

Boston University

OpenBU

<http://open.bu.edu>

Center for Global Health and Development

OVC-CARE Project

2010-06-28

OVC cost model

<https://hdl.handle.net/2144/26980>

"Downloaded from OpenBU. Boston University's institutional repository."

This presentation was delivered at the
“Orphans and Vulnerable Children Costing Technical
Consultation” meeting, held in Washington DC from June
28th – June 29th, 2010.

Questions on the presentation itself should be addressed to
the presenters. General questions on the OVC-CARE Project
and OVC-costing should be addressed to Professor Bruce
Larson at BU-CGHD (blarson@bu.edu)

Gesine Meyer-Rath Sarah Tougher Lilani Kumaranayake

OVCost Model

New models for
costing national responses

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE
FOR UNICEF

2010



Background: Unicef ToR

“The costing exercise will result in:

1. Consensus on **definitions of a set of essential services and populations in need** based on different definitions of orphans and vulnerable children. There may not be agreement on a single definition for each but on a few ways of defining each as **"core"** and **"expanded"**.
2. An **estimate of global resource needs** for orphans and vulnerable children including ***ranges for different modes of delivery***.
3. An **Excel spreadsheet based model** for estimating cost of services for orphans and vulnerable children, which allows cost estimations based on different numbers of orphans and vulnerable children; adjustments of unit costs based on local situation; ***adjustment*** of services package ***based on local needs***.”



Summary

- **OVCost** estimates the cost of providing a **core and an extended set of services** to either **orphans or children in poor households** in 57 high-prevalence countries between 2009 and 2015, using either **centralised services or a cash grant** to households
- Users can **update assumptions** on
 1. Interventions to be costed
 2. Numbers of orphans and/ or households
 3. Coverage with interventions in baseline year
 4. Scale-up dynamic for each intervention or intervention category
 5. Country-specific unit costs
 6. Level of administration cost for each intervention category (including parameters for the development of administration cost with scale)



Methods: Target population

- **Sub-Saharan Africa:**

User can choose between

- 1. All children in ultra-poor households**

- Total number of children from World Population Prospects (UNDESA)
- Adjusted for proportion of children living in lowest socioeconomic quintile (DHS) **or**

- 2. All orphans due to AIDS (UNAIDS/ UNICEF)**

- **Other countries: All orphans due to AIDS**

Total numbers of children from World Population Prospects (UNDESA)

- Total of 57 countries with



Methods: Interventions

CORE:

- Healthcare support
- Education support
- Nutritional support
- Home support
- Economic support
- Cash grants to households

EXTENDED:

- Psychosocial support
- Legal support
- Community support

Other interventions get scaled down if the level of the cash grant is above their unit cost



Methods: Cash grants vs. centralised support

- If a cash grant is provided, households are assumed to cease to use additional nutritional support first, then home, educational and economic support
- **Level** of cash grant, **distribution system**, and **conditionality** can be set by user
- If cash grant is chosen to be conditional, a **loss factor** can be set (ie, proportion of recipients who are estimated to discontinue receiving the grant because they fail to comply with conditions every year; 0.1 by default) and **monitoring costs** added
- Rate of replacement of centralised provision with cash grants is regulated by a “**cash grant stickiness factor**” (ie, proportion of households or orphans receiving a cash grant who cease to access other interventions as a result; 0.9 by default)



Methods: **Baseline coverage**

Baseline coverage by country and intervention

1. Interventions in the public sector:

National time-series data, extrapolated to 2009 and adjusted for orphans

- **Healthcare** (WHO/ GAVI/ UNICEF: immunisation and vit. A supplementation; WHO/ DHS: access to basic health care)
- **Education** (UNESCO/ World Bank: school enrollment rates)
- **Cash grants** (2007 DfID database of cash grant types and volumes and evaluation reports)

2. NGO-provided interventions:

Coverage survey amongst NGOs

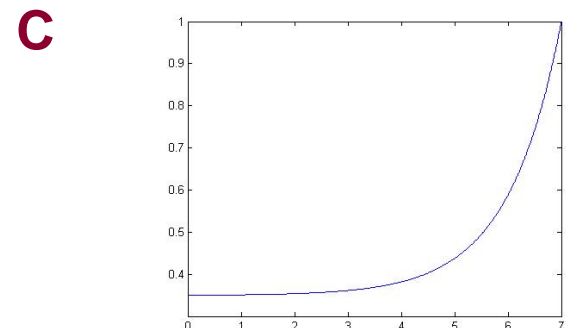
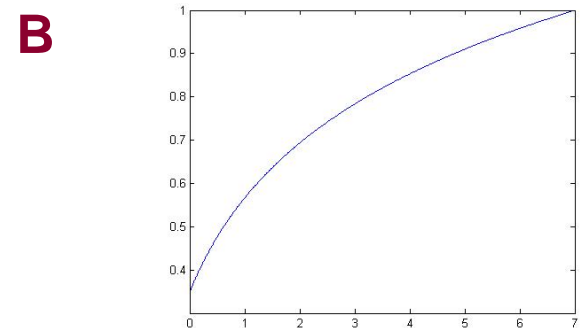
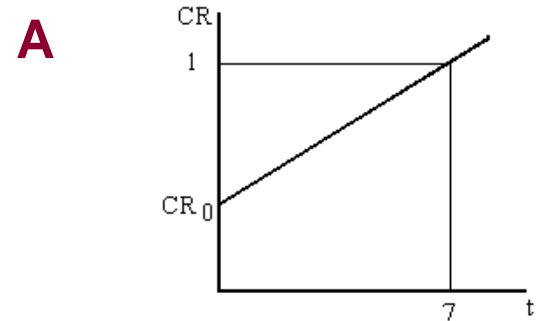
Home, nutritional, economic, psychosocial, legal and community support (Constella Futures, 2005/6)



