

Cost of Not Breastfeeding (CONBF) Tool Data Sources and Methodology

Version 2.0

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Acronyms

APA	American Psychological Association
ARI	Acute Respiratory Infection
BF	Breastfeeding
BMS	Breastmilk Substitute
CBF	Continued Breastfeeding
CONBF	Cost of Not Breastfeeding
DHS	Demographic and Health Survey
EBF	Exclusive Breastfeeding
GBD	Global Burden of Disease
GDP	Gross Domestic Product
GHO	Global Health Observatory
GNI	Gross National Income
HALE	Healthy Life Expectancy
IHME	Institute for Health Metrics and Evaluation
ILO	International Labour Organization
IQ	Intelligence Quotient
LCU	Local Currency Unit
LFPR	Labour Force Participation Rate
NPV	Net Present Value
PAR	Population Attributable Risk
PV	Present Value
RR	Relative Risk
UNICEF	United Nations Children's Fund
USD	United States Dollar
WHO	World Health Organization
WPP	World Population Prospects



Introduction

The Cost of Not Breastfeeding Tool is an evidence-based modelling tool that uses open-access data to estimate the health and economic costs of not protecting, promoting and supporting breastfeeding. First launched in 2019 by Dr. Dylan Walters and Alive & Thrive, with funding from the Bill & Melinda Gates Foundation, the tool was the first of its kind. It has been used by organizations around the world to inform advocacy, policy development and investments in breastfeeding promotion. The methodology for the tool is based on the Walters et al. (2019) paper.

In 2022, Nutrition International updated and developed the second version of the tool in partnership with Alive & Thrive and Limestone Analytics, with funding from the Government of Canada. This second version incorporated updated datasets, new indicators, a new function to calculate results for different breastfeeding rate scenarios or targets, and online access to the results for more than 100 countries.

In 2026, Nutrition International updated the tool's underlying datasets, methodologies and country estimates. This latest version incorporates updated data and methods to improve the accuracy of estimates on the health and economic impacts of suboptimal breastfeeding and the benefits of increasing breastfeeding rates.

The purpose of this document is to share the data sources and provide an example of the analytical approach used to estimate the indicators reported in the tool. The data points and sources used in the online tool may differ from the ones noted here as the datasets are updated periodically. If you are aware of a better data source, for more information on using the tool, or to share your experience using the tool, please contact us at: healthecon@nutritionintl.org.

When citing our work on the tool, please use the following (APA referencing style):

The Cost of Not Breastfeeding Tool. (2026, July 31). Nutrition International. Retrieved [add date here: Month, Day, Year] from <https://www.nutritionintl.org/learning-resource/the-cost-of-not-breastfeeding-tool/>

EXAMPLE COUNTRY: BANGLADESH

REGION: SOUTH ASIA

WORLD BANK INCOME GROUP: LOWER-MIDDLE INCOME

Child Morbidity and Mortality

A — Number of cases of child (0-23m) diarrhoea and acute respiratory infection (ARI) attributable to suboptimal breastfeeding

Table A.1.1 List of inputs

Variable	Value	Source/Assumption
Exclusive breastfeeding <6m	53.3%	UNICEF (2024)
Non-exclusive breastfeeding (non-EBF) <6m	46.7%	100% – Exclusive breastfeeding (EBF)
No breastfeeding <6m	3.4%	The DHS Program (n.d.) Note: If no data, then 10% of non-EBF
Partial breastfeeding <6m	10.8%	25% of non-EBF minus no breastfeeding is assumed to be partial breastfeeding; $(\text{Non-EBF} - \text{No BF}) \times 0.25$
Predominant breastfeeding <6m	32.5%	75% of non-EBF minus no breastfeeding is assumed to be predominant breastfeeding; $(\text{Non-EBF} - \text{No BF}) \times 0.75$
Continued BF at 20-23m	84.8%	UNICEF (2024)
No breastfeeding 20-23 m	15.2%	100% – Continued BF at 20-23m
Incidence of diarrhoea (0-5 months)	1,078,766	Institute for Health Metrics and Evaluation (2025a)
Incidence of diarrhoea (6-23 months)	1,786,716	Institute for Health Metrics and Evaluation (2025a)
Incidence of ARI (0-5 months)	296,938	Institute for Health Metrics and Evaluation (2025a)
Incidence of ARI (6-23 months)	461,862	Institute for Health Metrics and Evaluation (2025a)

Table A.2.1 Projected morbidity from suboptimal breastfeeding behaviours for infants aged 0-5 months

Diarrhoea	No BF <6m	Partial BF <6m	Predom BF <6m	Source/Calculation
Relative Risk (RR) of morbidity by infection pathway & breastfeeding behaviour	2.65	1.68	1.26	Lamberti (2011)
% Suboptimal breastfeeding behaviour	3.4%	10.8%	32.5%	Table A.1.1
Population Attributable Risk (PAR) morbidity from infection - individual	5.31%	6.86%	7.79%	(% Suboptimal BF behaviour * (RR-1)) / ((1 + % Suboptimal BF behaviour * (RR-1)))
PAR morbidity from infection - hybrid	18.7%			1 - (1 - PAR Morbidity ~None) * (1 - PAR Morbidity ~Partial) * (1 - PAR Morbidity ~Predom)
Incidence of diarrhoea (0-5 months)	1,078,766			Table A.1.1
Morbidity attributed to suboptimal breastfeeding	201,418			PAR Morbidity ~Hybrid * Infection Share 0-5m morbidity
ARI	No BF <6m	Partial BF <6m	Predom BF <6m	Source/Calculation
RR of morbidity by infection pathway & breastfeeding behaviour	2.07	2.48	1.79	Lamberti (2013)
% Suboptimal breastfeeding Behaviour	3.4%	10.8%	32.5%	Table A.1.1
PAR morbidity from infection - individual	3.51%	13.81%	20.42%	(% Suboptimal BF behaviour * (RR-1)) / ((1 + % Suboptimal BF behaviour * (RR-1)))
PAR morbidity from infection - hybrid	33.8%			1 - (1 - PAR Morbidity ~None) * (1 - PAR Morbidity ~Partial) * (1 - PAR Morbidity ~Predom)
Incidence of ARI (0-5 months)	296,938			Table A.1.1
Morbidity attributed to suboptimal breastfeeding	100,408			PAR Morbidity ~Hybrid * Infection Share 0-5m morbidity

Table A.2.2 projected morbidity from suboptimal breastfeeding behaviours for children 6-23 months

Diarrhoea	Value	Source/Calculation
RR of morbidity by infection pathway & breastfeeding behaviour	1.32	Lamberti (2011)
% Suboptimal breastfeeding (No breastfeeding 20-23 m)	15.20%	Table A.1.1
PAR morbidity from infection	4.64%	$(\% \text{ Suboptimal BF behaviour} * (RR-1)) / ((1 + \% \text{ Suboptimal BF behaviour} * (RR-1)))$
Incidence of diarrhoea (6-23 months)	1,786,716	Table A.1.1
Morbidity attributed to suboptimal breastfeeding	82,875	PAR Morbidity * Diarrhoea Share >6-23m mortality
ARI	Value	Source/Calculation
RR of morbidity by infection pathway & breastfeeding behaviour	1.17	Lamberti (2013)
% Suboptimal breastfeeding (No breastfeeding 20-23 m)	15.20%	Table A.1.1
PAR morbidity from infection	2.52%	$(\% \text{ Suboptimal BF behaviour} * (RR-1)) / ((1 + \% \text{ Suboptimal BF behaviour} * (RR-1)))$
Incidence of ARI (6-23 months)	461,862	Table A.1.1
Morbidity attributed to suboptimal breastfeeding	11,634	PAR Morbidity * ARI Share >6-23m mortality

Table A.3.1 Number of cases of child morbidity attributed to not breastfeeding according to recommendation

Variable	Value	Source/Calculation
Number of cases of child diarrhoea (0-23 months) attributed to not breastfeeding according to recommendation	284,292	Morbidity from Suboptimal BF (0-5m) due to diarrhoea + Morbidity from Suboptimal BF (6-23m) due to diarrhoea
Number of cases of child ARI/pneumonia (0-23 months) attributed to not breastfeeding according to recommendation	112,042	Morbidity from Suboptimal BF (0-5m) due to ARI + Morbidity from Suboptimal BF (6-23m) due to ARI

B — Number of cases of childhood obesity preventable with full breastfeeding

Table B.1.1 List of inputs

Variable	Value	Source/Assumption
Continued BF at 20-23m	84.8%	UNICEF (2024)
No breastfeeding 20-23 m	15.2%	100% - Continued BF at 20-23m
Prevalence of overweight children under 5	1.6%	World Health Organization. (n.d.-a)
Total population at age 4, both sexes combined	3,187,694	United Nations Department of Economic and Social Affairs, Population Division (n.d.)

Table B.2.1 Number of cases of childhood obesity preventable with full breastfeeding

Variable	Value	Source/Calculation
Continued BF at 20-23m	84.8%	Table B.1.1
Odds ratio	0.74	Horta et al. (2015b)
Incidence	51,003	Percentage of 0-59m children overweight * Total population by age 4
Number of cases of childhood obesity preventable with full breastfeeding	2,016	Incidence * (100% - Continued BF at 20-23m) * (1 - Odds Ratio)

C — Number of Child Deaths (Diarrhoea and ARI)

To estimate the number of child deaths each year attributable to not breastfeeding according to recommendations, published relative risks for both the diarrhoea and pneumonia infection pathways were multiplied by the current percentage of households in each breastfeeding behaviour category, and then multiplied by the mortality for each disease for infants and young children (age 0–23 months).

