Social Return on Investment in Child and Adolescence Health

Outcomes, Methods, and Economic Parameters

Final Report

Ludwig Boltzmann Institut
Health Technology Assessment
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Abbreviations

CBA ..... cost-benefit analysis
IMF ..... International Moentary Fund
Incl. ..... inclusive
LBI-HTA ..... Ludwig Boltzmann Institute for Health Technology Assessment
OECD ..... Organisation for Economic Co-operation and Development
PPP ..... Purchasing Power Parities
ROI ..... Return on Investment
SROI ..... Social Return on Investment
USA ..... United States of America

Summary

Background

Since the 1960's, performance and impact measurement has been discussed in the field of evaluation research. Social impact measurement, though, aims to assess the social value and impact produced by an intervention. One of the most popular frameworks is Social Return on Investment (SROI).

Messung der Wertschöpfung für Gesellschaft, SROI eine populäre Methode

SROI-analyses try to contrast invested resources and potential impacts in monetary value. The result is presented as an aggregated value (SROI-ratio). SROI is often described as an extended CBA, basically due to the addition of broader social-economic and environmental outcomes. This is for instance achieved by the use of financial proxies.

Social Return on Investment (SROI) ähnlich Kosten-Nutzen-Analyse

Methods

The main aim of this report was to give an overview of „social impact measurement" in the field of child and adolescence health. We focused on Social Return on Investment (SROI) analyses, and cost-benefit analyses as well. The inclusion criteria for searching and including studies were kept relatively broad, the focus was on interventions for children and adolescent aged 0-18 years.

Überblick von „Social Impact Measurement" im Bereich der Kinder- und Jugendgesundheit

A total of 1,102 records were identified through database and hand search. Two review authors (SF, MS) included and excluded the literature and extracted the data independently from each other, whereas differences were discussed between the authors. In the end, 18 studies on 15 programmes were included.

insgesamt 18 Studien zu 15 Programmen eingeschlossen

Results

For eight programmes, cost-benefit analyses were identified and for six programmes, SROIs were conducted. For one intervention, both a CBA and an SROI were calculated.

SROI zu 8, Kosten-Nutzen-Analyse zu 6 Programmen, 1 beides

The interventions in the evaluated programmes were for children and/or adolescents (and their families) aged 0-20 years. Most of the programmes, though, covered the ages 13-17. The programmes provided several interventions, from one-time interventions (e.g. vaccination) to interventions lasting eight years (e.g. education/skill development). The time horizons of calculating the impacts (or benefits) differed from around one year to 68 years. A total of five studies were able to base their calculations on long-term observational data (at least 10 years) of their study participants.

für Jugendliche 13-17 die meisten Interventionen, Zeithorizont Kalkulationen bis 68 Jahre

The interventions that the studies evaluated can be divided in seven categories: "mental health/addiction/delinquency", "education/skill development", "sexual health/sex education", "hospital interventions", "vaccination", "various interventions" (provided different interventions) and "nutritional intervention" (provided breakfast at schools).

Interventionen zu: mentale Gesundheit, Ernährung, sexuelle Gesundheit, Impfung, Bildung, etc.

Prävention und Unterstützung im Fokus der Interventionen

The intention of four programmes was to support children and their families from poor socio-economic or socially disadvantaged environments (e.g. families, neighbourhoods). A total of three programmes aimed at the prevention of, or the assistance with specific diseases, two programmes provided addiction assistance for children or young people, and a total of six interventions were not targeting a specific population.

Herangehensweisen in Studien sehr unterschiedlich

The methodological justification and the used methods to identify outcomes of the studies varied a lot. First, the methods were determined by the respective analysis (SROI or CBA). The chosen outcomes to measure the benefits and impacts were mainly effectiveness-related and were collected from the programmes in a short term and then monetised and estimated for the future. Only in some cases the participants were followed-up for a long time period of 10 years and more. In a few studies, though, the benefits were estimated based on literature. Moreover, the determination of the benefits and impacts – either directly or indirectly – was done using a vast range of outcomes.

Kosten der Programme 670-72.200 Euro, Einsparungen bis zu 79.100 Euro im Bereich Kriminalität

The interventional costs for the programmes varied between 669 and 72,167 Euros per participant. Avoided in the field of "education" varied between 665 and 11,031 Euros, e.g. due to higher graduation rates. A total of 596-76,430 Euros were saved in the area of "economic status/earnings", e.g. due to higher salaries (and therefore higher tax payments). For "health care/health services", the benefits were between -619 Euros and 10,087 Euros (the negative value means that the costs were higher than the benefits), e.g. due to better health or less spending for treatments. The benefits in "social services/welfare" were 240-11,182 Euros, e.g. due to less child neglect. And finally, the savings in the area of "crime/justice" were 508-79,134 Euros, e.g. due to less criminal activities or less police contacts.

höchste Einsparungen bei Kriminalität und Einkommen

Thus, the highest benefits were related to crimes and to economic status or earnings. The areas of health care/health services and education present potential savings as well, but they were reported to be lower.

durchschnittliche „Sozialrendite" 1,19-23,5

Over all studies, a positive return on investment of 1.19 to 23.5 in average was calculated. In one study (vaccination of hepatitis B), though, the return was 0.91 after 20 years, but after 68 years, it was 2.47 (the average return was 1.69).

Discussion and conclusion

Heterogenität der Studien

Overall, the identified studies showed a high variation in the applied methods and results, plus the evaluated interventions were very inconsistent. In addition, the results of the studies highly depended on the methodological approaches.

dennoch: bei allen Interventionen positiver Nutzen für Gesellschaft

Nevertheless, even the most rudimentary analyses consistently suggested that interventions for children and adolescent can be cost-saving and can offer substantial returns in investments, even though these benefits arise later in children's lives. These returns are not only health-related. The returns seem particularly located in the field of income – and therefore for instance, in an increase of tax revenues – and avoidance of crime.