Methods: Coverage scale-up

Scale-up scenario to be set by user for each intervention

- **Linear** (Option **A**):
Default for most interventions in non-SSA, and others with small numbers
- **Diminishing returns** (Option **B**):
Default for all outreach interventions
- **Exponential** (Option **C**):
Default for interventions which require high investment in systems



Methods: Unit costs

- Unit costs for all interventions from **Futures Group 2004** study
- Unit costs for **cash grant system** can be defined by user
 1. **Choice of management and disbursement system:**
 - **Central statutory body** (cost modelled on South African Social Security Agency, SASSA) **OR**
 - **Community-based committees** (cost modelled on Kalomo and Mchinji pilot schemes and planned scheme in Tanzania)
 2. **Level of cash grant:**
 - **\$0.97 per child per day** (modelled on South African Child Support Grant)
 - **\$0.25** per child per day (ILO)
 - **set by user** - \$1.50 by default



Methods: Adjusting unit costs

- Unit costs from Futuers Group survey in same country, else median of all countries adjusted for purchasing power (World Bank)
- Adjusted for country-specific or US inflation (IFS)
 - Nutritional support adjusted for food price inflation
 - User can choose between high (like rice) or low (like maize)

Real food price development (World Bank 2008; 2004=100%)

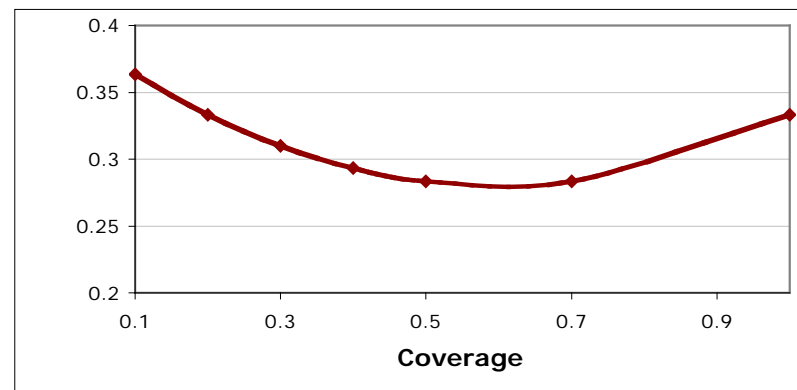
Assumptions on real prices	2009	2010	2015
Low (modelled on maize)	186%	176%	155%
High (modelled on rice)	207%	213%	192%



Methods: Administration costs

- User can choose between high and low admin costs
 - **Cash grant:**
 - 10% vs. 19% for central statutory body
 - 12% vs. 19% for community-based committees
 - **All other interventions:**
 - 16% vs. 22%
- Economies of scale apply with increasing coverage

User can choose shape and maximum of administration cost curve (as proportion of unit cost over coverage)



Results: Target population

	Orphans due to AIDS				Children in poor households (SSA only)
	TOTAL	in SSA	elsewhere	prop. in SSA	
2009	26,544,189	14,759,541	11,784,648	55.60%	82,283,904
2010	27,390,709	15,477,756	11,912,952	56.51%	83,886,842
2011	27,817,391	16,081,694	11,735,697	57.81%	85,450,298
2012	29,029,243	16,634,895	12,394,348	57.30%	87,013,755
2013	30,187,009	17,137,488	13,049,520	56.77%	88,577,212
2014	31,509,151	17,807,937	13,701,214	56.52%	90,140,669
2015	32,659,476	18,317,338	14,342,138	56.09%	91,704,125

Results: Scenarios of analysis

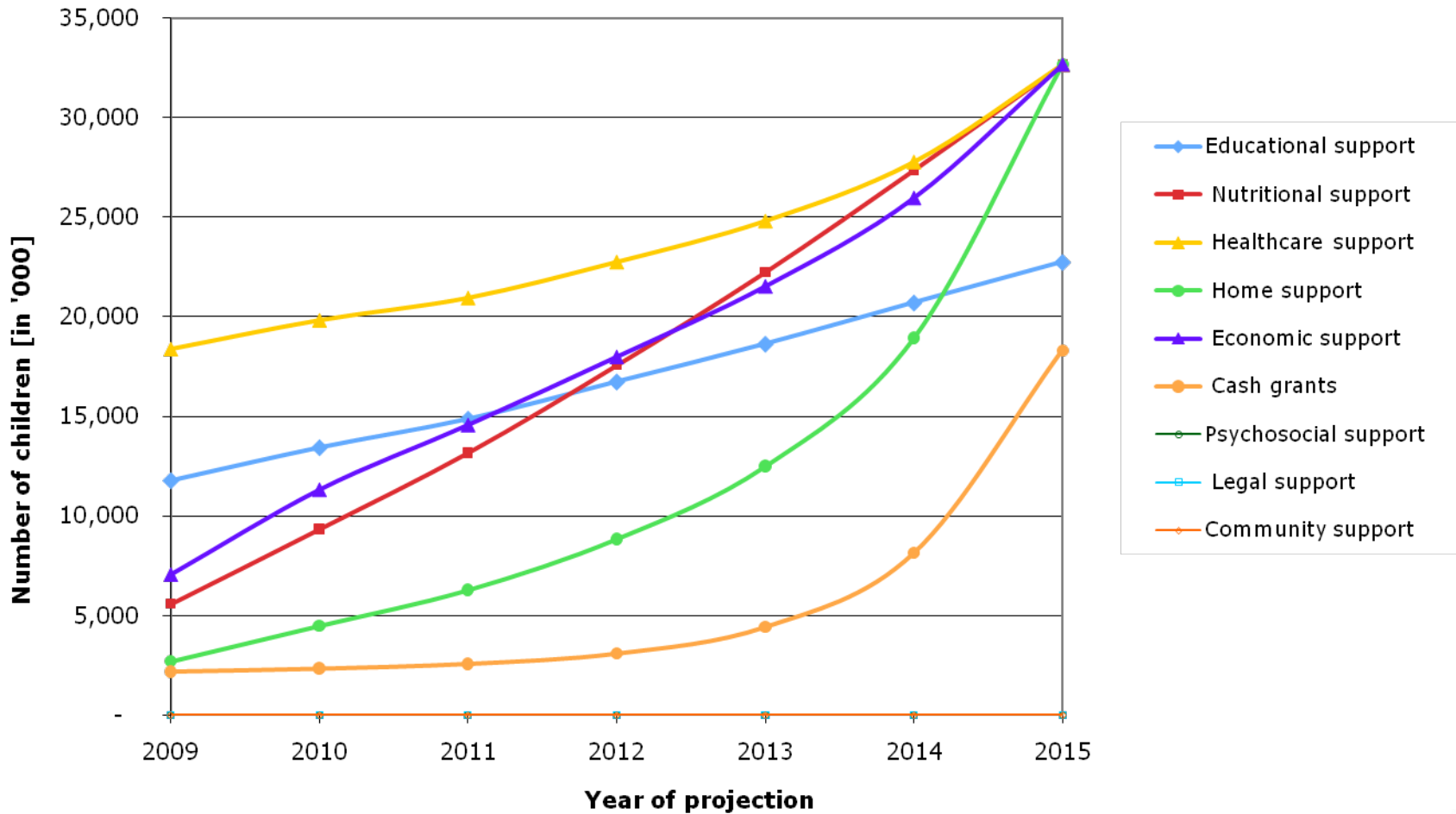
	Beneficiaries		Set of interventions		Cash grant level	Code
	SSA	non-SSA	SSA	non-SSA		
Scenario 1	Orphans	Orphans	Core	Core	0.25	OrphansCore0.97
					0.97	OrphansCore0.25
					1.50*	OrphansCore1.50
Scenario 2	Households	Orphans	Core	Core	0.25	HouseholdsCore0.97
					0.97	HouseholdsCore0.25
					1.50*	HouseholdsCore1.50
Scenario 3	Households	Orphans	Extended		0.97	HouseholdsExtended0.97