Table C.1.1 List of inputs

Variable	Value	Source/Assumption
Exclusive breastfeeding <6m	53.3%	UNICEF (2024)
Non-exclusive breastfeeding (non-EBF) <6m	46.7%	100% – exclusive breastfeeding
No breastfeeding <6m	3.4%	The DHS Program (n.d.) Note: IF no data, then 10% of non-EBF
Partial breastfeeding <6m	10.8%	25% of non-EBF minus no breastfeeding is assumed to be partial breastfeeding; $(\text{Non-EBF} - \text{No BF}) \times 0.25$
Predominant breastfeeding <6m	32.5%	75% of non-EBF minus no breastfeeding is assumed to be predominant breastfeeding; $(\text{Non-EBF} - \text{No BF}) \times 0.75$
Continued BF at 20-23m	84.8%	UNICEF (2024)
No Breastfeeding 20-23 m	15.2%	100% - Continued BF at 20-23m
0–5m deaths due to diarrhoea	1,046	Institute for Health Metrics and Evaluation (2025b)
6–23m deaths due to diarrhoea	899	Institute for Health Metrics and Evaluation (2025b)
0–5m deaths due to ARI	10,239	Institute for Health Metrics and Evaluation (2025b)
6–23m deaths due to ARI	2,193	Institute for Health Metrics and Evaluation (2025b)

Table C.2.1 Projected mortality from suboptimal breastfeeding behaviours for infants aged 0-5 months

Diarrhoea	No BF <6m	Partial BF <6m	Predom BF <6m	Source/Calculation
RR of mortality by infection pathway & breastfeeding behaviour	10.52	4.62	2.28	Lamberti (2011)
% Suboptimal breastfeeding behaviour	3.4%	10.8%	32.5%	Table C.1.1
PAR mortality from infection - individual	24.45%	28.15%	29.36%	$(\% \text{ Suboptimal BF behaviour} * (RR-1)) / ((1 + \% \text{ Suboptimal BF behaviour} * (RR-1)))$
PAR mortality from infection - hybrid	61.66%			$1 - (1 - \text{PAR Mortality} \sim \text{None}) * (1 - \text{PAR Mortality} \sim \text{Partial}) * (1 - \text{PAR Mortality} \sim \text{Predom})$
Infection share 0–5-month mortality	1,046			Table C.1.1
Mortality attributed to suboptimal breastfeeding	645			PAR Mortality~Hybrid * Infection Share 0-5m mortality
ARI	No BF <6m	Partial BF <6m	Predom BF <6m	Source/Calculation
RR of mortality by infection pathway & breastfeeding behaviour	14.97	2.5	1.66	Lamberti (2013)
% Suboptimal breastfeeding behaviour	3.4%	10.8%	32.5%	Table C.1.1
PAR mortality from infection – individual	32.20%	13.97%	17.65%	$(\% \text{ Suboptimal BF behaviour} * (RR-1)) / ((1 + \% \text{ Suboptimal BF behaviour} * (RR-1)))$
PAR mortality from infection – hybrid	51.97%			$1 - (1 - \text{PAR Mortality} \sim \text{None}) * (1 - \text{PAR Mortality} \sim \text{Partial}) * (1 - \text{PAR Mortality} \sim \text{Predom})$
Infection share 0–5-month mortality	10,239			Table C.1.1
Mortality attributed to suboptimal breastfeeding	5,321			PAR Mortality~Hybrid * Infection Share 0-5m mortality

Table C.2.2 Projected mortality from suboptimal breastfeeding behaviours for children 6-23 months

Diarrhoea	Value	Source/Calculation
RR of mortality by infection pathway & breastfeeding behaviour	2.18	Lamberti (2011)
% Suboptimal breastfeeding (No breastfeeding 20-23 m)	15.2%	Table C.1.1
PAR mortality from infection	15.21%	$(\% \text{ Suboptimal BF behaviour} * (RR-1)) / ((1 + \% \text{ Suboptimal BF behaviour} * (RR-1)))$
Diarrhoea share > 6-23m mortality	899	Table C.1.1
Mortality attributed to suboptimal breastfeeding	137	PAR Mortality * Diarrhoea Share >6-23m mortality
ARI	Value	Source/Calculation
RR of mortality by infection pathway & breastfeeding behaviour	1.92	Lamberti (2013)
% Suboptimal breastfeeding (No breastfeeding 20-23 m)	15.2%	Table C.1.1
PAR mortality from infection	12.27%	$(\% \text{ Suboptimal BF behaviour} * (RR-1)) / ((1 + \% \text{ Suboptimal BF behaviour} * (RR-1)))$
ARI share > 6-23m mortality	2,193	Table C.1.1
Mortality attributed to suboptimal breastfeeding	269	PAR Mortality * ARI Share >6-23m mortality

Table C.3.1 Number of child deaths attributed to not breastfeeding according to recommendation

Variable	Value	Source/Calculation
Number of child deaths (0-23mths) due to diarrhoea attributed to not breastfeeding according to recommendation	782	Mortality from Suboptimal BF (0-5m) due to diarrhoea + Mortality from Suboptimal BF (6-23m) due to diarrhoea
Number of child deaths (0-23mths) due to ARI/pneumonia attributed to not breastfeeding according to recommendation	5,590	Mortality from Suboptimal BF (0-5m) due to ARI + Mortality from Suboptimal BF (6-23m) due to ARI
Total number of child deaths attributed to not breastfeeding according to recommendation	6,372	No. of child deaths (0-23m) due to diarrhoea + No. of child deaths (0-23m) due to ARI

Maternal Morbidity and Mortality

D — Maternal morbidity attributed to not breastfeeding according to recommendation

Table D.1.1 List of inputs

Variable	Value	Formula/Assumption
Continued breastfeeding at 20-23m	84.8%	UNICEF (2024)
No breastfeeding 20-23 m	15.2%	100% - Continued BF at 20-23m
Incidence of breast cancer in females	29,650	Institute for Health Metrics and Evaluation (2025c)
Incidence of ovarian cancer in females	7,895	Institute for Health Metrics and Evaluation (2025c)
Incidence of diabetes mellitus (15+ years)	238,838	Institute for Health Metrics and Evaluation (2025d)

Table D.2.1 Number of cases of breast cancer (incidence) preventable with breastfeeding

Variable	Value	Source/Calculation
Continued breastfeeding at 20-23m	84.8%	Table D.1.1
Odds ratio	0.86	Chowdhury et al. 2015
Incidence	29,650	Table D.1.1
Number of cases of breast cancer (incidence) preventable with breastfeeding	631	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)

Table D.2.2 Number of cases of ovarian cancer (incidence) preventable with breastfeeding

Variable	Value	Source/Calculation
Continued breastfeeding at 20-23m	84.8%	Table D.1.1
Odds ratio	0.75	Chowdhury et al. 2015
Incidence	7,895	Table D.1.1
Number of cases of ovarian cancer (incidence) preventable with breastfeeding	300	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)

Table D.2.3 Incidence of maternal type II diabetes preventable with breastfeeding

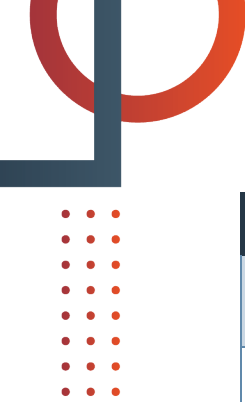
Variable	Value	Source/Calculation
Continued breastfeeding at 20-23m	84.8%	Table D.1.1
Odds ratio	0.82	Aune et al. (2014)
Incidence	238,838	Table D.1.1
Incidence of maternal type II diabetes preventable with breastfeeding	6,535	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)

E — Maternal mortality attributed to not breastfeeding according to recommendation

Table E.1.1 List of inputs

Variable	Value	Source/ Assumption
Continued breastfeeding at 20-23m	84.8%	UNICEF (2024)
No Breastfeeding 20-23 m	15.2%	100% - Continued BF at 20-23m
Incidence of female diabetes deaths (15-19)	54.08	Institute for Health Metrics and Evaluation (2025e)
Incidence of female diabetes deaths (20-24)	64.76	Institute for Health Metrics and Evaluation (2025e)
Incidence of female diabetes deaths (25-29)	91.41	Institute for Health Metrics and Evaluation (2025e)
Incidence of female diabetes deaths (30-34)	151.13	Institute for Health Metrics and Evaluation (2025e)
Incidence of female diabetes deaths (35-39)	183.78	Institute for Health Metrics and Evaluation (2025e)
Incidence of female diabetes deaths (40-44)	283.95	Institute for Health Metrics and Evaluation (2025e)
Incidence of female diabetes deaths (45-49)	620.62	Institute for Health Metrics and Evaluation (2025e)
Incidence of female diabetes deaths (50-54)	1,052.08	Institute for Health Metrics and Evaluation (2025e)
Incidence of female diabetes deaths (55-59)	1,232.92	Institute for Health Metrics and Evaluation (2025e)
Incidence of female diabetes deaths (60-64)	1,889.19	Institute for Health Metrics and Evaluation (2025e)

Variable	Value	Source/ Assumption
Incidence of female diabetes deaths (65-69)	2,023.44	Institute for Health Metrics and Evaluation (2025e)
Incidence of female diabetes deaths (70-74)	1,573.74	Institute for Health Metrics and Evaluation (2025e)
Incidence of female diabetes deaths (75+)	4,740.67	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (15-19)	45.42	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (20-24)	124.83	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (25-29)	341.69	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (30-34)	776.95	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (35-39)	853.93	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (40-44)	1,280.40	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (45-49)	1,737.46	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (50-54)	2,236.97	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (55-59)	1,624.54	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (60-64)	995.01	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (65-69)	1,023.05	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (70-74)	691.34	Institute for Health Metrics and Evaluation (2025e)
Incidence of breast cancer deaths (75+)	385.45	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (15-19)	39.11	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (20-24)	76.66	Institute for Health Metrics and Evaluation (2025e)



Variable	Value	Source/ Assumption
Incidence of ovarian cancer deaths (25-29)	127.33	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (30-34)	220.84	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (35-39)	247.37	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (40-44)	316.88	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (45-49)	435.49	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (50-54)	524.47	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (55-59)	613.99	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (60-64)	687.40	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (65-69)	521.62	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (70-74)	353.76	Institute for Health Metrics and Evaluation (2025e)
Incidence of ovarian cancer deaths (75+)	500.27	Institute for Health Metrics and Evaluation (2025e)

Table E.2.1 Number of maternal deaths due to breast cancer preventable with breastfeeding

Variable	Value	Source/Calculation
Continued breastfeeding at 20-23m	84.8%	Table E.1.1
Odds ratio	0.86	Chowdhury et al. 2015
Incidence of breast cancer deaths		Table E.1.1
Number of maternal deaths due to breast cancer preventable with breastfeeding (15-19)	0.97	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (20-24)	2.66	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (25-29)	7.27	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (30-34)	16.53	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (35-39)	18.17	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (40-44)	27.25	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (45-49)	36.97	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (50-54)	47.60	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (55-59)	34.57	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (60-64)	21.17	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (65-69)	21.77	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (70-74)	14.71	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to breast cancer preventable with breastfeeding (75+)	8.20	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Total number of maternal deaths due to breast cancer preventable with breastfeeding	258	

Table E.2.2 Number of maternal deaths due to ovarian cancer preventable with breastfeeding