Zusammenfassung

Hintergrund

Wirkungsmessung: verschwindende Grenzen zwischen Profit- und Non-Profit-Sektor

Messung der Wertschöpfung für Gesellschaft von zunehmendem Interesse

Bereits seit den 1960er-Jahren wird das Thema Leistungs- und Wirkungsmessung im Rahmen der Evaluationsforschung verstärkt diskutiert. Ursprünglich wurde angenommen, dass ein Mehrwert entweder ökonomisch sein kann, erzeugt durch profitorientierte Unternehmen, oder gesellschaftlich, durch Non-Profit-Organisationen. Jedoch verschwinden die Grenzen zwischen Profit und Non-Profit zunehmend: Auf der einen Seite agieren Firmen und Konzerne verstärkt in Sektoren, die von gemeinnützigen oder staatlichen Stellen dominiert werden und auf der anderen Seite nutzen gemeinnützige Unternehmen und Regierungsinstitutionen Geschäftspraktiken, um ihre eigene Leistung zu dokumentieren und auch zu optimieren. In den letzten 20 Jahren ist verantwortungsvolles und nachhaltiges Verhalten immer wichtiger geworden. Daher gab es (und gibt es immer noch) eine entsprechende Nachfrage nach geeigneten Methoden zur Messung und Quantifizierung der Auswirkungen von „Social Ventures", um die Wertschöpfung für die Gesellschaft zu messen. Diese Methoden werden unter dem Begriff „Social Impact Measurement" zusammengefasst.

„Social Impact Measurement" als Ansatz der Wirkungsmessung von Interventionen

Grundsätzlich zielt „Social Impact Measurement" darauf ab, den Wert und die Auswirkungen einer Intervention für die Gesellschaft zu bewerten. Während jedes Unternehmen soziale Auswirkungen haben kann, werden gemeinnützige Organisationen und soziale Unternehmen explizit so konzipiert, dass sie soziale Werte schaffen und gleichzeitig soziale Herausforderungen angehen. Bis heute gibt es jedoch keine allgemeingültige Ansätze zur Messung von „Social Impact". Gründe hierfür liegen z. B. darin, dass:

- „Social Impact" aufgrund der Subjektivität schwer zu messen und zu quantifizieren ist.
- „Social Impact" kurzfristig und langfristig auftreten kann, und viele Komponenten verschiedene Folgen haben können. Daher kann es schwierig sein zu erkennen, dass der „Impact" definitiv durch die jeweilige Intervention verursacht wurde.

30 Ansätze von „Social Impact Measurement"

Insgesamt gibt es ca. 30 quantitative Ansätze von „Social Impact Measurement". Als sehr bekannt und verbreitetet gilt hierbei „Social Return on Investment" (SROI).

„Social Return on Investment" (SROI) bekannt, da hohe Glaubwürdigkeit

SROI bewertet die Effizienz einer Intervention und ist auf eine Vielzahl von Aktivitäten anwendbar. Um den SROI zu identifizieren, wird der Geldwert der Auswirkungen („Impact") geschätzt und den eingesetzten Mitteln gegenüber gestellt. Im Vergleich zu anderen Wirkungsmessinstrumenten haben SROI-Analysen eine höhere Glaubwürdigkeit, da sie auf den tatsächlichen Ergebnissen der Unternehmen und sogenannten Proxy-Variablen basieren.

SROI als erweiterte Kosten-Nutzen-Analyse

SROI wird häufig als erweiterte Kosten-Nutzen-Analyse bezeichnet, was im Wesentlichen auf die Berücksichtigung breiterer sozialökonomischer Ergebnisse zurückzuführen ist. Das Ergebnis von Kosten-Nutzen-Analysen und SROIs ist ein Verhältnis (Ratio), das angibt, ob die Intervention die Investition wert ist oder nicht (auch als Rendite und bei gesellschaftlicher Perspektive als Sozialrendite bezeichnet).

Methode

Fragestellungen und Ziele

Überblick von „Social Impact Measurement" im Bereich der Kinder- und Jugendgesundheit zu Krankheitsbildern, Kosten und Methoden

Die initiale Fragestellung des Berichtes lautete, zu welchen Krankheits- bzw. Störungsbildern im Kindes- und Jugendalter mittels „Social Impact Measurement" berichtet wird. Besonderer Fokus sollte hierbei auf SROI-Analysen gelegt werden. Darüber hinaus wurden folgende Fragen aufgegriffen:

- Welche Outcomes werden identifiziert?
- Welche Kostentypen und Kostenbereiche werden berichtet?
- Wie hoch sind die Kosten der einzelnen Interventionen in der identifizierten Literatur und wie hoch der jeweils zu erwartende Nutzen?
- Wie wurde der Nutzen einer Intervention in den jeweiligen Analysen methodisch begründet?

Beschreibung etwaiger Fallbeispiele

Darüber hinaus sollten explizite Fälle, die in der identifizierten Literatur beschrieben werden, aufgegriffen und analysiert werden.

Identifikation von Krankheitsbildern für mögliches Folgeprojekt

Auf der Grundlage der Ergebnisse dieses Projektberichts sollten schließlich vier bis fünf Krankheiten oder Störungen identifiziert werden, die insbesondere in einem zukünftigen Projekt für eine weitere SROI-Analyse für den österreichischen Kontext geeignet sind.

Einschlusskriterien

Einschlusskriterien gemäß PIKO-Fragestellung

Da dieser Bericht einen Überblick über bestehende Studien zur Bewertung der Sozialrendite geben sollte, wurden die Einschlusskriterien für Studien relativ breit gehalten. Der Fokus lag auf gesundheitsbezogenen Interventionen für Kinder und Jugendliche im Alter von 0-18 Jahren. Zulässig war jede Art der Kontrollintervention (auch keine), jede Art von Outcome (der nicht ausschließlich gesundheitsbezogen war).