*set by user

- Scenario **1**: Provision to **orphans only**
- Scenario **2**: Adding **poor households in SSA**
- Scenario **3**: Adding **extended set** of interventions

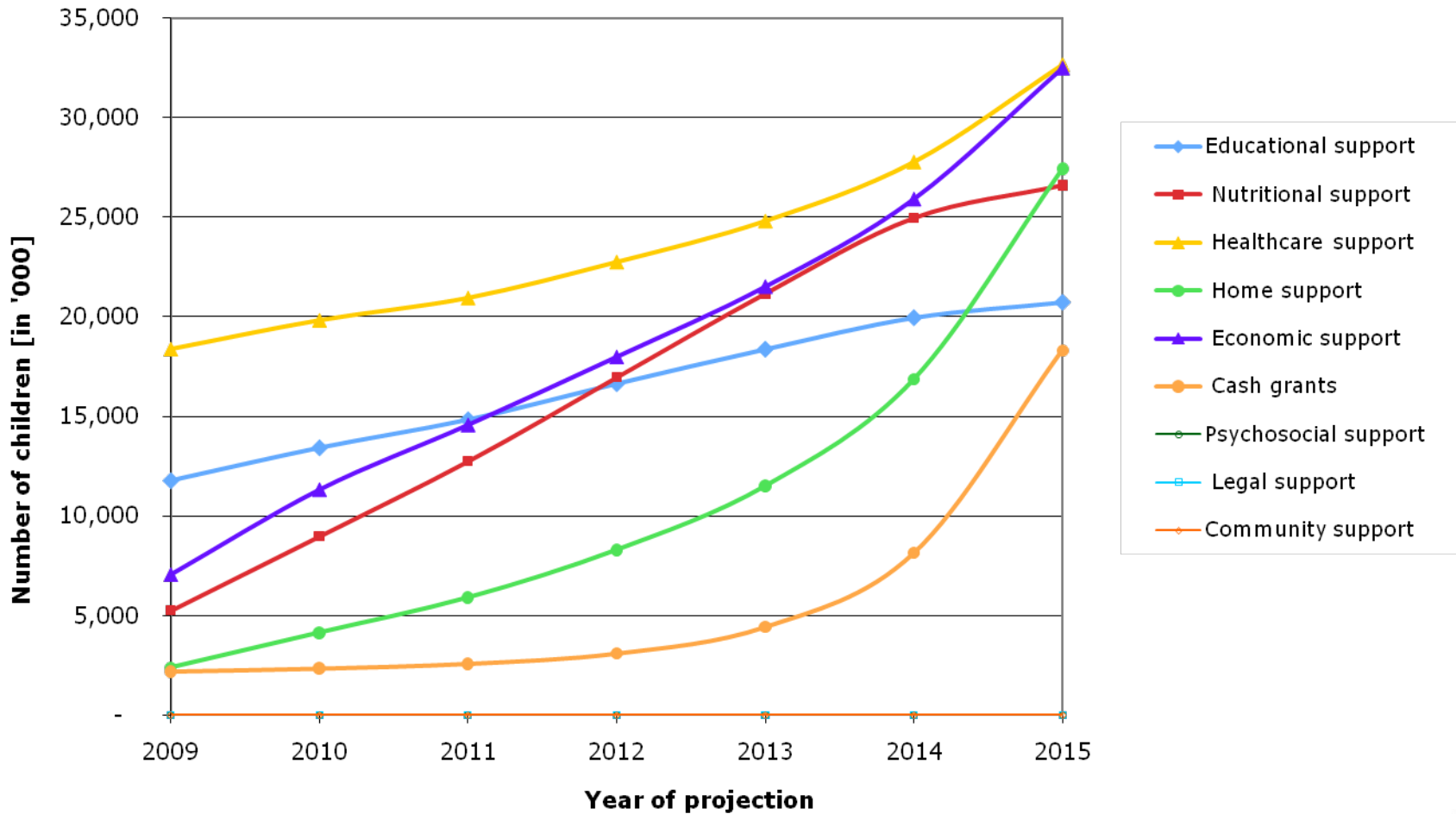
Results: Numbers covered, by intervention category (1A)

