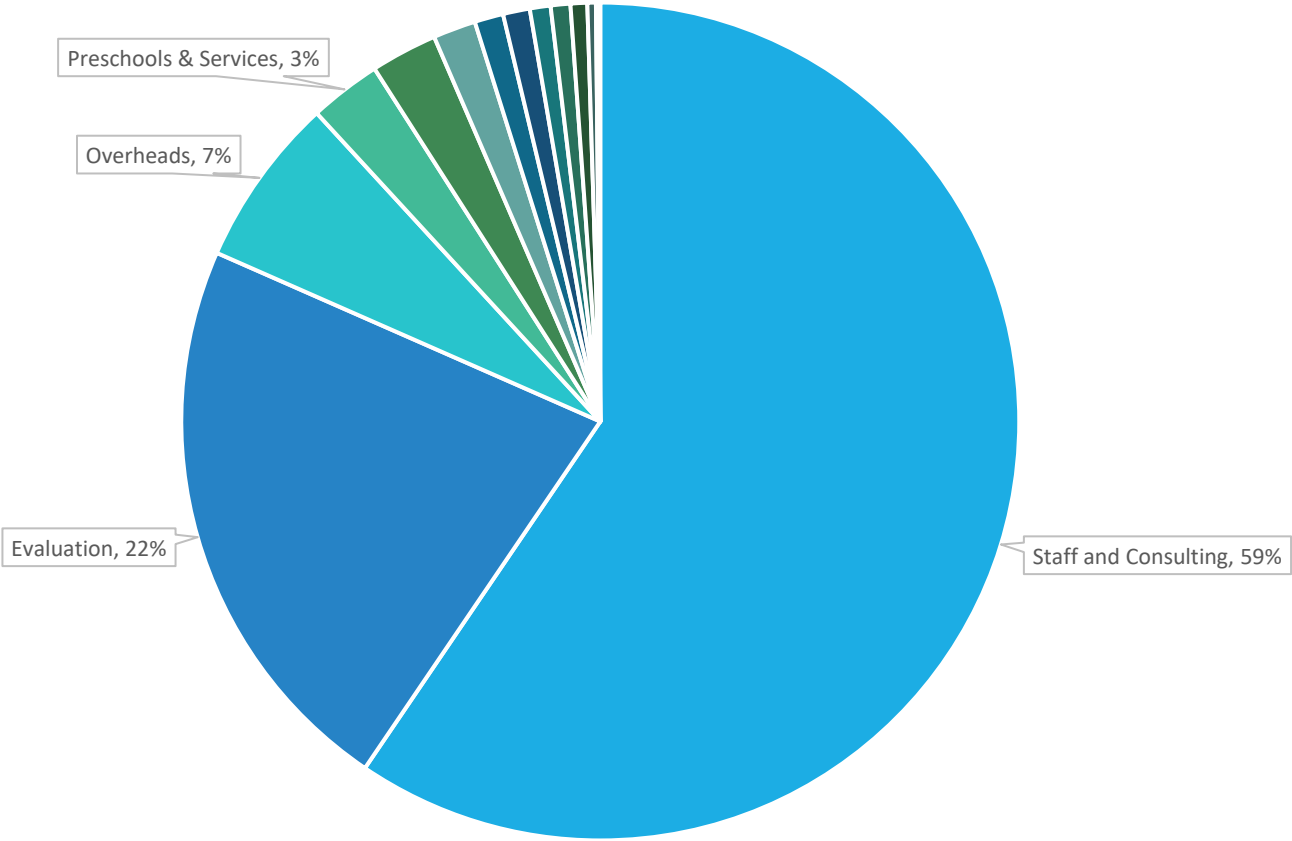
5,227 home visits to 96 participants, mean duration: 61 minutes

Mean age first and last visits: 6 months before birth – 42 months



# Total Costs

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# Total Costs

	€	€ / Visit	€ / Child	% Total
Staff and Consulting	3,364,237	644	29,254	59
Evaluation	1,249,659	239	10,867	22
Overheads	371,730	71	3,232	7
Preschools & Services	156,853	30	1,364	3
Development	145,324	29	1,264	3
Policy & Communications	93,263	18	811	2
Materials and Miscellaneous	62,749	12	546	1
Triple P	58,523	11	509	1
Training	45,293	9	394	1
Transport	42,791	8	372	1
Capital	36,449	7	317	1
HSE Inputs	18,556	4	161	0
Reimbursements	4,596	1	40	0
Childcare	4,744	1	41	0
<b>Total</b>	<b>5,654,767</b>	<b>1,081</b>	<b>49,172</b>	