Variable	Value	Source/Calculation
Continued breastfeeding at 20-23m	84.8%	Table E.1.1
Odds ratio	0.75	Chowdhury et al. 2015
Incidence of ovarian cancer deaths		Table E.1.1
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (15-19)	1.49	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (20-24)	2.91	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (25-29)	4.84	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (30-34)	8.39	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (35-39)	9.40	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (40-44)	12.04	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (45-49)	16.55	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (50-54)	19.93	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (55-59)	23.33	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (60-64)	26.12	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (65-69)	19.82	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (70-74)	13.44	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to ovarian cancer preventable with breastfeeding (75+)	19.01	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Total number of maternal deaths due to ovarian cancer preventable with breastfeeding	177	

Table E.2.3 Number of maternal deaths due to type II diabetes preventable with breastfeeding

Variable	Value	Source/Calculation
Continued breastfeeding at 20-23m	84.8%	Table E.1.1
Odds ratio	0.82	Aune et al. (2014)
Incidence of maternal diabetes deaths		Table E.1.1
Number of maternal deaths due to diabetes preventable with breastfeeding (15-19)	1.48	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to diabetes preventable with breastfeeding (20-24)	1.77	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to diabetes preventable with breastfeeding (25-29)	2.50	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to diabetes preventable with breastfeeding (30-34)	4.13	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to diabetes preventable with breastfeeding (35-39)	5.03	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to diabetes preventable with breastfeeding (40-44)	7.77	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to diabetes preventable with breastfeeding (45-49)	16.98	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to diabetes preventable with breastfeeding (50-54)	28.78	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to diabetes preventable with breastfeeding (55-59)	33.73	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to diabetes preventable with breastfeeding (60-64)	51.69	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to diabetes preventable with breastfeeding (65-69)	55.36	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due diabetes preventable with breastfeeding (70-74)	43.06	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Number of maternal deaths due to diabetes preventable with breastfeeding (75+)	129.70	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Total number of maternal deaths due to diabetes preventable with breastfeeding	382	

Table E.3.1 Number of maternal deaths attributed to not breastfeeding according to recommendation

Variable	Value	Source/Calculation
Total number of maternal deaths attributed to not breastfeeding according to recommendation	817	Number of maternal deaths due to breast cancer preventable with BF + Number of maternal deaths due to ovarian cancer preventable with BF + Number of maternal deaths due to type II diabetes preventable with BF

Health System and Household Cost

F — Total health system cost attributed to not breastfeeding according to recommendation

The health system cost refers specifically to the direct medical costs for the treatment of cases of childhood diarrhoea and pneumonia, and cases of type II diabetes in women that can be attributed to not breastfeeding.

The number of cases of each childhood disease attributed to not breastfeeding was multiplied by the percentage of children with the disease who were taken to a health facility, the percentage of cases taken to a health facility that receive either outpatient care services or inpatient services (Lamberti et al., 2012; Niederman and Krilov, 2013) and the percentage of patients that seek care at each level of care (health centre, primary hospital, secondary hospital or teaching/tertiary hospital) in each country. The annual total cost of treatment of diarrhoea and pneumonia attributed to not breastfeeding is equal to the number of cases that receive outpatient and inpatient services at each level of care multiplied by the unit cost of treatment for children at each level of care.

The estimated health system cost of treatment for type II diabetes in women was calculated by multiplying the number of annual cases of type II diabetes attributed to not breastfeeding by an estimate on the percentage of cases of type II diabetes that are diagnosed. This figure represents the number of cases that are diagnosed and potentially treated, which is then multiplied by the health expenditure per case of type II diabetes in each country from the International Diabetes Federation Diabetes Atlas.

Table F.1.1 List of inputs (breastfeeding and diabetes)

Variable	Value	Source/ Assumption
Continued BF at 20-23m	84.8%	UNICEF (2024)
No breastfeeding 20-23 m	15.2%	100% - Continued BF at 20-23m
Annual number of cases attributed to suboptimal breastfeeding – diarrhoea (0-5m)	201,418	Table A.2.1
Annual number of cases attributed to suboptimal breastfeeding – diarrhoea (6-23m)	82,875	Table A.2.2
Annual number of cases attributed to suboptimal breastfeeding – ARI (0-5m)	100,408	Table A.2.1
Annual number of cases attributed to suboptimal breastfeeding – ARI (6-23m)	11,634	Table A.2.2
Incidence diabetes mellitus (female 15+)	238,837	Institute for Health Metrics and Evaluation (2025d)
Adults with undiagnosed diabetes [20-79]	5,426,100	International Diabetes Federation (n.d.-a)

Variable	Value	Source/ Assumption
Adults with diabetes [20-79]	13,877,400	International Diabetes Federation (n.d.-b)
Mean diabetes-related expenditure per person with diabetes [USD]	\$74.40	International Diabetes Federation. (n.d.-c)
Gross National Income (GNI), Atlas method (current USD)	\$490,163,600,000	World Bank (n.d.-a)

Table F.1.2 List of inputs (health facility)

Variable	Value	Source/ Assumption
Percentage with diarrhoea taken to health facility	30.00%	UNICEF (n.d.-a)
Percentage with pneumonia taken to health facility	46.00%	UNICEF (n.d.-b)
Percentage of cases taken to health facility, who received outpatient care - diarrhoea	98.5%	Lamberti (2012)
Percentage of cases taken to health facility, who received inpatient care - diarrhoea	1.5%	100% - % of cases taken to health facility who received outpatient care (Diarrhoea)
Mean # days of inpatient care - diarrhoea	8.40	Lamberti (2012)
Percentage of cases taken to health facility, who received outpatient care - ARI	87.0%	Niederman (2013)
Percentage of cases taken to health facility, who received inpatient care - ARI	13.0%	100% - % of cases taken to health facility who received outpatient care (ARI)
Mean # days of inpatient care - ARI	6.40	Zhang et al. (2016)
Percentage of outpatient in health centre	85%	Assumption
Percentage of outpatient in primary level hospital	10%	Assumption
Percentage of outpatient in secondary level hospital	5%	Assumption
Percentage of inpatient in primary hospital	85%	Assumption
Percentage of inpatient in secondary hospital	10%	Assumption




Variable	Value	Source/ Assumption
Percentage of inpatient in teaching hospital	5%	Assumption
Inflation adjusted outpatient visit cost - Cost per outpatient visit USD – health centre (no beds)	\$2.44	World Health Organization (n.d.-b)
Inflation adjusted outpatient visit cost – cost per outpatient visit USD primary level hospital	\$3.43	World Health Organization (n.d.-b)
Inflation adjusted outpatient visit cost - cost per outpatient visit USD- secondary level hospital	\$3.56	World Health Organization (n.d.-b)
Inflation adjusted inpatient visit cost - cost per inpatient visit USD - primary level hospital	\$8.94	World Health Organization (n.d.-b)
Inflation adjusted inpatient visit cost - cost per inpatient visit USD - secondary level hospital	\$9.34	World Health Organization (n.d.-b)
Inflation adjusted inpatient visit cost - cost per inpatient visit USD - teaching hospital	\$12.07	World Health Organization (n.d.-b)

Table F.2.1 Cost of avoidable health care treatment of childhood diarrhoea attributed to not breastfeeding according to recommendation

Variable	Value (\$)		Source/Calculation
	0-5m	6-23m	
Total cost of outpatient care at health centre	\$123,442	\$50,791	Annual no. of cases * % with diarrhoea taken to health facility * % of cases who received outpatient care * % of outpatient in health care * Inflation adjusted outpatient visit cost
Total cost of outpatient care in primary level hospital	\$20,415	\$8,400	
Total cost of outpatient care in secondary level hospital	\$10,594	\$4,359	
Total cost of inpatient care in Primary hospital	\$57,856	\$23,805	Annual no. of cases * % with diarrhoea taken to health facility * % of cases who received inpatient care * % of inpatient in health care * mean no. days of inpatient care * Inflation adjusted outpatient visit cost
Total cost of inpatient care secondary hospital	\$7,111	\$2,926	
Total cost of inpatient care teaching hospital	\$4,595	\$1,891	
Cost of avoidable health care treatment of childhood diarrhoea (age group)	\$224,013	\$92,172	Total cost of outpatient care + Total cost of inpatient care
Cost of avoidable health care treatment of childhood diarrhoea attributed to not breastfeeding according to recommendation	\$316,185		Cost of avoidable health care treatment (<6m) + Cost of avoidable health care treatment (6-23m)

Table F.2.2 Cost of avoidable health care treatment of childhood ARI/pneumonia attributed to not breastfeeding according to recommendation

Variable	Value (\$)		Source/Calculation
	0-5m	6-23m	
Total cost of outpatient care at health centre	\$83,340	\$9,656	Annual no. of cases * % with ARI taken to health facility * % of cases who received outpatient care * % of outpatient in health care * Inflation adjusted outpatient visit cost
Total cost of outpatient care in primary level hospital	\$13,783	\$1,597	
Total cost of outpatient care in secondary level hospital	\$7,153	\$829	
Total cost of inpatient care in primary hospital	\$292,015	\$33,835	Annual no. of cases * % with ARI taken to health facility * % of cases who received inpatient care * % of inpatient in health care * mean no. days of inpatient care * Inflation adjusted outpatient visit cost
Total cost of inpatient care in secondary hospital	\$35,892	\$4,159	
Total cost of inpatient care in teaching hospital	\$23,191	\$2,687	
Cost of avoidable health care treatment of childhood ARI/pneumonia (age group)	\$455,373	\$52,762	Total cost of outpatient care + Total cost of inpatient care
Cost of avoidable health care treatment of childhood ARI/pneumonia attributed to not breastfeeding according to recommendation	\$508,136		Cost of avoidable health care treatment (<6m) + Cost of avoidable health care treatment (6-23m)

Table F.2.3 Cost of avoidable health care treatment of type II diabetes morbidity in mothers attributed to not breastfeeding according to recommendation

Variable	Value	Source/Calculation
Continued breastfeeding at 20-23m	84.80%	Table G.1.1
Odds ratio	0.82	Aune et al. (2014)
Incidence	238,837	Table G.1.1
Incidence potentially averted at full BF rates	6,535	Incidence * (100% - % BF at 2 years) * (1 - Odds Ratio)
Health system cost of treating diagnosed incidence of type II diabetes potentially averted by BF	\$296,079	Incidence potentially averted at full BF * (1 - (Adults with undiagnosed diabetes / Adults with diabetes)) * Mean diabetes-related expenditure per person

Table F.3.1 Total health system cost attributed to not breastfeeding according to recommendation

Variable	Value	Source/Calculation
Total health system cost attributed to not breastfeeding according to recommendation	\$1,120,399	Cost of avoidable health care treatment of childhood diarrhoea + Cost of avoidable health care treatment of childhood ARI/pneumonia + Health System Cost of treating diagnosed incidence of type II diabetes potentially averted by BF
Total health system cost attributed to not breastfeeding according to recommendation as % of GNI	0.000229%	Total health system cost attributed to not breastfeeding according to recommendation / GNI, Atlas Method (current USD)