(1A)



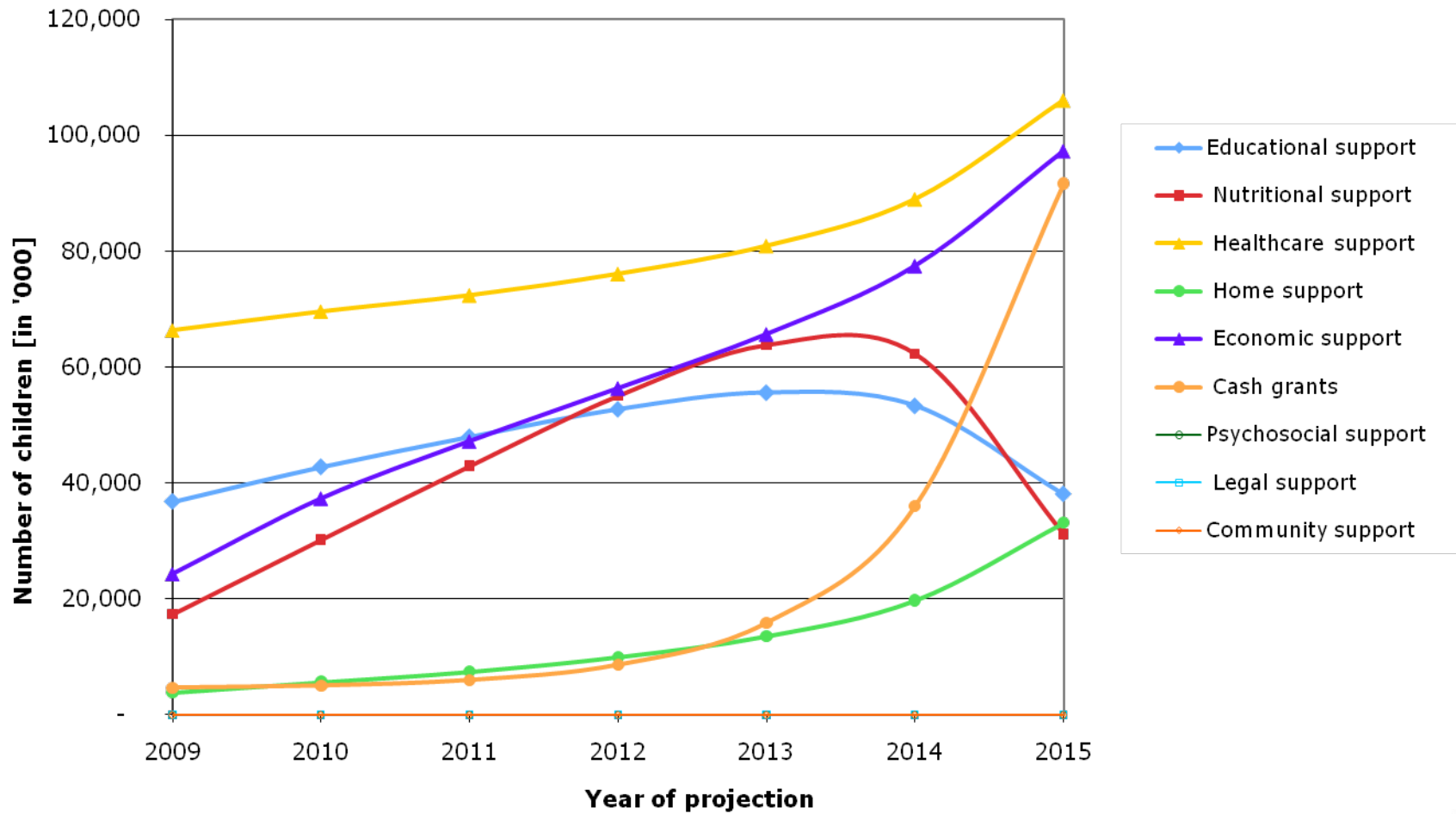
Results: Numbers covered, by intervention category (1B)

(1B)