Literatursuche

Suche in 8 Datenbanken

Zunächst wurde eine systematische Literatursuche in den folgenden Datenbanken durchgeführt:

- Cochrane,
- Centre for Research and Dissemination (CRD),
- EconLit,
- Embase,
- Medline,
- PsycInfo,
- Trip-database (Turning Research Into Practice),
- WoS-database (Web of Science).

zusätzlich Handsuche

Diese Suche wurde durch eine ausführliche Handsuche mittels Google und Scopus ergänzt.

1.102 Zitate identifiziert

Insgesamt wurden 1.102 Zitate durch Datenbank- und Handsuche identifiziert. Zwei Autoren (SF, MS) schlossen die Literatur unabhängig voneinander ein und aus, wobei Unterschiede zwischen den Autoren diskutiert wurden.

Ergebnisse: Charakteristika und Methoden der Studien

Generell

Insgesamt wurden 18 Studien zu 15 Programmen/Interventionen in diesen Bericht aufgenommen. Neun dieser Studien wurden in Journals veröffentlicht und neun stammten aus „grauer Literatur“. Außerdem wurden, neben SROIs zu sechs Programmen, Kosten-Nutzen-Analysen für weitere acht Programme identifiziert, die ebenfalls eingeschlossen wurden. Für eine Intervention wurde sowohl eine Kosten-Nutzen-Analyse als auch eine SROI-Analyse angewendet.

18 Studien zu 15 Programmen, darunter auch Kosten-Nutzen-Analysen

Länder, Publikationsjahre und Studienpublikation

Der Großteil der Programme, nämlich fünf, stammen aus den USA, gefolgt von Großbritannien mit drei Programmen. Aus Österreich und Kanada stammen zwei und aus Australien, Deutschland sowie Italien jeweils ein Programm.

Großteil Programme aus USA

In den Interventionsgruppen waren 4-2.405 TeilnehmerInnen und in den Kontrollgruppen 65-2.002 TeilnehmerInnen. Im überwiegenden Teil der Studien gab es lediglich eine „hypothetische“ Vergleichsgruppe.

4-2.405 TeilnehmerInnen in Interventionsgruppen

Informationen zu Interventionen/Programmen

Die Interventionen können in sieben Kategorien zusammengefasst werden, die von „Erziehung“ über „sexuelle Gesundheit“ bis hin zu „Impfung“ reichen. Die Mehrzahl der Programme – nämlich vier – bestand aus verschiedenen Interventionen, die individuelle Hilfe für Kinder und Familien anbieten. Drei Programme finden sich im Bereich „Bildung/Kompetenzentwicklung“ und „psychische Gesundheit/Sucht und Delinquenz“. In der Kategorie „Sexuelle Gesundheit/Sexualerziehung“ wurden zwei Interventionen identifiziert. Eine Studie kann in „Krankenhausintervention“ kategorisiert werden und eine in „Impfung“. Eine andere Studie wurde dem Bereich „Ernährung“ zugeordnet, hier wurde Kindern in der Schule Frühstück angeboten.

Programme meist aus verschiedenen Interventionen bestehend

Die meisten Interventionen – insgesamt sechs – zielten nicht auf die Behandlung spezifischer Störungen oder Krankheiten ab, sondern eher auf Prävention und Unterstützung. Die Absicht von vier Programmen war es, Kinder und ihre Familien aus sozioökonomischen oder einem sozial benachteiligten Umfeld (z. B. Familien, Nachbarschaften) zu unterstützen. Insgesamt drei Programme waren zur Prävention oder Unterstützung bestimmter Krankheiten und zwei Programme boten Suchthilfe für Kinder oder Jugendliche.

Großteil nicht auf Behandlung spezifischer Krankheiten ausgerichtet

Die Dauer der Programme reichte von einmaligen Interventionen, wie die „Impfung gegen Hepatitis B in Italien“, bis hin zu acht Jahren. Der Zeithorizont der Berechnungen lag zwischen einem Jahr und 68 Jahren.

einmalige Interventionen bis hin zu 8 Jahren

Einige der Studien basierten auf Programmen, die vor vielen Jahren eingeführt oder durchgeführt wurden. Insbesondere das „High/Scope Perry Preschool Program“ aus den 1960er Jahren, das „Child-Parent Center Education Program“, das 1967 initiiert wurde, oder die „Impfung gegen Hepatitis B in Italien“, die 1991 durchgeführt wurde. Diese drei Programme bieten umfassende Langzeitergebnisse von 20 Jahren oder mehr. Die „Better Beginnings, Better Future Initiative” und „Carolina Abecedarian Project and Carolina Approach to Responsive Education” können Beobachtungen von mindestens 10 Jahren aufweisen.

einige Studien basieren auf Langzeitbeobachtungen

Informationen zu den Methoden der Studien

Studiendesigns prägen Methoden

Generell wurden die Methoden vorrangig von den Studiendesigns beeinflusst. Die „reinen" SROI-Analysen folgten im Wesentlichen den Schritten: Einbeziehung der Stakeholder, Abbildung der potenziellen Veränderungen, Identifizierung von finanziellen Proxies und Bewertung dieser Proxies. Die Stakeholder waren in erster Linie Kinder, aber auch Eltern, ProgrammmitarbeiterInnen oder die Regierung. Die verwendeten Proxies umfassten z. B. bildungsbezogene Faktoren, wie verbessertes Lernen.

Kosten-Nutzen-Analysen meist auf eigenen Beobachtungen beruhend

Die Kosten-Nutzen-Analysen basierten hauptsächlich auf den Beobachtungen der zugrundeliegenden (Effektivitäts-)Studie. Es gab aber auch zwei Studien, in denen die Schätzung der späteren Wirkung der Intervention(en) ausschließlich anhand vorhandener Literatur geschätzt wurde.