G — Cost of avoidable breastmilk substitute purchased for children not breastfed according to recommendation

Table G.1.1 List of inputs

Variable	Value	Source/ Assumption
Exclusive Breastfeeding (EBF) <6m	53.3%	UNICEF (2024)
Non-exclusive breastfeeding (non-EBF) <6m	46.7%	100% - Exclusive breastfeeding
No breastfeeding <6m	3.4%	The DHS Program (n.d.) Note: IF no data, then 10% of non-EBF
Partial breastfeeding <6m	10.8%	25% of non-EBF minus no breastfeeding is assumed to be partial breastfeeding; (Non-EBF - No BF) * 0.25
Predominant breastfeeding <6m	32.5%	75% of non-EBF minus no breastfeeding is assumed to be predominant breastfeeding; (Non-EBF - No BF) * 0.75
Continued BF at 20-23m	84.8%	UNICEF (2024)
No Breastfeeding 20-23 m	15.2%	100% - Continued BF at 20-23m
Average nominal monthly earnings (local currency)	15,516.53	International Labour Organization (n.d.-a)
Official exchange rate (Local Currency Unit, LCU, per USD, period average)	115.60	World Bank (n.d.-b)
Average nominal monthly earnings (USD)	\$134.23	Average nominal monthly earnings (local currency) / official exchange rate
GNI, Atlas Method (current USD)	\$490,163,600,000	World Bank (n.d.-a)
Price of economy infant formula (per unit)	\$12.84	Data collected (see appendix table B) Note: For both 0-5m and 6-23m
Units required for period (no breastfeeding 0-5m)	40	Assumption
Units required for period (partial 0-5m)	30	Assumption
Units required for period (predominant 0-5m)	10	Assumption
Units required for period (no breastfeeding 6-23m)	36	Assumption

Variable	Value	Source/ Assumption
Total population by age 0, both sexes combined	3,410,874	United Nations Department of Economic and Social Affairs, Population Division (n.d.)
Total population by age 1, both sexes combined	3,367,191	United Nations Department of Economic and Social Affairs, Population Division (n.d.)

Table G.2.1 Cost of avoidable breastmilk substitute purchased for children not breastfed according to recommendation

	No BF <6m	Partial BF <6m	Predom BF <6m	No BF 6-23m	Source/ Calculation
Total cost over period (USD)	\$514	\$385	\$128	\$462	Price of infant formula * Units required for period
% Suboptimal breastfeeding behaviour	3.4%	10.8%	32.5%	15.2%	Table H.1.1
Total no. children in age groups	1,705,437			5,072,628	0-5m: Total population (Age 0) / 2 6:23m: Total population (Age 1) + (Total population age 0 / 2)
Total cost for group (\$s)	\$29,782,448	\$71,116,543	\$71,116,543	\$356,422,326	Total cost over period * Total no. of children in age group * percentage of suboptimal breastfeeding behaviour
Cost of avoidable breastmilk substitute purchased for children not breastfed according to recommendation	\$528,437,860				Total cost for group (no BF 0-5m) + Total cost for group (partial) + Total cost for group (predom) + Total cost for group (no BF 6-23m)
Cost of formula feeding children 0-23 months as percent of nominal wages	46.2%				{Total cost over period (no BF 0-5m) + Total cost over period (no BF 6-23m)} / {Average nominal monthly earnings (USD) * 24}

Human Capital Losses

H — IQ points and years of education lost

The formulae for calculating projected number of IQ points and years of education lost have been replicated from the Nutrition International Investment Case tool. The source for the IQ points effect size has been changed to use Victora et al. (2016), to be consistent with the calculation of economic losses.

Table H.1.1 Projected number of IQ points and years of education lost

Variable	Value	Source/Calculation
Exclusive breastfeeding <6m	53.3%	UNICEF (2024)
Non-exclusive breastfeeding (non-EBF) <6m	46.7%	100% - Exclusive breastfeeding <6m
Population of age 0	3,410,874	United Nations Department of Economic and Social Affairs, Population Division (n.d.)
Total number of child deaths attributed to not breastfeeding according to recommendation	6,372	Table C.3.1
Number of age 0 children not breastfeeding according to recommendation	1,586,507	(Population of Age 0 * Non-EBF <6m) - Total number of child deaths attributed to not BF
IQ points gained from EBF	2.62	Victora et al. (2016)
Years of education gained from EBF	0.91	Victora, et al. (2015).
Number of IQ points lost due to not breastfeeding according to recommendation	4,156,647	Number of age 0 children not BF * IQ points gained from EBF
Number of years of education lost due to not breastfeeding according to recommendation	1,443,721	Number of age 0 children not BF * Years of education gained from EBF

I — Economic losses due to cognitive losses attributed to not breastfeeding according to recommendation

This estimation reflects the potential contribution to a country's economy through increased earnings over a person's productive years that will be lost due to not achieving cognitive gains in intelligence (provided by being breastfed according to recommendations) in the early years of childhood. This analysis calculated the cognitive losses by assuming that exclusive breastfeeding in children younger than six months of age compared with non-exclusive breastfeeding can achieve the same cognitive gains equal to a 2.62 IQ increase compared with not being breastfed (Horta et al., 2015; Victora et al., 2016). The 2.62 IQ increase point estimate was adjusted for maternal IQ and used in the tool in order to be conservative (Horta et al., 2015).

The potential future income lost due to cognitive losses is equal to multiplying the number of children not breastfed by GNI per capita (World Bank, 2016), the 2.62 IQ point increase lost per child not breastfed (Horta et al., 2015; Victora et al., 2016) and 1.067 percent increase in earnings lost for each IQ point lost (Hanushek and Woessmann, 2008). The total future income lost in a country is equal to the sum of this calculation for each year from the point that the children would have turned 18 years of age until expected retirement at age 65 or the country's age of life expectancy (World Bank, 2016), whichever comes first.

Table I.1.1 List of inputs

Variable	Value	Source/ Assumption
Exclusive Breastfeeding <6m	53.3%	UNICEF (2024)
Non-exclusive breastfeeding (non-EBF) <6m	46.7%	100% - EBF<6m
Percentage of lifetime earning actually realized (child cognitive and mortality benefits)	90.0%	Hoddinott et al. (2013)
Increase in IQ due to EBF	2.62	Victora et al. (2016)
Increase in earnings due to increase in 1 IQ pt.	1.07%	Hanushek & Wossman (2008)
% Wages account for GNI	47.6%	International Labour Organization (n.d.-b)
Labour Force Participation Rate, females %	38.41%	International Labour Organization (n.d.-c)
Discount rate costs	3.00%	Assumption
Discount rate benefits	3.00%	Assumption
Long-run GNI growth rate	3%	Assumption
Net discount rate for Net Present Value (NPV) calculations	0%	$(1 + \text{discount rate benefits}) / (1 + \text{GNI growth rate}) - 1$
Healthy life expectancy (HALE) at birth	63.1	World Health Organization (n.d.-c)

Variable	Value	Source/ Assumption
Age for start of productivity	15	Assumption
Age for end of productivity	63.1	If HALE is less than 65, then use HALE or else use 65
GNI, Atlas Method (current USD)	\$490,163,600,000	World Bank (n.d.-a)
GNI per capita	\$2,820.00	World Bank (n.d.-c)
Population of children Age 0	3,410,874	United Nations Department of Economic and Social Affairs, Population Division (n.d.)
Age of Death for 15-19	17.0	Assumption
Age of Death for 20-24	22.0	Assumption
Age of Death for 25-29	27.0	Assumption
Age of Death for 30-34	32.0	Assumption
Age of Death for 35-39	37.0	Assumption
Age of Death for 40-44	42.0	Assumption
Age of Death for 45-49	47.0	Assumption
Age of Death for 50-54	52.0	Assumption
Age of Death for 55-59	57.0	Assumption
Age of Death for 60-64	62.0	Assumption
Age of Death for 65-69	67.0	Assumption
Age of Death for 70-74	72.0	Assumption
Age of Death for 75+	75.0	Assumption
Child mortality (Diarrhoea/ARI)	6,372	Table C.3.1
Maternal deaths due to suboptimal breastfeeding (15-19)	3.9	Summation of breast cancer, ovarian cancer, and diabetes deaths from Tables F.2.1, F.2.2, and F.2.3
Maternal deaths due to suboptimal breastfeeding (20-24)	7.3	

Variable	Value	Source/ Assumption
Maternal deaths due to suboptimal breastfeeding (25-29)	14.6	
Maternal deaths due to suboptimal breastfeeding (30-34)	29.1	
Maternal deaths due to suboptimal breastfeeding (35-39)	32.6	
Maternal deaths due to suboptimal breastfeeding (40-44)	47.1	
Maternal deaths due to suboptimal breastfeeding (45-49)	70.5	
Maternal deaths due to suboptimal breastfeeding (50-54)	96.3	
Maternal deaths due to suboptimal breastfeeding (55-59)	91.6	
Maternal deaths due to suboptimal breastfeeding (60-64)	99.0	

Calculation of cognitive gains (EBF vs. Non-EBF) for a given year:

(Population of Children Aged 0 * Non-Exclusive Breastfeeding <6m * increase in IQ due to EBF * Increase in earnings due to increase in 1 IQ point * Percentage wages account for GNI * (GNI per capita * (1 + GNI growth rate) ^Age) * Percentage of lifetime earning actually realized)

/

(1/ (1 + Discount rate for benefits) ^Age)

Table I.2.1 Net benefits discounted – Mortality

Variable	Value	Source/Calculation
Economic losses due to child mortality attributed to not breastfeeding according to recommendation	\$369,484,256	Child mortality * Percentage of lifetime earning actually realized * {PV(Net discount rate, Age for end of productivity, GNI per capita) – PV(Net discount rate, Age for beginning of productivity, GNI per capita 2020)}
Economic losses due to maternal mortality attributed to not breastfeeding according to recommendation	\$7,154,028	Maternal mortality * LFPR (female) * {PV(Net discount rate, Age of end of productivity – mean age of maternal death, GNI per capita)}
Combined economic losses due to maternal and child mortality attributed to not breastfeeding according to recommendation	\$376,638,284	Economic losses due to child mortality attributed to not breastfeeding according to recommendation + Economic losses due to maternal mortality attributed to not breastfeeding according to recommendation
Combined economic losses due to maternal and child mortality attributed to not breastfeeding according to recommendation as % of GNI	0.077%	Combined economic losses due to maternal and child mortality attributed to not breastfeeding according to recommendation / GNI, Atlas Method (current USD)