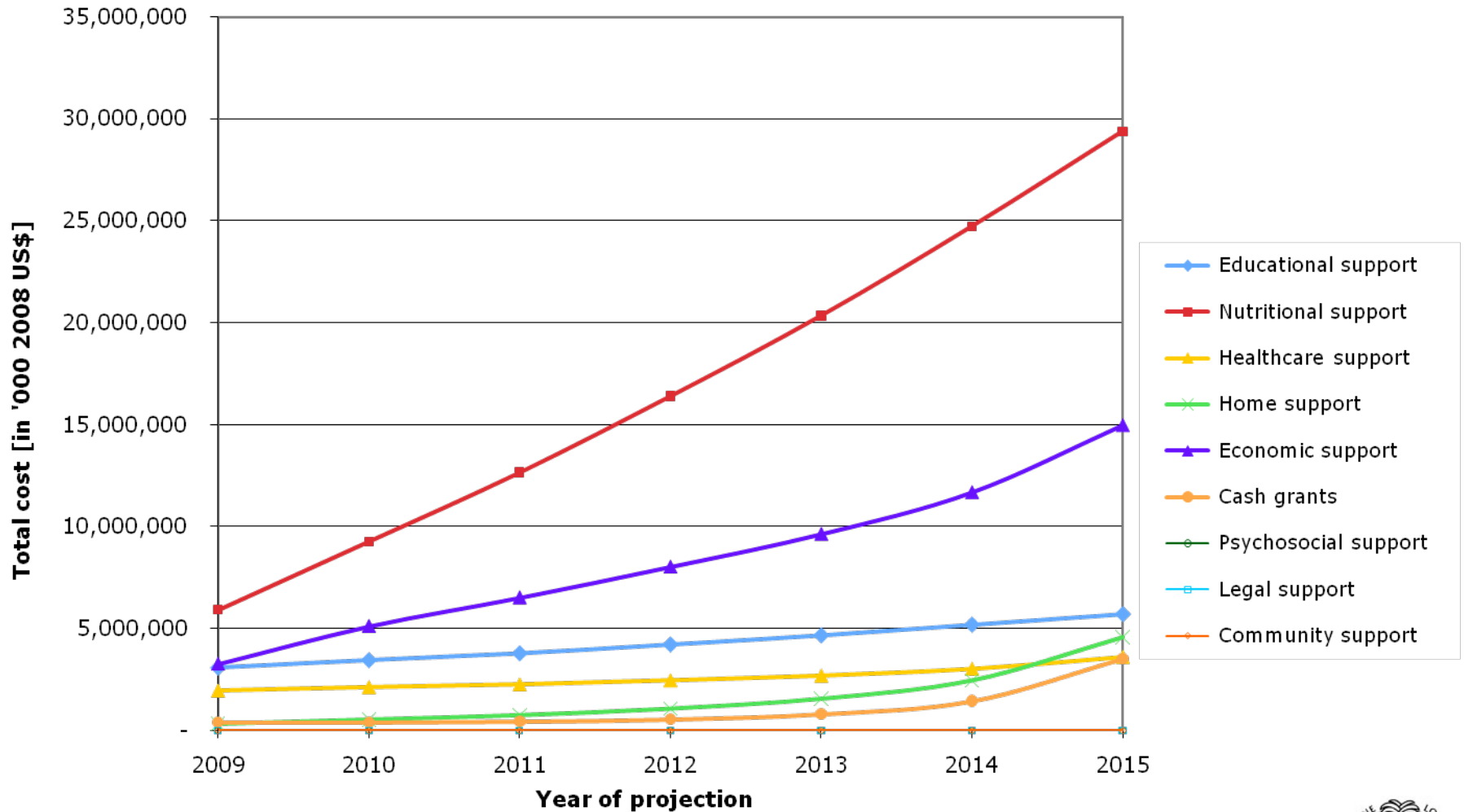
Results: Numbers covered, by intervention category

(2C)



Results: Total cost, by intervention category

(1A)