Abschätzung Impact entweder meist prospektiv

Insgesamt kann festgehalten werden, dass bei den meisten Studien die Interventionen anhand von „Surrogatparametern" (oder eben Proxies) gemessen wurden und letztlich in monetäre Auswirkungen „übersetzt", die in der Zukunft eintreten. Zum Beispiel wurde der Tabakkonsum für die „Communities That Care" gemessen und dann mit empirischen Daten und nationalen Datensätzen verknüpft, um die zukünftigen monetären Auswirkungen auf die Gesundheitsversorgung oder Gesundheitsdienste abzuschätzen.

Informationen zu Kostendaten der Studien

5 verschiedene Kategorien für Bestimmung „Impact"

In allen Studien wurden verschiedene Kategorien von Kosten berücksichtigt, um den Nutzen oder den „Impact" zu monetisieren und zu berechnen. Die Hauptdomänen, die identifiziert wurden, waren:

- *Bildung* (z. B. Kosten für sonderpädagogische Dienste, öffentliche Kosten für Schulbildung, Kosten durch mangelnde höhere Bildung),
- *Ökonomischer Status/Einkommen* (z. B. Einkommen der Eltern, späteres Einkommen der Kinder, Kosten für Arbeitslosigkeit),
- *Gesundheitswesen/Gesundheitsdienste* (z. B. Kosten für Arztbesuche, Krankenhausaufenthalte, Diabetes, Herzerkrankungen),
- *Soziale Dienste/Sozialhilfe* (z. B. Kosten für SozialarbeiterInnen, Unterstützung junger Menschen, die nicht in Ausbildung, Beschäftigung oder Ausbildung sind),
- *Kriminalität/Justiz* (z. B. Kosten für Verbrechen, Kosten für Opfer von Jugendkriminalität, Kosten für Polizeikontakte).

Ergebnisse: Resultate der Studien

Generell

Kosten in Euros 2016, pro TeilnehmerIn

Alle Kosten der Studien wurden in Euros für das Jahr 2016 und Österreich umgewandelt (der Wert eines Euros ist in den Ländern der Eurozone unterschiedlich). Außerdem beziehen sich alle Kosten – mehr oder weniger – auf die gesellschaftliche Perspektive. Und wenn möglich, wurden die Kosten pro TeilnehmerIn angegeben. Bei Bedarf wurden die Kosten aus den gegebenen Informationen ermittelt, dies war jedoch bei der „Impfung gegen Hepatitis B in Italien" nicht möglich.

Kosten

Die Kosten für die Interventionen selbst schwankten zwischen 669 für „Communities That Care" aus den USA und 31.488 Euro für die österreichischen „Frühe Hilfen". Die Gesamtkosten der Interventionen (inkl. z. B. Implementierung oder Training) beliefen sich auf 813 Euro für den „Breakfast Club" sowie 79.119 Euro für „Carolina Abecedarian Project and Carolina Approach to Responsive Education". Die Interventionskosten für die „Impfung gegen Hepatitis B in Italien" betrugen insgesamt 1,035 Milliarden Euro.

Kosten nur Intervention 670-31.500 Euro

Vermiedene Kosten/Benefits

Die, durch die jeweiligen Interventionen/Programme, vermiedenen Kosten, sprich die Benefits, schwankten zwischen 2.750 Euro für „Moving Parents And Children Together" und 548.690 Euro für „Grow Together".

vermiedene Kosten 2.800-550.000 Euro insgesamt

Im Bereich *Bildung* lagen die Einsparungen zwischen 665 Euro für „Boston Children's Hospital Community Asthma Initiative" und 11.031 Euro für das „High/Scope Perry Preschool Programme".

Bildung: 670-11.000 Euro

Im Bereich *ökonomischer Status/Einkommen* wurden Einsparungen in Höhe von 596 Euro für „Better Beginnings, Better Future Initiative" und 76.430 für das High/Scope Perry Preschool Programme" erzielt.

Einkommen: 600-76.400 Euro

Die Einsparungen für das *Gesundheitswesen/Gesundheitsdienste* waren bis zu 10.087 Euro für das „Pine River Institute Program". Für „Moving Parents And Children Together" waren die Kosten um 619 Euro höher als die potenziellen Einsparungen.

Gesundheitswesen: -620-10.100 Euro

Für *soziale Dienste/Sozialhilfe* wurden Einsparungen in Höhe von 240-11.182 Euro für das „Child-Parents Education Program" angegeben – je nachdem welche Studie als Grundlage herangezogen wird.

Sozialwesen: 240-11.200 Euro

Im Bereich *Kriminalität/Justiz* waren die Einsparungen 508 Euro für das „Child-Parents Education Program" sowie 194.520 Euro für das „High/Scope Perry Preschool Programme".

Kriminalität: 500-195.000 Euro

Nettonutzen

Der kalkulierte „Nettonutzen" pro TeilnehmerIn liegt bei 361 Euro für „Moving Parents And Children Together" und durchschnittlich 880.578 Euro für die „Frühen Hilfen".

„Nettonutzen": Ø 360-880.000 Euro

Der „Nettonutzen" für die „Impfung gegen Hepatitis B in Italien" lag bei insgesamt 1,52 Milliarden Euro nach 68 Jahren.

Hepatitis B Impfung in Italien 1,52 Mrd. Euro

Sozialrendite

Die sogenannte Rendite für die Gesellschaft, sprich der „Gewinn" der Intervention pro investierten Euro, variierte letztlich im Mittel zwischen 1,19 und 23,5. D. h. für jeden investierten Euro, kann ein „Gewinn" von 1,19 bis 23,5 Euro erwartet werden. Die „Impfung gegen Hepatitis B in Italien" erwies sich erst nach 21 Jahren rentabel.

(S)ROI im Mittel: 1,19-23,5

Ergebnisse: Fallbeispiele

Es konnten keine relevanten Fallbeispiele in der Literatur identifiziert werden. Daher wurden im Hauptteil zu den jeweiligen Interventionen/Programmen zusätzlich Informationen zu den TeilnehmerInnen, den entsprechenden Interventionen und den jeweiligen Renditen gegeben.

keine Fallbeispiele, sondern Beschreibung der 15 identifizierten Programme

Diskussion und Fazit

alle Studien zeigten, dass Interventionen vorteilhaft, aber Heterogenität

Insgesamt haben alle Studien zeigen können, dass sich die „Investition" in Kinder und Jugendliche rentiert – insbesondere über einen langfristigen Zeithorizont. Jedoch zeigten die Studien auch eine enorme Heterogenität bei den angewendeten Methoden, den Ergebnissen und den Interventionen an sich.