Table I.2.2 Net benefits discounted – Economic losses due to cognitive losses attributed to not breastfeeding according to recommendation

Variable	Value	Source/Calculation
Economic losses attributable cognitive losses attributed to not breastfeeding according to recommendation (NPV of future potential earnings with increased breastfeeding at full coverage)	\$2,579,174,722	Population of Children Aged 0 * Non-Exclusive Breastfeeding <6m * increase in IQ due to EBF * Increase in earnings due to increase in 1 IQ point * Percentage wages account for GNI * Percentage of lifetime earning actually realized * {PV(Net discount rate, Age for end of productivity, GNI per capita) – PV(Net discount rate, Age for beginning of productivity, GNI per capita)}
Economic losses attributable cognitive losses attributed to not breastfeeding according to recommendation as % of GNI	0.526%	Economic losses attributable cognitive losses attributed to not breastfeeding according to recommendation / GNI, Atlas Method (current USD)
Total future cost (health system, mortality and cognitive) attributed to not breastfeeding according to recommendation	\$2,956,933,405	Total health system cost attributed to not breastfeeding according to recommendation (Table F.3.1) + Combined economic losses due to maternal and child mortality attributed to not breastfeeding according to recommendation (Table I.2.1) + Economic losses attributable cognitive losses attributed to not breastfeeding according to recommendation (Table I.2.2)
Total future cost (health system, mortality and cognitive) of suboptimal breastfeeding as % of GNI	0.603%	Total future cost (health system, mortality and cognitive) attributed to not breastfeeding according to recommendation / GNI, Atlas Method (current USD)



Data Sources

Dataset	Source	Year of Values	Date Accessed
Global Infant and Young Child Feeding Databases	UNICEF. (2024). <i>Infant and young child feeding (IYCF) data</i> . UNICEF DATA. https://data.unicef.org/resources/dataset/infant-young-child-feeding/	Varies	Nov 8th, 2025
Children Not Breastfeeding	The DHS Program. (n.d.). <i>STATcompiler</i> . Retrieved from https://www.statcompiler.com/en/#	Varies	Nov 8th, 2025
Total Population-Both Sexes	United Nations Department of Economic and Social Affairs, Population Division. (n.d.). <i>Data Portal</i> . https://population.un.org/dataportal/home?df=19009df6-a6f7-4d3d-b039-a603fdb597e0	Varies	Nov 8th, 2025
Diarrhoea and ARI Incidence	Institute for Health Metrics and Evaluation. (2025a). <i>Global Burden of Disease (GBD) Results Tool</i> . VizHub. https://vizhub.healthdata.org/gbd-results?params=gbd-api-2023-permalink/7cd78c8f71ea682662732fb6274bdacb	2023	Nov 8th, 2025
Diarrhoea and ARI Deaths for Children	Institute for Health Metrics and Evaluation. (2025b). <i>Global Burden of Disease (GBD) Results Tool</i> . VizHub. https://vizhub.healthdata.org/gbd-results?params=gbd-api-2023-permalink/2c20cfc04b50930adad8e908d165125	2023	Nov 8th, 2025
Ovarian and Breast Cancer Deaths and Incidence	Institute for Health Metrics and Evaluation. (2025c). <i>Global Burden of Disease (GBD) Results Tool</i> . VizHub. https://vizhub.healthdata.org/gbd-results?params=gbd-api-2023-permalink/cb793a529937cd940535008c065642a0	2023	Nov 8th, 2025
Diabetes mellitus type II Incidence	Institute for Health Metrics and Evaluation. (2025d). <i>Global Burden of Disease (GBD) Results Tool</i> . VizHub. https://vizhub.healthdata.org/gbd-results?params=gbd-api-2023-permalink/aa9c5bd667960e05caf8b305b23c8f15	2023	Nov 8th, 2025
Diabetes, Ovarian and Breast Cancer Deaths by age group	Institute for Health Metrics and Evaluation. (2025e). <i>Global Burden of Disease (GBD) Results Tool</i> . VizHub. https://vizhub.healthdata.org/gbd-results?params=gbd-api-2023-permalink/f2eec3d4dc6c74f46eb9be91ac6e040f	2023	Nov 8th, 2025



Dataset	Source	Year of Values	Date Accessed
Undiagnosed Diabetes	International Diabetes Federation. (n.d.-a). <i>Undiagnosed Diabetes Population (in 1,000s)</i> . IDF Diabetes Atlas. https://diabetesatlas.org/data-by-indicator/diabetes-estimates-20-79-y/people-with-undiagnosed-diabetes-in-1000s/	2024	Nov 8th, 2025
Diagnosed Diabetes	International Diabetes Federation. (n.d.-b). <i>People Living with Diabetes (in 1,000s)</i> . IDF Diabetes Atlas. https://diabetesatlas.org/data-by-indicator/diabetes-estimates-20-79-y/people-with-diabetes-in-1000s/	2024	Nov 8th, 2025
Health Related Diabetes Expenditure	International Diabetes Federation. (n.d.-c). <i>Total diabetes-related health expenditure, USD million</i> . IDF Diabetes Atlas. https://diabetesatlas.org/data-by-indicator/diabetes-related-health-expenditure/total-diabetes-related-health-expenditure-usd-million/	2024	Nov 8th, 2025
Care seeking for children with diarrhoea (%)	UNICEF. (n.d.-a). <i>Careseeking for diarrhoea [Data set]</i> . UNICEF Data Warehouse. https://data.unicef.org/resources/data_explorer/unicef_f/?ag=UNICEF&df=GLOBAL_DATAFLOW&ver=1.0&dq=.MNCH_DIARCARE.&startPeriod=2015&endPeriod=2025	Varies	Nov 8th, 2025
Care seeking for children with ARI (%)	UNICEF. (n.d.-b). <i>Careseeking for ARI [Data set]</i> . UNICEF Data Warehouse. https://data.unicef.org/resources/data_explorer/unicef_f/?ag=UNICEF&df=GLOBAL_DATAFLOW&ver=1.0&dq=.MNCH_PNEUCARE.&startPeriod=2015&endPeriod=2025	Varies	Nov 8th, 2025
Average monthly earnings Wages*	International Labour Organization. (n.d.-a). <i>Mean nominal monthly earnings of employees by sex and occupation (local currency) [Data set]</i> . ILOSTAT. Retrieved November 8, 2025, from https://rshiny.ilo.org/dataexplorer32/?lang=en&segment=indicator&id=EAR_4MTH_SEX_CUR_NB	2024	Nov 8th, 2025
Labour Share of GDP (%) Annual	International Labour Organization. (n.d.-a). <i>Labour share of GDP, (%) [Data set]</i> . ILOSTAT. Retrieved November 8, 2025, from https://rshiny.ilo.org/dataexplorer32/?lang=en&segment=indicator&id=SDG_1041_NOC_RT_A	2024	Nov 8th, 2025
Labour force Participation rate by sex and age (%)	International Labour Organization. (n.d.-c). <i>Labour force participation rate by sex and age (%) [Data set]</i> . ILOSTAT. Retrieved November 8, 2025, from https://rshiny.ilo.org/dataexplorer32/?lang=en&segment=indicator&id=EAP_DWAP_SEX_AGE_RT_A	2024	Nov 8th, 2025



Dataset	Source	Year of Values	Date Accessed
GNI Atlas method Current USD	World Bank. (n.d.-a). <i>GNI, Atlas method (current US\$) [Data set]</i> . World Bank Open Data. https://data.worldbank.org/indicator/NY.GNP.ATLS.CD	Varies	Nov 8th, 2025
Exchange Rate**	World Bank. (n.d.-b). <i>Official exchange rate (LCU per US\$, period average) [Data set]</i> . World Bank Open Data. https://data.worldbank.org/indicator/PA.NUS.FCRF	Varies	Nov 8th, 2025
GNI per Capita	World Bank. (n.d.-c). <i>GNI per capita (current US\$) [Data set]</i> . World Bank Open Data. https://data.worldbank.org/indicator/NY.GNP.PCAP.CD	Varies	Nov 8th, 2025
Overweight prevalence among children under 5 years of age (survey-based estimates)	World Health Organization. (n.d.-a). <i>Overweight among children and adolescents, BMI > +1 standard deviations above the median, prevalence (crude estimate) (%) [Data set]</i> . The Global Health Observatory. https://www.who.int/data/gho/data/indicators/indicator-details/GHO/gho-jme-overweight-prevalence	Varies	Nov 8th, 2025
Price of Breastmilk substitutes	Nutrition International Provided (Appendix Table B)	Varies	Nov 8th, 2025

Notes: * - ILO estimates in LCU for Czechia, Lebanon, Hungary, Serbia, and Iceland appear unreliable. For these countries, we take the ILO estimates in USD and multiply them by the LCU exchange rate. Additionally, Sierra Leone rebased its currency in 2022, so the wage rate is divided by 1,000.

** - World Bank exchange rate estimates for Turkmenistan, Yemen, and Venezuela appear unreliable, so alternative sources are used.

Turkmenistan: <https://wise.com/gb/currency-converter/usd-to-tmt-rate/history/01-01-2026>

Yemen: <https://wise.com/gb/currency-converter/usd-to-yer-rate/history/01-01-2026>

Venezuela: <https://wise.com/gb/currency-converter/usd-to-ves-rate/history/01-01-2026>