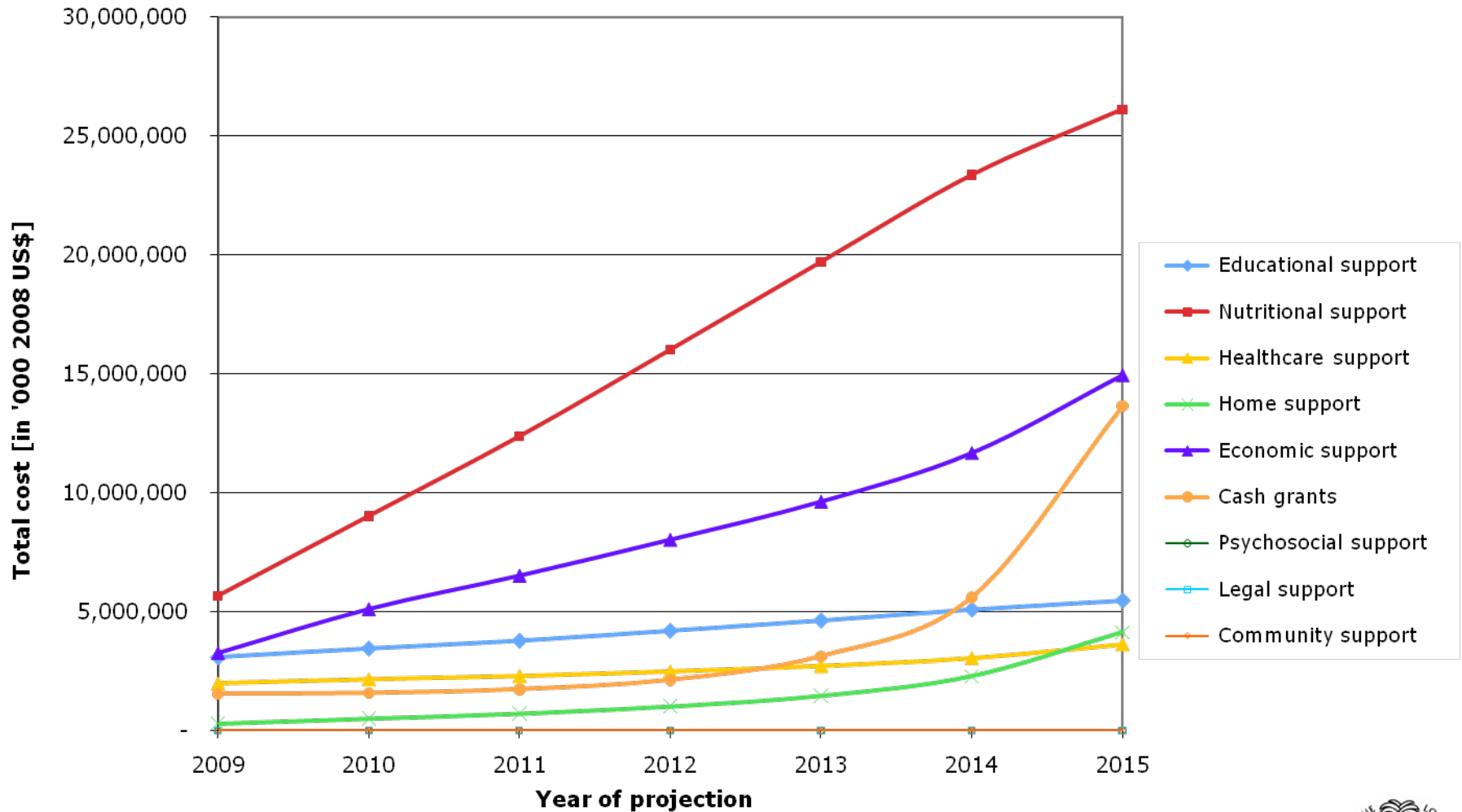


OrphansCore0.25



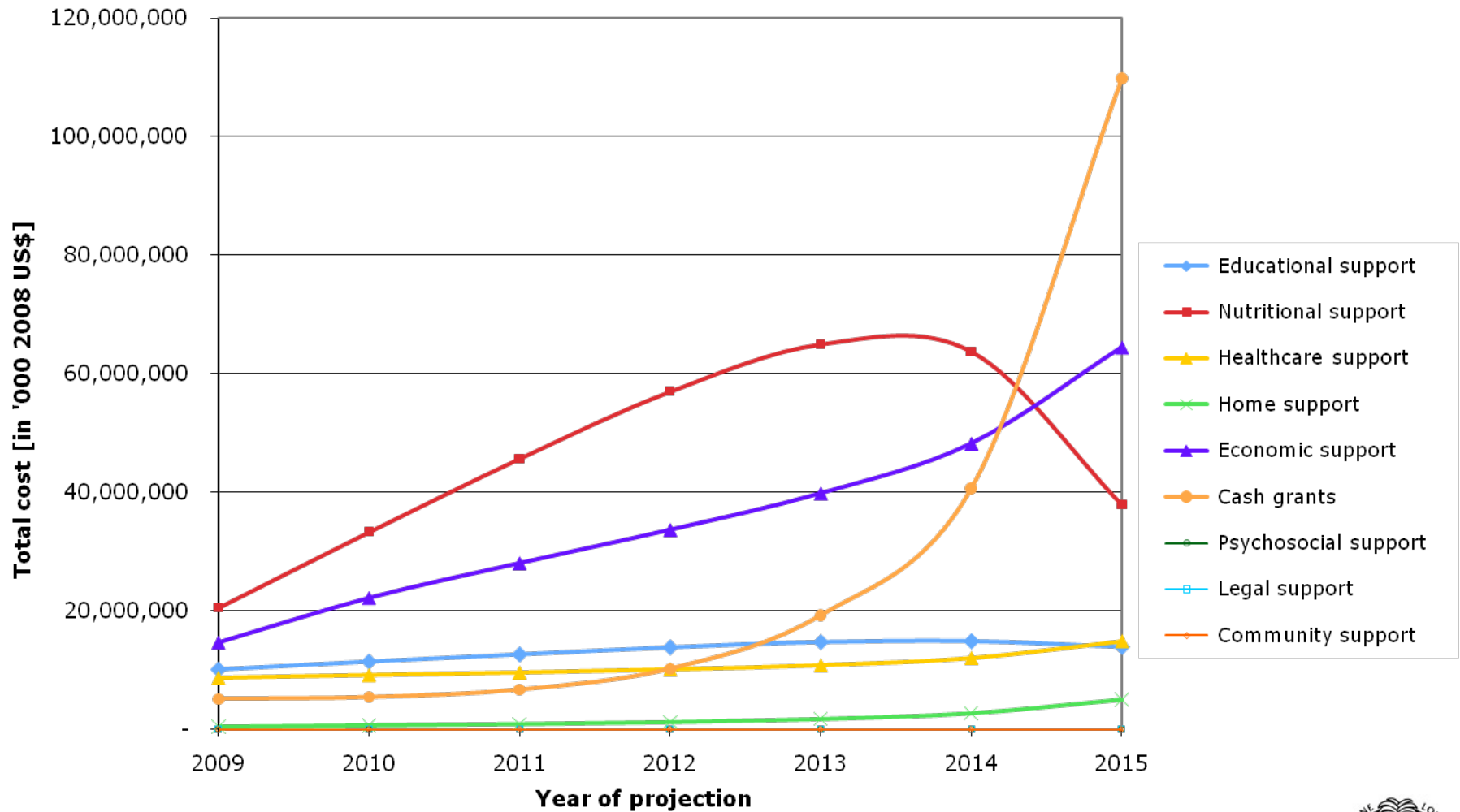
Results: Total cost, by intervention category

(1B)



Results: Total cost, by intervention category

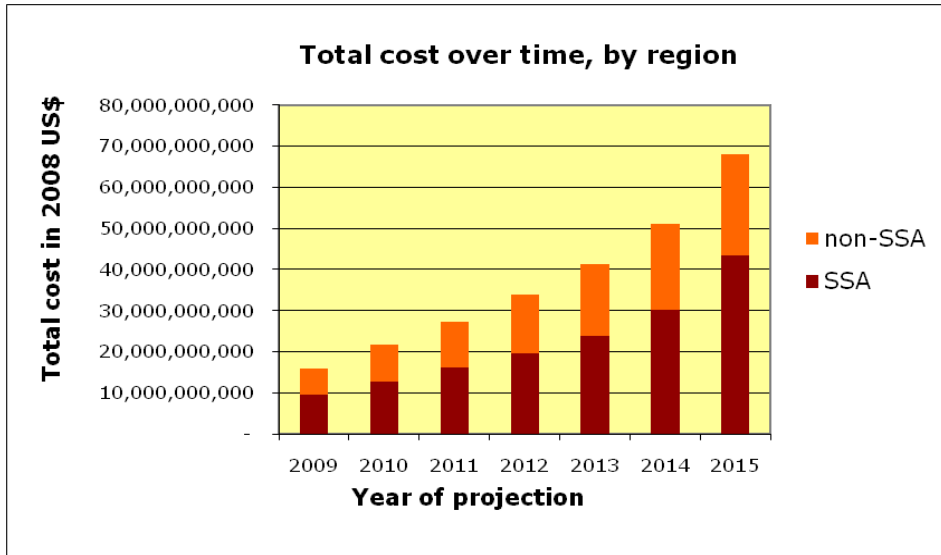
(2C)