Auswirkungen der Methoden auf Ergebnisse

Die Auswirkungen der jeweiligen Methoden waren gerade bei den Studien zum „High/Scope Perry Preschool Programme" sehr offensichtlich. Während zwei Evaluationen relativ einheitliche Ergebnisse lieferten, wichen die Ergebnisse einer zusätzlichen Analyse, die einen etwas anderen Ansatz in der Methodik verfolgte, davon ab. Daher sollten die Ergebnisse, auch wenn sie (fast) ausschließlich positive Benefits und Renditen zeigten, mit einer gewissen Vorsicht gelesen und vor allem generalisiert werden.

Studienergebnisse nur bedingt generalisierbar

Auch der vorliegende Bericht weist einige Limitationen auf. Kritisch zu sehen sind vor allem der vom Studienprotokoll abweichende Studieneinschluss und die getätigten Annahmen bei der Ausbereitung der Studienergebnisse (insbesondere die eigene Berechnung der Kosten pro TeilnehmerIn).

Bericht hat gezeigt:

Dennoch gibt der vorliegende Bericht einen umfangreichen Überblick über die Thematik, die immer mehr in den Fokus politischer Entscheidungsträger rückt. Die Kernaussagen des Berichts sind:

zahlreiche Studien zum Thema

- Es gibt eine Vielzahl von Studien zu einer Vielzahl von Interventionen im Bereich der Kinder- und Jugendgesundheit, die den finanziellen Mehrwert für die Gesellschaft untersuchen.

Investment in Kinder kann sich lohnen

- Die Investition in Kinder und Jugendliche kann – langfristig gesehen – erfolgreich sein,

„Social Impact" schwer zu messen

- Jedoch ist der „Social Impact" schwer messbar und es gibt keinen Konsens über die Methodik zu Messung.

Ergebnisse in Einklang mit anderen systematischen Reviews

Letztlich decken sich die Ergebnisse unseres Berichts mit denen anderer Übersichtsarbeiten zum Thema Kinder- und Jugendgesundheit, sowie bezüglich der Heterogenität der zugrundliegenden Studien bzw. der Limitationen der Studien im Allgemeinen.

dennoch: bei allen Interventionen positiver Nutzen für Gesellschaft

Nichtsdestotrotz haben selbst die rudimentärsten Analysen zeigen können, dass Interventionen im Bereich der Kinder- und Jugendgesundheit kostensparend sind und sich rentieren – auch wenn der finanzielle Nutzen erst im Laufe des Lebens der Kinder eintritt. Diese finanziellen Vorteile sind nicht nur im Bereich der Gesundheit zu orten, sondern insbesondere im Bereich des (späteren) Einkommens der Kinder – wodurch z. B. höhere Steuereinnahmen generiert werden – und bei der Reduktion von Kriminalität.

1 Background

Since the 1960's, performance and impact measurement has been discussed in the field of evaluation research. Traditionally, it was believed that value is either economic – created by for-profit organisations, or social – created by non-profit or non-governmental organisations. However, the boundaries between business and non-profit organisations are fading. On the one hand, for-profit organisations are increasingly acting in sectors dominated by non-profit or governmental agencies. On the other hand, non-profit firms and governmental institutions are adopting business practices to increase performance. Moreover, in the past 20 years, responsible and sustainable behaviour has become more and more important – for business and also academic communities. Thus, there was (and there still is) a demand for appropriate methods to measure and quantify the impact of social ventures in order to measure the value creation for the society. These methods are summarised under the term "social impact measurement" [7-10].

Wirkungsmessung: verschwindende Grenzen zwischen Profit- und Non-Profit-Sektor

Messung der Wertschöpfung für Gesellschaft von zunehmendem Interesse

Basically, social impact measurement aims to assess the social value of the impact produced by an intervention. Although any business can have a social impact, non-profit organisations and social enterprises are explicitly designed to create social value while addressing social challenges and are therefore expected to produce social impact. However, to date there is no common language on social impact measurement. The field is rapidly evolving, with national and international debates taking place inside academia, institutions, and communities of practice [7-10].

„Social Impact Measurement" als Ansatz der Wirkungsmessung von Interventionen

In the past, at least 30 frameworks for social impact measurements have been developed. However, at first, an understanding of the definition of social impact is required [7-9].

30 Ansätze für „Social Impact Measurement"

1.1 Definitions of social impact

Even though social impact measurement has gained an increasing importance, there is no standardised definition of social impact. There are various reasons why [8, 9, 11]:

keine standardisierte Definition von „Social Impact", da:

- Social impact is difficult to measure and quantify due to its subjective nature.

schwer messbar und quantifizierbar

- An intervention (or programme, etc.) can produce a wide range of impacts – positive as well as negative – which makes it difficult to integrate all of them into a comprehensive framework.

Auswirkungen vielseitig

- Social impacts can arise in a short-term and in a long-term, and many components can contribute to the impacts. Thus, it can be difficult to detect that possible impacts are definitely caused by the intervention in question.

Auswirkungen oftmals schwer der Intervention zuzuordnen

- Furthermore, it might be challenging to establish a common definition of social impact since the impact can be positive, negative, intended, and unintended.