# Total Costs – Improving Parenting, Conservative

	€	€ / Visit	€ / Child	% Total
Staff and Consulting	3,364,237	644	29,254	84
Evaluation				
Overheads	371,730	71	3,232	9
Preschools & Services				
Development				
Policy & Communications				
Materials and Miscellaneous	62,749	12	546	2
Triple P	58,523	11	509	1
Training	45,293	9	394	1
Transport	42,791	8	372	1
Capital	36,449	7	317	1
HSE Inputs	18,556	4	161	0
Reimbursements	4,596	1	40	0
Childcare	4,744	1	41	0
<b>Total</b>	<b>4,009,668</b>	<b>767</b>	<b>34,867</b>	

# Total Costs – Stated Parameters

	€	€ / Visit	€ / Child	% Total
Staff and Consulting	2,888,432	553	25,117	84
Evaluation				
Overheads	297,384	57	2,586	9
Preschools & Services				
Development				
Policy & Communications				
Materials and Miscellaneous	50,199	10	437	1
Triple P	58,523	11	509	2
Training	45,293	9	394	1
Transport	42,791	8	372	1
Capital	29,159	6	254	1
HSE Inputs	18,556	4	161	1
Reimbursements	3,676	1	32	0
Childcare	4,744	1	41	0
<b>Total</b>	<b>3,438,757</b>	<b>658</b>	<b>29,902</b>	

# Total Costs – Sensitivity

	€	€ / Visit	€ / Child
Staff and Consulting	2,512,936 - 3,364,237	481 – 644	21,852 - 29,254
Evaluation	0 -1,249,659	0 – 239	0 - 10,867
Overheads	185,865 - 371,730	36 – 71	1,364 - 3,232
Preschools & Services	0 - 156,853	0 – 30	0 - 1,364
Development	0 - 145,324	0 – 29	0 - 1,264
Policy & Communications	0 - 93,263	0 – 18	0 – 811
Materials and Miscellaneous	6,275 - 62,749	1- 12	55 – 546
Triple P	56,137 - 58,523	11 – 11	488 – 509
Training	38,129 - 45,293	7 – 9	332 – 394
Transport	29,953 - 42,791	6 – 8	260 – 372
Capital	29,159 - 36,449	6 – 7	254 – 317
HSE Inputs	18,556 - 18,556	4- 4	161 – 161
Reimbursements	460 - 4,596	0 – 1	4 – 40
Childcare	4,744 - 4,744	1 – 1	41 – 41
Parent costs	0 - 67,820	0 – 13	0 – 590
<b>Total</b>	<b>2,882,214 - 5,722,587</b>	<b>551 - 1,095</b>	<b>25,063 – 49,762</b>

# “Monetary” Returns

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	Effect	€ / Child
Children’s Hospital Costs	Yes	-1,359
PFL Child Maternity Costs	Yes	-402.32
Neonatal Costs	?	
Childcare	No	
Social and Educational Services	No	
Total Financial Returns		1761.32 +/-
Cost Per Child		28,141

# Steady State – 2011

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## Purpose

Eliminate wind-up and wind-down variability

## Why 2011?

Continuous age range  
Time use data available

## Snapshot

Recruitment (115) complete  
85 active participants  
1349 visits (15.9/child)  
Five births

# Total Costs – 2011

	€	€/Visit	% Annual	% All	€/Child (89)	€/Child (100-115)
Staff and Consulting	378,161	280	85	13	4,449	3,288
Overheads	37,711	28	8	13	424	328-377
Materials and Miscellaneous	5,436	4	1	11	61	47-54
Triple P	7,315	5	2	12	82	64
Training	3,619	3	1	8	41	31
Transport	5,419	4	1	13	61	47-54
Capital	3,645	3	1	13	41	32
HSE Inputs	4,036	3	1	22	45	35-40
Childcare	1,318	1	0	28	15	11-13
Total Outputs						3884-
	446,660	331		13	5,019	3953
Monetary Returns					-429	-429
Cost per participant, steady-state year					4,590	3,455-3,524

# Discussion

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Home visiting programmes are labour driven

Generalisability: Greater efficiency outside trial setting

Commonly purported unique benefits of such programmes hold true

Reducing barriers to participation

Gatekeeper to other services

Costing is a great way to index benefits while incorporating complexity

Costing service use shows that reporting on use alone can mask effects

In costs analyses, a line has to be drawn

Endless theorising on programme components, and thus costs, is possible

Literature: Build on the choices of others