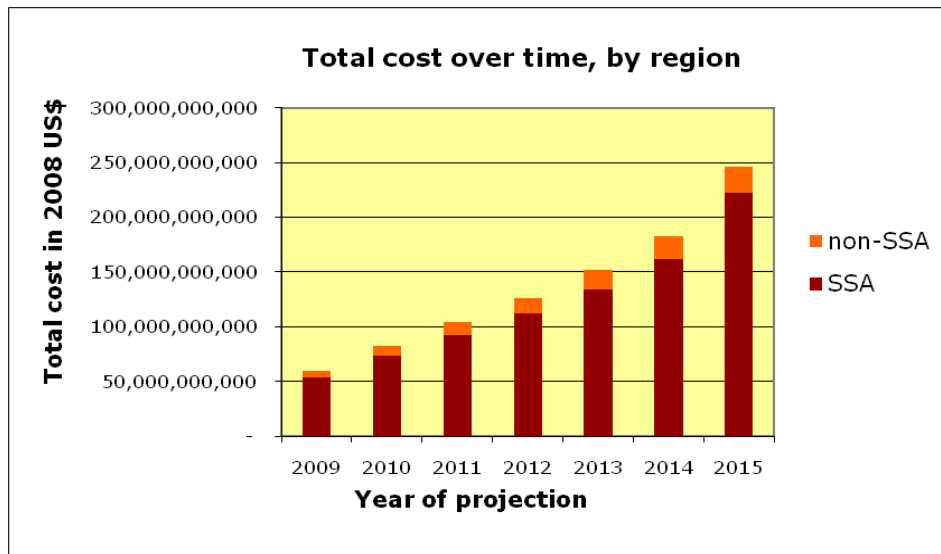
Results: Total and per child cost and numbers covered

Scenario	Orphans Core 0.25	Orphans Core 0.97	Orphans Core 1.50	Households Core 0.25	Households Core 0.97	Households Core 1.50	Households Extended 0.97
Numbers of children covered by 2015 (in '000)							
Total	32,659	32,659	32,659	106,046	106,046	106,046	106,046
Sub-Saharan Africa	18,317	18,317	18,317	91,704	91,704	91,704	91,704
% of total	56%	56%	56%	86%	86%	86%	86%
elsewhere	14,342	14,342	14,342	14,342	14,342	14,342	14,342
% of total	44%	44%	44%	14%	14%	14%	14%
Total cost (in '000'000 2007 constant US\$)							
2009	14,960	15,809	16,484	56,608	58,521	59,911	61,965
2010	20,923	21,789	22,445	79,254	81,288	82,485	86,508
2011	26,429	27,372	28,006	100,457	103,012	103,830	109,600
2012	32,726	33,838	34,385	122,602	126,566	126,319	134,353
2013	39,702	41,234	41,473	147,569	155,107	151,581	163,983
2014	48,518	51,025	50,230	180,143	196,021	182,499	205,915
2015	61,739	67,889	65,262	237,414	281,144	246,212	292,010
Total	245,001	258,958	258,288	924,050	1,001,661	952,840	1,054,333
Mean cost per child in 2015							
	1,881	2,196	1,942	1,884	2,198	1,944	2,326

Results: Total cost, by region



1B



2C



Results: Sensitivity analysis

Assumption	Result by scenario			% Change in result		
	Orphans Core 0.97	Households Core 0.97	Households Core 1.50	Orphans Core 0.97	Households Core 0.97	Households Core 1.50
Food price inflation						
low*	258,958	1,001,661	952,840	--	--	--
high	290,705	1,125,823	1,071,248	12.26%	12.40%	12.43%
off	225,377	873,200	832,523	-12.97%	-12.82%	-12.63%
Inclusion of cash grant						
as part of Core set*	258,958	1,001,661	952,840	--	--	--
no cash grant	237,454	891,155	891,155	-8.30%	-11.03%	-6.47%
Cash grant delivery system						
by income status*	258,958	1,001,661	952,840	--	--	--
same: centralised	258,759	1,000,622	951,232	-0.08%	-0.10%	-0.17%
same: community	259,041	1,001,838	953,114	0.03%	0.02%	0.03%
CG delivery system at high admin costs						
by income status/ CG low and others high*	258,958	1,001,661	952,840	--	--	--
same: centralised; CG and others high	260,449	1,007,923	962,522	0.58%	0.63%	1.02%
same: centralised; CG high/ others low	248,039	960,841	920,142	-4.22%	-4.08%	-3.43%
CG stickiness assumption						
0.9*	258,958	1,001,661	952,840	--	--	--
0.7	260,631	1,005,340	981,912	0.65%	0.37%	3.05%
0	266,728	1,018,758	1,088,440	3.00%	1.71%	14.23%
Conditional cash grant						
off*	258,958	1,001,661	952,840	--	--	--
yes; compliance factor of 0.5; monitoring costs 2%	247,579	944,258	916,371	-4.39%	-5.73%	-3.83%
yes; compliance factor of 0.9; monitoring costs 2%	256,373	988,977	943,798	-1.00%	-1.27%	-0.95%
yes; compliance factor of 1; monitoring costs 2%	259,240	1,002,878	954,721	0.11%	0.12%	0.20%
yes; compliance factor of 1; monitoring costs 5%	259,662	1,004,703	957,544	0.27%	0.30%	0.49%
yes; compliance factor of 1; monitoring costs 12%	260,648	1,008,962	964,130	0.65%	0.73%	1.18%
Relative administration cost						
CG low/ others high*	258,958	1,001,661	952,840	--	--	--
CG low/ others low	246,548	954,579	910,459	-4.79%	-4.70%	-4.45%
CG high/ others low	247,741	959,281	917,730	-4.33%	-4.23%	-3.68%
CG high/ others high	260,151	1,006,363	960,110	0.46%	0.47%	0.76%
Economies of scale for administration cost						
U-shaped*	258,958	1,001,661	952,840	--	--	--
uniform	251,620	972,078	921,097	-2.83%	-2.95%	-3.33%
inflection at 0.1	278,676	1,077,333	1,029,454	7.61%	7.55%	8.04%
inflection at 0.9	254,726	985,195	938,469	-1.63%	-1.64%	-1.51%
Adjustment for inflation						
adjusted for local inflation*	258,958	1,001,661	952,840	--	--	--
adjusted for US inflation	218,816	810,353	774,823	-15.50%	-19.10%	-18.68%
not adjusted	188,483	698,021	667,416	-27.21%	-30.31%	-29.96%