„Impact" kann positiv, negativ sowie (un)beabsichtigt sein

Even though there is no standardised definition of social impact, there are several definitions existing. The most commonly adopted definitions are summarised in the table below.

sieben gängige Definitionen von „Social Impact"

Table 1.1-1: Definitions of social impact

Term and author(s)	Definition
Social impact (Bibb Latané, 1981)	"By social impact, we mean any of the great variety of changes in physiological states and subjective feelings, motives and emotions, cognitions and beliefs, values and behavior that occur in an individual, human, or animal, as a result of the real, implied, or imagined presence or actions of other individuals."
Social impact (William Freudenburg, 1986)	"Social impact refers to impacts (or effects or consequences) that are likely to be experienced by an equally broad range of social groups as a result of some course of action."
Social impact (Rabel Burdge and Frank Vanclay 1996)	"By social impacts we mean the consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally act as a member of society."
Social impact (Mary Gentile, 2000)	"Social impacts are the wider societal concerns that reflect and respect the complex interdependency between business practice and society."
Social impact (Catherine Clark, William Rosenzweig, David Long and Sara Olsen, 2004)	"By impact we mean the portion of the total outcome that happened as a result of the activity of the venture, above and beyond what would have happened anyway."
Social impact (Frank Vanclay, 2003)	"Social impacts are intended and unintended social consequences, both positive and negative, of planned interventions (policies, programmes, plans, projects) and any social change processes involved by those interventions."
Social value (Jed Emerson, Jay Wachowicz and Suzi Chun, 2000)	"Social value is created when resources, inputs, processes, or policies are combined to generate improvements in the lives of individuals or society as a whole."

References: [8, 9]

Unterschiede in Definition von „Social Impact" in Terminologie von Begriffen

The main differences in the definitions of "social impact" can be found in the usage of words like "impact", "output", "effect", and "outcome". Furthermore, for "social impact", other words are used like "social value creation" or "social return" [8, 9].

bestimmte Handlungen haben Einfluss auf gesellschaftliches System

Even though the above listed definitions vary, the main character of "social impact" is that a certain action (e.g. intervention or programme) is leading to an outcome, implementing changes to the social system and the society, respectively [8, 9, 11].

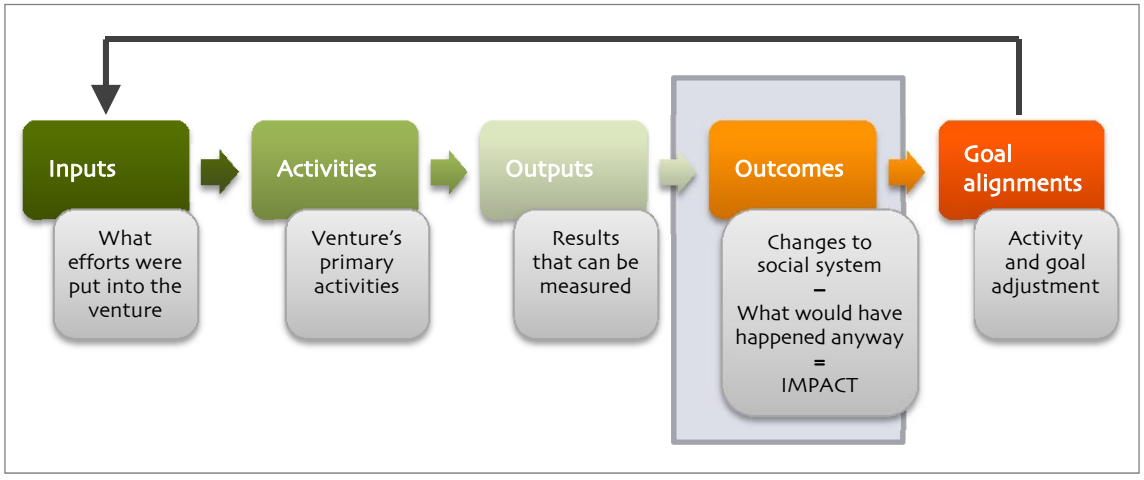

Figure 1.1-1: The impact value chain (References: [8, 9])

One definition of social impact, which is based on the so-called "impact value chain", is additionally differentiating outputs from outcomes and impacts (see Figure 1.1-1). While outputs and outcomes are related to the provider of the activity (e.g. intervention, programme), impacts are somehow related to the user(s) of the activity. Thus, the impact is defined as "outcomes" minus "what would have happened anyway" [8-10].

Wirkungskette, darin ist „Impact" die Änderung abzüglich dem, was ohnehin eingetreten wäre

Moreover, impacts can be intended or unintended, positive or negative and short- or long-term. Plus, the impact measurement can help to prove the goal achievement [8-10].

„Impact" kann auch unbeabsichtigt und negativ sein

1.2 Social impact measurement frameworks

1.2.1 Overview

Since the early 1990s, a large number of methods from profit and non-profit organisations have been developed to measure social impact [12]. Overall, there are 30 common quantitative frameworks existing. The most popular frameworks are chosen to be discussed and compared in detail in this section on the condition that they are sufficiently different to provide a wide range of characteristics [7]. These frameworks are: the Social Costs-Benefit Analysis (SCBA), the Ongoing Assessment of Social Impacts (OASIS), Social Return on Investment (SROI), the Balanced Scorecard (BSc), and the Poverty Social Impact Assessment (PSIA). The complete list and classification of the 30 methods can be found in Table 8.1-1 in the appendix.

30 Methoden, um „Social Impact" zu messen, 5 genauer beschrieben

Social Costs-Benefit Analysis (SCBA): SCBA is measuring social return on an investment and (social) returns to certain groups in the society, such as taxpayers or investment beneficiaries. The method outlines the costs and social impact of an activity or investment in monetary terms. These values are evaluated according to: benefit-cost ratio; net present value; and internal rate of return. SCBA is widely used to assess investments when revenues and expenditures do not completely reveal the consequences of an investment. It is beneficial that the social returns of an investment can be estimated on the basis of informed assumptions about the expected social impact [7, 8].