References

- Australian Bureau of Statistics. (2024). *Breastfeeding*. Australian Bureau of Statistics. <https://www.abs.gov.au/statistics/health/health-conditions-and-risks/breastfeeding/latest-release>
- Aune, D., Norat, T., Romundstad, P., & Vatten, L. J. (2014). Breastfeeding and the maternal risk of type 2 diabetes: A systematic review and dose–response meta-analysis of cohort studies. *Nutrition, Metabolism and Cardiovascular Diseases*, 24(2), 107–115. <https://doi.org/10.1016/j.numecd.2013.10.028>
- Centre for Disease Prevention and Control of Latvia. (2025). *Breastfeeding indicators by region (VSM140) [Data set]*. Official Statistics Portal of Latvia. https://data.stat.gov.lv/api/v1/en/OSP_PUB/START/VES/VS/VSM/VSM140
- Chowdhury, R., Sinha, B., Sankar, M. J., Taneja, S., Bhandari, N., Rollins, N., Bahl, R., & Martines, J. (2015). Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. *Acta Paediatrica*, 104(S467), 96–113. <https://doi.org/10.1111/apa.13102>
- Direction de la Santé. (2018). *Étude ALBA 2015: L'alimentation de nos bébés—Enquête nationale sur l'alimentation des enfants de 4, 6 et 12 mois au Grand-Duché de Luxembourg en 2015*. Ministère de la Santé, Luxembourg. <https://santesecu.public.lu/en/publications/e/etude-alba-2015-alimentation-bebes.html>
- Economou, M., Kolokotroni, O., Paphiti-Demetriou, I., Kouta, C., Lambrinou, E., Hadjigeorgiou, E., Hadjiona, V., Tryfonos, F., Philippou, E., & Middleton, N. (2018). Prevalence of breast-feeding and exclusive breast-feeding at 48 h after birth and up to the sixth month in Cyprus: The BrEaST start in life project. *Public Health Nutrition*, 21(5), 967–980. <https://doi.org/10.1017/S1368980017003214>
- Hanushek, E. A., & Woessmann, L. (2008). The role of cognitive skills in economic development. *Journal of Economic Literature*, 46(3), 607–668. <https://doi.org/10.1257/jel.46.3.607>
- Health and Social Care Information Centre. (2012). *Infant Feeding Survey 2010*. Health and Social Care Information Centre. <https://digital.nhs.uk/data-and-information/publications/statistical/infant-feeding-survey/infant-feeding-survey-uk-2010>
- Hoddinott, J., Alderman, H., Behrman, J. R., Haddad, L., & Horton, S. (2013). The economic rationale for investing in stunting reduction: Economic rationale for stunting reduction. *Maternal and Child Nutrition*, 9, 69–82. <https://doi.org/10.1111/mcn.12080>
- Hörnell, A., & Lagström, H. (2024). Infant feeding—A scoping review for Nordic Nutrition Recommendations 2023. *Food & Nutrition Research*, 68, 10456. <https://doi.org/10.29219/fnr.v68.10456>
- Horta, B. L., Loret de Mola, C., & Victora, C. G. (2015). Breastfeeding and intelligence: a systematic review and meta-analysis. *Acta Paediatrica*, 104(S467), 14–19. <https://doi.org/10.1111/apa.13139>
- Horta, B. L., Loret de Mola, C., & Victora, C. G. (2015). Long-term consequences of breastfeeding on cholesterol, obesity, systolic blood pressure and type 2 diabetes: a systematic review and meta-analysis. *Acta Paediatrica*, 104(S467), 30–37. <https://doi.org/10.1111/apa.13133>
- Iliodromiti, Z., Zografaki, I., Papamichail, D., Stavrou, T., Gaki, E., Ekizoglou, C., Nteka, E., Mavrika, P., Zidropoulos, S., Panagiotopoulos, T., & Antoniadou, I. (2020). Increase of breast-feeding in the past decade in Greece, but still low uptake: Cross-sectional studies in 2007 and 2017. *Public Health Nutrition*, 23(6), 961–970. <https://doi.org/10.1017/S1368980019003719>

- Lamberti, L. M., Fischer Walker, C. L., Noiman, A., Victora, C., & Black, R. E. (2011). Breastfeeding and the risk for diarrhea morbidity and mortality. *BMC Public Health*, 11(3), S15–S15. <https://doi.org/10.1186/1471-2458-11-S3-S15>
- Lamberti, L. M., Fischer Walker, C. L., & Black, R. E. (2012). Systematic review of diarrhea duration and severity in children and adults in low- and middle-income countries. *BMC Public Health*, 12(1), 276–276. <https://doi.org/10.1186/1471-2458-12-276>
- Lamberti, L. M., Zakarija-Grković, I., Fischer Walker, C. L., Theodoratou, E., Nair, H., Campbell, H., & Black, R. E. (2013). Breastfeeding for reducing the risk of pneumonia morbidity and mortality in children under two: A systematic literature review and meta-analysis. *BMC Public Health*, 13(3), S18–S18. <https://doi.org/10.1186/1471-2458-13-S3-S18>
- Niederman, M. S., & Krilov, L. R. (2013). Acute lower respiratory infections in developing countries. *The Lancet (British Edition)*, 381(9875), 1341–1342. [https://doi.org/10.1016/S0140-6736\(12\)62178-3](https://doi.org/10.1016/S0140-6736(12)62178-3)
- Public Health Agency of Canada. (2023). *Breastfeeding in Canada*. Government of Canada. <https://health-infobase.canada.ca/breastfeeding/>
- Shiraishi, M., Matsuzaki, M., Kurihara, S., Iwamoto, M., & Shimada, M. (2020). Post-breastfeeding stress response and breastfeeding self-efficacy as modifiable predictors of exclusive breastfeeding at 3 months postpartum: A prospective cohort study. *BMC Pregnancy and Childbirth*, 20, 730. <https://doi.org/10.1186/s12884-020-03431-8>
- Theurich, M. A., Davanzo, R., Busck-Rasmussen, M., et al. (2019). Breastfeeding rates and programs in Europe: A survey of 11 national breastfeeding committees and representatives. *Journal of Pediatric Gastroenterology and Nutrition*, 68(3), 400–407. <https://doi.org/10.1097/MPG.0000000000002234>
- Vaz, J. S., Maia, M. F. S., Neves, P. A. R., Santos, T. M., Vidaletti, L. P., & Victora, C. G. (2021). Monitoring breastfeeding indicators in high-income countries: Levels, trends and challenges. *Maternal & Child Nutrition*, 17(3), e13137. <https://doi.org/10.1111/mcn.13137>
- Victora, C. G., Horta, B. L., Loret de Mola, C., Quevedo, L., Pinheiro, R. T., Gigante, D. P., Gonçalves, H., & Barros, F. C. (2015). Association between breastfeeding and intelligence, educational attainment, and income at 30 years of age: a prospective birth cohort study from Brazil. *The Lancet. Global health*, 3(4), e199–e205. [https://doi.org/10.1016/S2214-109X\(15\)70002-1](https://doi.org/10.1016/S2214-109X(15)70002-1)
- Victora, C. G., Bahl, R., Barros, A. J. D., França, G. V. A., Horton, S., Krasevec, J., Murch, S., Sankar, M. J., Walker, N., & Rollins, N. C. (2016). Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *The Lancet (British Edition)*, 387(10017), 475–490. [https://doi.org/10.1016/S0140-6736\(15\)01024-7](https://doi.org/10.1016/S0140-6736(15)01024-7)
- Walters, D. D., Phan, L. T. H., & Mathisen, R. (2019). The cost of not breastfeeding: global results from a new tool. *Health Policy and Planning*, 34(6), 407–417. <https://doi.org/10.1093/heapol/czz050>
- World Breastfeeding Trends Initiative. (2018). *Malta Country Report 2018*. World Breastfeeding Trends Initiative. <https://www.worldbreastfeedingtrends.org/uploads/country-data/country-report/WBTi-Malta-2018.pdf>
- World Breastfeeding Trends Initiative. (2023). *Ireland Country Report 2023*. World Breastfeeding Trends Initiative. <https://www.worldbreastfeedingtrends.org/uploads/country-data/country-report/WBTi-Ireland-2023.pdf>



World Health Organization Regional Office for Europe. (2020, July 31). *Cooperation and coordination to improve maternal and infant health in the Russian Federation*. World Health Organization. <https://www.who.int/europe/news/item/31-07-2020-cooperation-and-coordination-to-improve-maternal-and-infant-health-in-the-russian-federation>

Zhang, S., Sammon, P. M., King, I., Andrade, A. L., Toscano, C. M., Araujo, S. N., Sinha, A., Madhi, S. A., Khandaker, G., Yin, J. K., Booy, R., Huda, T. M., Rahman, Q. S., El Arifeen, S., Gentile, A., Giglio, N., Bhuiyan, M. U., Sturm-Ramirez, K., Gessner, B. D., ... Nair, H. (2016). Cost of management of severe pneumonia in young children: systematic analysis. *Journal of Global Health*, 6(1), 010408–010408. <https://doi.org/10.7189/jogh.06.010408>

Appendix

Table A: Exclusive breastfeeding rate for select countries

Exclusive breastfeeding rate for select countries for whom standardized breastfeeding data are not available. These countries' cost of not breastfeeding estimates are not included in aggregate calculations presented in the CONBF tool.

Country	Year	Value	Breastfeeding observation period	Source
Australia	2022	63.9	At 4 months	Australian Bureau of Statistics (2024)
Belgium	2019	54.0	At 3 months	Theurich et al. (2019)
Canada	2022	58.8	Average of observations at 1, 2, 3, 4, 5, and 6 months	Public Health Agency of Canada (2023)
Cyprus	2015	12.3	At 4 months	Economou et al. (2018)
Denmark	2019	56.0	At 4 months	Theurich et al. (2019)
Finland	2019	53.0	At 3 months	Hörnell & Lagström (2024)
Greece	2017	25.0	At 4 months	Iliodromiti et al. (2020)
Iceland	2021	59.0	At 4 months	Hörnell & Lagström (2024)
Ireland	2022	31.1	At 3 months	World Breastfeeding Trends Initiative (2023)
Italy	2019	42.0	At 4 months	Theurich et al. (2019)
Japan	2021	50.0	At 3 months	Shiraishi et al. (2020)
Latvia	2023	15.7	Under 6 months	Centre for Disease Prevention and Control of Latvia (2025)
Luxembourg	2015	33.1	At 4 months	Direction de la Santé (2018)
Malta	2018	9.6	Under 6 months	World Breastfeeding Trends Initiative (2018)
Norway	2019	68.0	At 3 months	Vaz et al. (2021)
Portugal	2014	58.0	At 3 months	Vaz et al. (2021)
Russia	2020	40.0	During first 6 months	World Health Organization (2020)
Spain	2017	64.0	At 3 months	Theurich et al. (2019)
Sweden	2017	50.0	At 4 months	Vaz et al. (2021)
United Kingdom	2010	17.0	At 3 months	Health and Social Care Information Centre (2012)



Table B: Cost of Breastmilk Substitutes

Data on the unit price of infant formula from the following countries was collected by Nutrition International in June 2026 through an online search of e-commerce vendors based in each country. The lowest price of an economy brand of infant formula was selected for this analysis to be conservative since the average price paid is unknown.