Results sensitive to

- Food price inflation (13-26%)
- Choice of scale-up scenario (-41 to 46%)
- Inclusion of cash grant as intervention (7-11%)
- Replacement of other interventions by cash grant (2-14%)

Results not sensitive to

- Level of administration cost (-5 to 0.5%)
- Cash grant delivery system (-0.2 to 0.03)
- Cash grant conditionality (monitoring cost and loss rate) (-5 to 0.1%)

Discussion

Results much higher than previous estimates, due to

- Size of target population, especially in “Household” scenarios: 106 vs. 19 million children
(for “Orphans” scenarios: 33 vs. 19 million)
- High food price inflation (+13% of total cost)
- Cash grant as intervention (+ 6-11%)
- Treatment of scale-up: Back-loading through non-linear scale-up

Conclusions: Model results

- Community-based methods of service delivery might save money when the target population is the child in an ultra-poor household in a high HIV prevalence country, if their household is capacitated by a cash grant that is high enough and delivered through a system that is cheaper to administer than traditional, NGO-led provision
- Targeting households rather than orphans alone will increase total cost by several orders of magnitude, but will decrease the cost per child covered at full coverage
- More care will have to be taken to scale up monitoring systems that capture financial data alongside information on the quality of provision of care to orphaned and vulnerable children, such as the Child State Index



Next steps

- OVCost is designed with the end user: the OVC country programme in mind
 - Flexibility re: target population, interventions, scale-up dynamics, unit cost
- Still needs to be tested at the country level
- Potential updates:
 - New unit costs (new Constella Futures review from 2008)
 - New estimates of numbers of OVC

M141

Summary

Definition of target populations

1. Choose the beneficiaries in each region.
To avoid double-counting, the categories are mutually exclusive.

NB:

	in sub-Saharan Africa	elsewhere
Orphans due to AIDS		x

Please choose one option only

	in sub-Saharan Africa	elsewhere
Households	x	

Interventions to be costed

2. Choose a set of interventions

	in sub-Saharan Africa	elsewhere
Core set	x	x

Core set: Educational, nutritional, healthcare, home and economic support, cash grants

	in sub-Saharan Africa	elsewhere
Extended set		

Extended set: Core plus psychosocial, legal and community support

Interventions and scale-up dynamics

3. If required, add additional interventions into the clear lines in the box or under 'Other support'

Intervention	Choice of scale-up scenario
--------------	-----------------------------

4. Choose a scale-up option for each intervention

	in sub-Saharan Africa	elsewhere
Educational support	x	x

	in sub-Saharan Africa	elsewhere
Educational support		
<i>Primary school support</i>		
School fees	B	A
Uniforms	A	A
Books and supplies	A	A
Transport to school	A	A
Special fees (assessments etc)	A	A
<i>Secondary school support</i>		
School fees	B	A
Uniforms	A	A
Books and supplies	A	A
Special fees (assessments etc)	B	A
Skills training	C	A

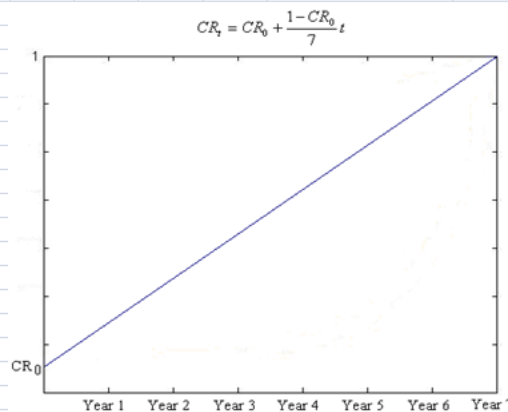
Results

Total cost, coverage and cost

	No scenario	OrphansCore 0.97	OrphansCore 0.97
\$1,646,237,181,801.64			
TOTAL COST			
in '000'000 US\$ (2007)	1,646,237	-	-
in sub-Saharan Africa	1,600,422		
% of total	97%		
elsewhere	45,815		
% of total	3%		
Total children covered by 2015 (in '000)	94,755		
in sub-Saharan Africa	91,704		
% of total	97%		
elsewhere	3,051		
% of total	3%		
Median cost per child per year by 2015 (in 2007 US\$)	3,386		
Mean cost per child per year by 2015 (in 2007 US\$)	3,518		

Distribution of incremental coverage over time

Option A: Linear



Acknowledgements

- Arjan de Wagt, Behzad Noubary , Doreen Mulenga, Chewe Luo, Patricia Lim Ah Ken, Priscilla Akwara (UNICEF HQ)
- Chris Desmond, Alex de Waal, Kavitha Nallanthambi (Joint Learning Initiative on Children and AIDS (JLICA))
- Gerard Boyce (Human Science Research Council, South Africa)
- Jane Begala (Constella Futures)
- Carlos Avila (UNAIDS)
- Masuma Mamdani, Valerie Leach, Ben Dandi, Wietze Lindeboom, Francis Omondi (Research for Poverty Alleviation (REPOA), Tanzania)
- Robert Mhamba (Institute of Development Studies, University of Dar es Salaam)
- Jane Calder, Jeanne Marie Tucker (Pact Tanzania)
- Derrick Mblewa, Vincent Akulumuka (Save the Children Tanzania)
- Diane Swales (UNICEF Tanzania)
- Amadeus Kamagenge (Tanzanian Social Action Fund (TASAF))
- Peter Vickerman, Anna Foss (LSHTM HIVTools)
- Katie Schenk (Population Council/ Horizons)
- Tessa Tan-Torres, Karin Stenberg, Marta Gacic-Dobo, Ben Johns (WHO)
- Heidi Loening (UNICEF South Africa)
- Bernd Schubert (Team Consult)
- Staff from the National Treasury, South Africa



THANK YOU