Social Costs-Benefit Analysis skizziert Kosten und „Social Impact" in Geldwerten

Ongoing Assessment of Social Impacts (OASIS): OASIS is intended for internal use to evaluate social impacts of non-profit agencies. The methodological steps of OASIS are: evaluating organisational client-related information needs; designing the client tracking system; automation; and implementation and beyond. A planning process centred around client information aims at a customised approach for each organisation. Furthermore, dedicated funding, engaging staff and consultants are key in the process. Also, the organisation must be ready to use OASIS, which for example stems from a culture valuing information on social impact and the stability of an organisation with regards to leadership and programmes [7, 8].

Ongoing Assessment of Social Impacts für organisationsinterne Zwecke

Social Return on Investment (SROI): SROI was developed to place a monetary value on organisations with a social and a market objective. The method assesses the efficiency of a social intervention and is applicable to a wide range of activities. To identify the SROI, the monetary value of the social impact created is estimated and compared to the inputs used. The method has high feasibility and low costs in case a firm is already gathering revenue, cost, and

Social Return on Investment bewertet Effizienz

outcome data. Compared to the other impact measurement tools, SROI has a higher credibility as it can be based on companies' actual outcomes and proxy research [7, 8].

Balanced Scorecard ist strategisches Planungs- und Management-System

Balanced Scorecard (BSc): BSc is a strategic planning and management system that is widely used by a variety of organisations, such as the government, business and industry firms, and non-profit organisations. It is used to align business activities and strategy, enhance communications and check firm performance in terms of achievement of goals. The BSc provides a 'balanced' view of a company's performance as it adds non-financial performance measures to traditional financial metrics. It views a firm from four different perspectives: the learning and growth perspective, the business process perspective, the customer perspective, and the financial perspective. For each perspective, metrics are developed and data is collected and analysed relative to each other. The method offers a straightforward prescription of what should be measured, done, and executed for 'balancing' the financial perspective and for promoting planning, learning, and reflection [7, 8].

Poverty Social Impact Assessment bewertet Auswirkungen von Reformen

Poverty Social Impact Assessment (PSIA): PSIA assesses the social and distributional impacts of policy reforms on the well-being of various groups of people in the society, in particular the poor and vulnerable. The method stresses the significance of setting up the analysis by identifying the programme assumptions, the channels of implementation and occurrence, the institutional structures, and the relevant stakeholders. After this, the social impact and risks can be estimated by analytical techniques shaped to fit the project under study. The multidimensional nature of PSIA can assist in: offering evidence on the effect of; introducing policy course changes and corrections and measuring them to limit negative impacts; proposing alternatives to stimulate positive impact and poverty mitigation; creating room for public discussion on reforms through engaging stakeholders. As a consequence, policy effectiveness, accountability, transparency, and national dialogue surrounding policies are increased. However, the time frame that a firm adopts when using PSIA is retrospective and can be time consuming [7, 8].

nebenbei existieren etliche qualitative Ansätze

Besides, there exist many qualitative guidelines, principles, and standards that are not included Table 8.1-1. Furthermore, the list of the quantitative methods is not intended to be comprehensive, in fact, it is intended to give a rough overview.

Methoden vor allem für Non-Profit-Organisationen …

Several of these methods in Table 8.1-1 were developed by or for non-profit or governmental organisations, those are for example:

- Local Economic Multiplier (LEM),
- Ongoing Assessment of Social Impacts (OASIS),
- Social Cost-Benefit Analysis (SCBA),
- Social Return on Investment (SROI).

… aber auch Methoden für Unternehmen

Other frameworks were developed by or for for-profit organisations, like:

- Social Return Assessment (SRA),
- Atkinsson Compass Assessment for Investors (ACAFI),
- Measuring Impact Framework (MIF),
- Best Available Charitable Option (BACO).

Methoden dennoch vielseitig einsetzbar, insbesondere SROI

Even though a method might have been created for an individual organisation, the method could be used and adopted for others. This happened for instance with SROI, mainly due its higher credibility (see above and section 1.3) [8, 9].

1.2.2 Characteristics of methods

Charakteristika der methodischen Ansätze

There is no framework of social impact measurement that captures the whole range of impacts or that can be applied for any purpose of evaluation. Thus, in this section, the available methods and their application in the individual frameworks are presented (for a comprehensive summary, see Table 1.2-7).

Purpose: screening, monitoring, reporting, and evaluation

für Screening, Monitoring, Reporting und/oder Evaluation

The purpose of the different social measurement frameworks depends on intention of the assessment. Overall, four types of purposes can be determined (see Table 1.2-1).

Table 1.2-1: Purpose of social impact measurement frameworks

Type	Explanation
Screening	Facilitates evaluation of investment opportunities specific to investors' social and financial objetives.
Monitoring	Assists management with ongoing operational decision-making and provides data for investor oversight.
Reporting	Useful to report performance to external stakeholders (e.g. public).
Evaluation	Used for retrospective, ex-post impact assessment of achievements for academic purposes, or organisational learning.

References: [8, 9]

Großteil der Methoden für mehrere Zwecke

Almost all of the 30 social impact measurement frameworks are useable for multiple purposes: 17 can be used for screening, 18 for monitoring, and 25 for reporting and evaluating (for more details see Table 1.2-7).

Time frame: ex-ante, accompanying, ex-post

Betrachtung retrospektiv, laufend oder prospektiv

The several methods of social impact measurement may use different time frames for their evaluation. Overall, the approach can be prospective, ongoing, or retrospective (see Table 1.2-2).

Table 1.2-2: Time frames of social impact measurement frameworks

Type	Explanation
Prospective	To assess expectable impacts. Methods have the ability to show different options.
Ongoing	For testing assumptions.
Retrospective	For evaluating past activities.

References: [8, 9]

Großteil der Methoden mehrere Zeitrahmen

Of the 30 social impact measurement frameworks, seven can be taken exclusively for a retrospective time frame and one can exclusively be taken for a prospective time frame. All the others can be used for multiple time frames (for more details see Table 1.2-7).

Orientation: input, output

Orientierung an Inputs oder Outputs

Methods of social impact measurement can either focus on inputs or outputs (see Table 1.2-3).