Country	Currency	Applicable exchange rate to USD	Price of BMS	Source	Mass (g)	Price of BMS (USD)
Angola	AOA	869.85	6,890	https://www.bharatmart.co.ao/products/optilait-1-baby-formula-milk-0-6-months-400gm	400	\$9.90
Albania	ALL	93.12	2,565	https://halsa.al/products/holle-bio-infant-goat-milk-formula-1-0m-400gr	400	\$34.43
Argentina	ARS	914.69	60,410	https://www.farmaciadelpuente.com.ar/shop/product/leche-infantil-en-polvo-nutrilon-1-pouch-x-12-kg-0-a-6-meses-WS130058	1200	\$27.52
Armenia	AMD	392.73	4,750	https://shop.humana-baby.am/en/product/my-pack-platin-1/	400	\$15.12
Australia	AUD	1.52	4	<u>Euromonitor (Feb 2026)</u>	100	\$13.16
Azerbaijan	AZN	1.7	11	https://pharmonline.az/product/ushaq-qidasi-nutrilak-1-sud-formulasi-0-6-ayliq-300-q-rusiya?lng=en	300	\$10.78
Burundi	BIF	2574.05	35,000	https://kilakitu.bi/lait-infantile-1er-age-400g-2	400	\$17.00
Belgium	EUR	0.92	2	<u>Euromonitor (Feb 2026)</u>	100	\$10.87
Benin	XOF	606.35	4,355	https://shopafrico.com/shop/france-lait-lait-infantile-1er-age-bte-400-g/	400	\$8.98
Bangladesh	BDT	115.6	2,375	https://chaldal.com/formula?srsItid=AfmBOooKwphjikQfzD0ueuO5a2aPZRxy1D8plqa86EEU9Gy46rHL-F7	800	\$12.84
Bosnia and Herzegovina	BAM	1.81	17	https://www.aksabih.ba/mlecna-formula-osnovna/9-bebelac-mlijeko-1-400g	400	\$11.74



Country	Currency	Applicable exchange rate to USD	Price of BMS	Source	Mass (g)	Price of BMS (USD)
Belarus	BYN	3.25	78	https://detmir.by/product/index/id/3249559/?variant_id=3249559	800	\$15.00
Bolivia	BOB	6.91	210	https://fsa.bo/producto/detalle/62b38e7d5a20016c1132efe4	800	\$18.99
Brazil	BRL	5.39	14	<u>Euromonitor (Feb 2026)</u>	100	\$12.99
Barbados	BBD	2	29	https://aonesupermarkets.com/collections/baby-milk-cereals/products/similac-advance-with-iron-12-9oz	352	\$20.60
Bhutan	INR	83.67	420	https://shoponline.bt/products/copy-of-nestle-cerelac-wheat-300g-1	400	\$6.27
Botswana	BWP	13.56	156	https://www.shopsefalana.com/lactogen-1-lr-1-x-900g	900	\$6.39
Canada	CAD	1.37	6	<u>Euromonitor (Feb 2026)</u>	100	\$21.90
China	CNY	7.2	30	<u>Euromonitor (Feb 2026)</u>	100	\$20.83
Côte d'Ivoire	XOF	606.35	3,300	https://www.adjovan.com/shop/articles-pour-bebe/aliments-pour-bebe/guigoz-1-400g/	400	\$6.80
Cameroon	XAF	606.35	2,150	https://glotelho.cm/product/guigoz-1-lait-infantile-1er-age-300g-65066	300	\$5.91
DRC	USD	1	11	https://sotekardc.com/product/france-lait-confort/	400	\$13.75
Congo	EUR	0.92	21	https://242market.com/1497381-FRANCE-LAIT-0-a-6-MOIS-900g.html	900	\$12.68
Colombia	COP	4074.43	80,200	https://www.exito.com/formula-infantil-nan-pro-181486/p	400	\$24.60
Cabo Verde	CVE	101.92	1300	https://manueldosanjos.cvbuy.cv/produto/leite-hero-baby-inicia-1-900g-29796/	900	\$7.09
Costa Rica	CRC	515.11	21,505	https://sucreenlinea.com/nuestros-productos/bebes-y-mamas/formulas-infantiles/leche-en-polvo/1275810-nan-1-optiprof-inf-hmo-900-g.html	900	\$23.19



Country	Currency	Applicable exchange rate to USD	Price of BMS	Source	Mass (g)	Price of BMS (USD)
Cuba	EUR	0.92	15	https://habana.mercocaribe.com/producto/leche-para-lactantes-nidina-nestle-800g/	800	\$10.19
Cyprus	EUR	0.92	11	https://www.alphamega.com.cy/en/groceries?GroupId=GROUP475&productId=764664	400	\$14.95
Djibouti	DJF	177.72	1,300	https://www.djiboutifresh.com/acheter/france-lait-1-0-6-mois-400g/	400	\$9.14
Denmark	DKK	6.89	150	https://www.med24.dk/mor-og-barn/babymad/modermaelkserstatning/babysemp-1-sensipro-plus-700-g	700	\$15.55
Dominican Republic	DOP	59.57	979	https://supermercadosnacional.com/bebe/alimentacion-del-bebe/formulas-infantiles/formula-infantil-sin-lactosa-nan-400-gr-2001966	400	\$20.54
Algeria	DZD	134.05	884	https://orchidea-dz.com/produit/nursie-lait-1er-age-400g/	400	\$8.24
Ecuador	USD	1	22	https://pequeayuda.com/categoria-producto/formulas/	400	\$27.50
Egypt		45.3	634	https://www.amazon.eg/dp/B09DCNTC7W	800	\$8.75
Spain	EUR	0.92	3	<u>Euromonitor (Feb 2026)</u>	100	\$16.30
Ethiopia	ETB	82.6	1,500	https://jiji.com.et/gullele/baby-care/formula-milk-BvxgOmq3czfXuzLdJnG7qybu.html	400	\$22.70
Finland	EUR	0.92	11	https://www.k-ruoka.fi/kauppa/tuote/valio-tuuti1-aidinmaidonkorvikej-800g-6408430840892	800	\$7.47
Fiji	FJD	2.27	31	https://www.cjssupermarket.com.fj/product/sma-baby-infant-formula-milk-900-g/	900	\$7.59
Gabon	XAF	606.35	4,135	https://pharmacie-saintemarie-gabon.com/produit/france-lait-lait-infantile-1er-age-de-0-a-6-mois-400g/	400	\$8.52



Country	Currency	Applicable exchange rate to USD	Price of BMS	Source	Mass (g)	Price of BMS (USD)
United Kingdom	GBP	0.78	2	Euromonitor (Feb 2026)	100	\$12.82
Georgia	GEL	2.72	32	https://imart.ge/hipp-1-organic-300-%E1%83%92%E1%83%A0/	300	\$19.61
Ghana	GHS	11.02	290	https://www.jumia.com.gh/aptamil-infant-baby-formula-800g-282039515.html	800	\$16.45
Greece	EUR	0.92	14	https://www.familypharmacy.gr/en/baby-kids/baby-feeding/1st-stage-milk-formula-0-6-month/rontamil-rontis-no1-400gr-%CE%B3%CE%B1%CE%BB%CE%B1-1%CE%B7%CF%83-%CE%B2%CF%81%CE%B5%CF%86%CE%B9%CE%BA%CE%B7%CF%83-%CE%B7%CE%BB%CE%B9%CE%BA%CE%B9%CE%B1%CF%83.htm	400	\$19.02
Guatemala	GTQ	7.76	99	https://www.walmart.com.gt/formula-infantil-marca-nan-1-optipro-360gr/p	360	\$17.72
Honduras	HNL	24.8	715	https://www.paiz.com.hn/nestogeno-1-formula-1100gr-7/p	1100	\$13.10
Croatia	EUR	0.92	12	https://www.konzum.hr/web/products/bebimil-zamjensko-mlijeko-1600-g	600	\$10.87
Indonesia	IDR	15855.45	27,336	Euromonitor (Feb 2026)	100	\$8.62
India	INR	83.67	150	Euromonitor (Feb 2026)	100	\$8.96
Ireland	EUR	0.92	15	https://www.tesco.ie/shop/en-IE/products/301359789	800	\$10.19
Iraq	IQD	1300	7,500	https://sada-iraq.com/product/9593228401/	400	\$7.21
Iceland	ISK	137.96	2,792	https://www.aha.is/nan-pro-1	800	\$12.65
Italy	EUR	0.92	3	Euromonitor (Feb 2026)	100	\$16.30
Jamaica	JMD	156.44	1,300	https://jadeals.com/product/nestle-lactogen-one-1-infant-formula/	400	\$10.39



Country	Currency	Applicable exchange rate to USD	Price of BMS	Source	Mass (g)	Price of BMS (USD)
Jordan	JOD	0.71	10	https://www.dumyah.com/en/baby-category/feeding/formula-amp-snacks/similac-advance-gold-infant-formula-number-1-for-0-6-months-babies-800g-pack-enriched-with-hmo-for-immune-support-and-brain-development-easy-to-digest-formula	800	\$8.80
Japan	JPY	151.37	903	Euromonitor (Feb 2026)	100	\$29.83
Kazakhstan	KZT	468.96	5,800	https://gippokrat.kz/product/6051840/	600	\$10.31
Kenya	KES	134.82	2,600	https://www.jumia.co.ke/nestle-nan-1-327586238.html	400	\$24.11
Kyrgyzstan	KGS	87.15	355	https://neman.kg/detskoe-pitanie-smes-nutrilak-mol-0-6m-350gr/	300	\$6.79
Cambodia	USD	1	34	https://www.foodpanda.com.kh/en/shop/z7wb/lucky-supermarket-k-mall/category/794b8389-d389-4eb0-bd12-83d35e620fae	800	\$21.25
Kiribati	USD	1	18	https://mtcic.gov.ki/download/16/price-control/3973/kiribati-group-update-list-of-control-price-as-at-14-06-2022.pdf	900	\$10.00
Laos	LAK	20167.33	140,000	https://www.foodpanda.la/en/shop/f2dk/sokxay-paakthaang/category/3c9c56e6-de38-4704-9061-99ca6453c107	500	\$6.94
Lebanon	LBP	89500	685,166	https://www.moph.gov.lb/ar/DynamicPages/index/3/25171/infant-formulas-from-0-to-1-year-	400	\$9.57
Sri Lanka	LKR	327.51	1,649	https://www.daraz.lk/products/nestle-lactogen-classic-starter-infant-formula-birth-to-6-months-300g-bag-in-box-pack-i100048168-s1005431123.html	300	\$8.39
Luxembourg	EUR	0.92	19	https://mapharmacie.lu/en/products/nan-optipro-1-lait-800g	800	\$12.91
Latvia	EUR	0.92	11	https://www.salidzini.lv/click.php?itemid=95596825816&q=m%C4%81ksl%C4%ABgais+piena+mais%C4%Abjums	400	\$14.95



Country	Currency	Applicable exchange rate to USD	Price of BMS	Source	Mass (g)	Price of BMS (USD)
Morocco	MAD	9.94	265	https://www.jumia.ma/ar/nestle-nativa-1-lait-de-0-a-6-mois-800-g-lait-tres-complet-grace-a-la-presence-de-fer-de-zinc-et-de-selenium-67312707.html	800	\$16.66
Moldova	MDL	17.79	72	https://mamico.md/ro/catalog/alimentatie-si-hranire/alimentatie/lapte-praf/formula-de-lapte-bellact-0-6-luni-400-g/	400	\$5.06
Madagascar	MGA	4525.43	71,900	https://www.moramarket.mg/shop/listings/6626-bledina-lait-infantile-1-re-ge-nursie-900-g?id=6626	900	\$8.83
Maldives	MVR	15.39	200	https://www.pharmacy.mv/Product/product_details/129751/similac-stage-1-infant-formula-400g	400	\$16.24
Mexico	MXN	18.3	54	<u>Euromonitor (Feb 2026)</u>	100	\$14.75
North Macedonia	MKD	56.87	615	https://www.polin.mk/shop/product/medis-novalac-1-400g/	400	\$13.52
Mali	XOF	606.35	6,000	https://malibebe.com/index.php?id_product=157&rewrite=lait-de-croissance-0-a-6-mois-400g-nursie&controller=product	400	\$12.37
Malta	EUR	0.92	18	https://shop.spar.com.mt/category.php?categoryid=GRP-G0006	800	\$12.23
Myanmar (Burma)	MKK	1381.62	22,500	https://lifeplusmm.com/product/dumex-dupro-infant-milk-powder-step-1-0-12m-400g/	400	\$20.36
Montenegro	EUR	0.92	16	https://www.apoteka-lenapharm.me/product-page/aptamil-1-400gr	400	\$21.74
Mongolia	MNT	3389.98	88,750	https://hi-mommy.mn/product/149044	800	\$16.36
Malawi	MWK	1161.09	6,955	https://www.add2cartmw.com/collections/baby-food/products/nestle-lactogen-1-400g	400	\$7.49
Malaysia	MYR	4.58	13	<u>Euromonitor (Feb 2026)</u>	100	\$14.19



Country	Currency	Applicable exchange rate to USD	Price of BMS	Source	Mass (g)	Price of BMS (USD)
Nigeria	NGN	1478.97	11,000	https://babyshopnigeria.com/product/nestle-nan-optipro-1/	400	\$9.30
Nicaragua	NIO	36.62	950	https://www.walmart.com.ni/nan-optipro-1-1100g/p	1100	\$11.79
Norway	NOK	10.75	209	https://meny.no/varer/barneprodukter/morsmelkerstatning/nan-pro-1-8445291078932	800	\$12.15
Nepal	NPR	133.73	1,262	https://www.daraz.com.np/products/neoma-st-1-400gm-i128100595-s1035553078.html	400	\$11.80
Oman	OMR	0.38	2	https://gcc.luluhypermarket.com/ar-om/nestle-nan-optipro-stage-1-from-birth-to-6-months-400-g/p/1138675/	400	\$6.58
Pakistan	PKR	278.58	1,225	https://www.daraz.pk/products/nestle-nan-1-starter-infant-formula-300g-box-i139122908-s1299124737.html	300	\$7.33
Panama	USD	1	27	https://www.superextra.com/formula-infantil-nan-900-gr-optipro-de-0-a-6-meses-1/p	900	\$15.00
Peru	PEN	3.75	87	https://tottus.falabella.com.pe/tottus-pe/product/113708312/formula-en-polvo-enfamil-1-promental-0-a-12-meses-375-g/113708314?exp=tottus	375	\$30.93
Philippines	PHP	57.29	198	https://www.watsons.com.ph/nestogen-1-infant-formula-for-0-6-months-340g/p/BP_50012781	340	\$5.08
Papua New Guinea	PGK	3.85	48	https://www.rhtradingpng.com/shop/sma-baby-formula-900g/	900	\$6.93
Portugal	EUR	0.92	16	https://www.farmaciaideal.pt/nan-optipro-1-leite-lactentes-800g.html	800	\$10.87
Paraguay	PYG	7560.25	96,924	https://www.farmaoliva.com.py/nidina-1-bebe-x-800-gramos-p45869	900	\$7.12
Qatar	QAR	3.64	43	https://kuludonline.com/ar/collections/baby-milk/products/novalac-n1-milk-formula-400-gm	400	\$14.77



Country	Currency	Applicable exchange rate to USD	Price of BMS	Source	Mass (g)	Price of BMS (USD)
Romania	RON	4.6	30	https://www.emag.ro/lapte-hipp-1-organic-lapte-de-inceput-300g-0-9062300129691/pd/D8806YBBM/	300	\$10.87
Russia	RUB	85.16	231	Euromonitor (Feb 2026)	100	\$13.56
Rwanda	RWF	1318.13	18,900	https://tuma250.com/product/cowgate-infant-formula0-6months-400g/	400	\$17.92
Sudan	SDG	546.76	8,000	https://hypersale.sd/product/nan-milk-400-gm-rpurx	400	\$18.29
Senegal	XOF	606.35	8,000	https://pharmec.sn/produit/nursie-ar-1-400g-2-3/	800	\$8.25
Sierra Leone	SLE	21.3	650	https://babysessentials.catalog.to/s/gallery/babys-essentials-/baby-food-and-formula/31h/product/-OIDOrZ18bYYqtPIrk_7	800	\$19.07
El Salvador	USD	1	44	https://www.superselectos.com/products?category=094301&productId=67646	1100	\$20.00
Serbia	EUR	0.92	11	https://prices.nedostavka.net/en/product/7613036362924	400	\$14.95
Sweden	SEK	10.57	19	Euromonitor (Feb 2026)	100	\$8.99
Thailand	THB	35.29	80	Euromonitor (Feb 2026)	100	\$11.33
Tajikistan	TJS	10.8	189	https://magnit.tj/product/show/847	800	\$10.94
Turkmenistan	TMT	3.5	189	https://ashgabat.market/ru/product/21533	400	\$67.50
Timor-Leste	USD	1	20	https://halodili.com/nutribaby-royal1-800g	800	\$12.50
Tonga	USD	1	28	https://www.hikiotonga.com/products/sma-900g	900	\$15.56
Trinidad and Tobago	TTD	6.75	240	https://shop.doortodoortt.com/west/product/baby-steps-stage-1goat-follow-on-900g-2/	900	\$19.75



Country	Currency	Applicable exchange rate to USD	Price of BMS	Source	Mass (g)	Price of BMS (USD)
Turkey	TRY	32.81	200	https://www.e-bebek.com/mamamil-cocuk-devam-sutu-1-numara-0-6-ay-400-gr-p-mml-101	400	\$7.62
Tanzania	TZS	2597.9	31,500	https://www.nidadanish.com/nestle-lactogen1-milk-powder/	400	\$15.16
Uganda	UGX	3757.26	35,700	https://www.jumia.ug/cow-gate-0-6-months-infant-formula-400gm-50690014.html	400	\$11.88
Ukraine	UAH	40.15	771	https://anc.ua/item/sumish-suha-molochna-nutrilon-1-1000-g-1039217	1000	\$9.60
Uruguay	UYU	40.21	1,160	https://www.farmacity.com.uy/formula-lactea-nutrilon-1-premium-en-polvo-x-400-g/p	400	\$36.06
United States	USD	1	6	<u>Euromonitor (Feb 2026)</u>	100	\$30.00
Uzbekistan	UZS	12652.29	114,990	https://babymarket.uz/magazin/product/nan-4-nestle-kislomolochnaya-sukhaya-smes-400-gr-1/	400	\$11.36
Venezuela	USD	1	11	https://www.farmadon.com.ve/producto/formidable-crecer-formula-lactea-0-6m-400gr/	400	\$13.75
Vietnam	VND	24164.89	545,000	https://www.kidsplaza.vn/sua-bot-nutifood-growplus-vang-sua-non-800g-0-12m.html	800	\$14.10
Yemen	YER	238.4	4200	https://tamimpharmacy.com/product/similac-gold-infant-formula-1-800-gm/	800	\$11.01
South Africa	ZAR	18.33	28	<u>Euromonitor (Feb 2026)</u>	100	\$7.64
Zambia	ZMW	26.17	324	https://www.hngapp.co.zm/product/product-details/4439/nan-1-900gm	900	\$6.88
Zimbabwe	USD	1	7	https://www.spar.co.zw/products/122677/nestle-nan-1-optipro-starter-400g	400	\$8.75



Table C: Change log

Changes to the CONBF data and model are tracked and displayed in the following table:

Change No.	Effective Date	Change Description	Implications
1	August 1, 2026	The relative risk for diarrhoea morbidity among children aged 6–23 months was changed from 2.07, representing prevalence, to 1.32, representing incidence among children aged 6–11 months.	This change substantially reduced estimated avoidable diarrhoea cases and associated healthcare and economic costs.
2	August 1, 2026	The relative risk for maternal diabetes was changed from 0.86 to 0.82 to reflect the effect among women who breastfed, as reported by Aune et al. (2014)	This change increased the estimated protective association between breastfeeding and maternal diabetes.
3	August 1, 2026	The child morbidity calculations were modified. Child deaths are now subtracted from morbidity-related economic losses instead of being added to avoid double counting.	These corrections reduced estimated economic losses from child morbidity.
4	August 1, 2026	Demographic, epidemiological, breastfeeding, labour-market, and economic data were updated to the latest estimates available from GBD, UNICEF, the World Bank, and ILO . Diabetes incidence was sourced from GBD/IHME rather than International Diabetes Federation.	These updates materially changed country, regional, and global estimates. In this version, global CONBF declined to US\$339 billion. The largest contributors were lower diabetes incidence estimates, the diarrhoea parameter correction, and the child morbidity formula correction.
5	August 1, 2026	20 countries with non standardized breastfeeding data were included in the tool, but the estimates were excluded from aggregate calculations.	This change allows countries that do not have standardized data to still have an estimate on the cost of not breastfeeding, though it is not the cost of EBF specifically. Country-level estimates remain available, but countries using non-comparable indicators do not influence regional or global totals. This improves comparability of aggregate results, although aggregate estimates cover fewer countries than the full country-level model.
6	August 1, 2026	Breastmilk-substitute cost data and calculations were updated. New price data collected by Nutrition International were added in Table B above. The previous 100 g to 900 g to 500 g conversion process was removed.	Estimates of avoidable breastmilk-substitute expenditure now use more direct country-specific price and package-size information. This improves transparency and reduces the risk of errors arising from multiple package-size conversions.
7	August 1, 2026	Missing GNI or GNI-per-capita values were populated for Egypt, The Gambia, Kyrgyzstan, Lao PDR, Türkiye, and Somalia.	Populating missing GNI values enables more complete economic-loss estimates and calculation of CONBF as a percentage of GNI for the affected countries.



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