Table 1.2-3: Possible orientations of social impact measurement frameworks

Type	Explanation
Input	To assess differences in input as a result of a social activity (e.g. expenditure saved by better employee satisfaction).
Output	To assess differences in outputs as a result of a social activity (e.g. better reputation).

References: [8, 9]

Großteil der Methoden fokussiert Inputs

Most of the 30 frameworks focus on inputs resulting from a social activity (21 of 30). Eight look at the differences in outputs resulting from a social activity. Only one method targets inputs and outputs of social activities (for more details see Table 1.2-7).

Time fram: short-term, long-term

Zeitrahmen kurz- oder langfristig

Depending on the needs, the time frame of social impact measures can be short- or long-term. Sometimes both, a short and a long-term time horizon, is needed.

Table 1.2-4: Time frames of social impact measurement frameworks

Type	Explanation
Short-term	Traditionally, the focus is short-term.
Long-term	Impacts often do not occur in the short-term, thus long-term observations are useful.

References: [8, 9]:

Großteil der Methoden für kurzfristige Horizonte

The majority of the 30 method frameworks show results for a short-term time horizon exclusively (17 of 30) and one uses a long-term time frame. However, eleven show both, long plus short-term results (for more details see Table 1.2-7).

Perspective: micro, meso, and macro

Perspektive: Mikro-, Meso- oder Makroebene

Depending for what purposes and for who is the social impact measured, the chosen perspective or level varies. And based on the used perspective, different indicators are needed. The respective analysis can be conducted on the micro, meso, and/or macro-level.

Table 1.2-5: Perspectives of social impact measurement frameworks

Type	Explanation
Micro (individual)	Useful for business measurements.
Meso (corporation)	Useful for policy or programme evaluation.
Macro (society)	Useful for policy or programme evalutation and social science.

References: [8, 9]

A total of six methods analyse the social impact for all three perspectives. Eleven show results for the micro, ten for the meso, and 18 for the macro-perspective (for more details see Table 1.2-7).

Großteil der Methoden für Markoebene

Approach: measuring social impact

Individual methods can have various approaches to measure social impact (see Table 1.2-6).

Ansätze für Messung „social impact", z. B. durch Monetarisierung

Table 1.2-6: Approaches of social impact measurement frameworks

Type	Explanation
Process methods	Monitor the efficieny and cost-effectiveness of ongoing operational processes.
Impact methods	Measure operational outputs and their impact.
Monetization	Quantifiess social and environmental indicators and transforms those indicators into a monetary value.

References: [8, 9]

Most of the methods (11 of 30) allow the monetization of the social impact. Only eight methods measure the "true" impact by measuring the operational outputs (for more details see Table 1.2-7).

Großteil Methoden misst „Impact" mittels Monetarisierung

Table 1.2-7: Methodological characteristics of social impact measurement frameworks

Measurement tool	Purpose				Time frame			Orientation		Length time frame		Perspective			Approach		
	Screening	Monitoring	Reporting	Evaluation	Prospective	Ongoing	Retrospective	Input	Output	Short-term	Long-term	Micro	Meso	Macro	Process methods	Impact methods	Monetisation
Acumen scorecard	X	X	X	-	X	X	-	X	-	X	X	-	X	-	X	-	-
Atkisson Compass Assessment for Investors	-	X	X	-	X	X	-	X	-	X	X	X	X	-	X	-	-
Balanced scorecard	X	X	X	X	X	X	X	-	X	X	-	-	X	X	X	O	-
Best Available Charitable Option	X	X	X	-	X	X	X	X	-	X	-	-	X	X	X	-	X
Bottom of the Pyramid Impact Assessment Framework	X	X	X	X	X	X	X	X	-	X	-	X	X	X	X	X	-
Center for High Impact Philanthrophy Cost per Impact	X	X	X	X	X	X	-	X	-	X	X	X	-	X	X	-	-
Charity Assessment Method of Performance	-	-	X	X	-	-	X	X	-	X	-	X	-	X	X	-	-
Foundation Investment Bubble Chart	-	-	X	X	-	X	X	-	X	X	-	X	-	X	X	-	-
Hewlett Foundation Expected Return	X	-	-	-	X	-	-	-	X	X	-	X	-	X	X	-	-
Local Economic Multiplies	X	-	-	X	X	-	X	X	-	X	-	X	X	-	X	-	X
Measuring Impact Framework	X	X	X	X	X	X	X	X	-	X	X	-	X	X	X	X	-
Millenium Development Goal-Scan	-	-	X	X	-	-	X	-	X	X	-	-	-	X	X	O	-
Measuring Impacts Toolkit	-	-	-	X	-	-	X	X	-	X	-	X	X	X	X	-	X
Ongoing Assessment of Social Impacts	-	X	X	X	-	X	X	X	X	X	-	X	-	X	X	X	X
Participatory Impact Assessment	X	X	X	X	X	X	X	X	-	X	X	X	-	X	X	X	-
Poverty Social Impact Assessment	X	-	X	X	-	-	X	X	-	X	X	X	-	X	X	X	-
Public Value Scorecard	-	X	X	-	X	X	-	X	-	X	-	-	X	X	X	-	-
Robin Hood Foundation benefit-cost ratio	X	-	X	X	X	X	X	-	X	X	X	-	-	X	X	X	X
Social Compatibility Analysis	X	X	-	X	X	X	-	X	-	X	-	-	X	X	X	-	-
Social Cost-Benefit Analysis	X	-	X	X	X	X	X	X	-	X	X	-	-	X	X	X	X
Social Cost Effectiveness Analysis	-	-	X	X	-	-	X	X	-	X	X	-	-	X	X	-	X
Social e-valuator	-	X	X	X	-	X	X	X	-	X	-	X	-	O	X	O	X
Social Footprint	X	X	X	X	X	X	X	-	X	X	X	X	X	X	X	-	-
Social Impact Assessment	X	X	X	X	X	X	X	X	-	X	-	-	-	X	X	X	-
Social Return Assessment	X	X	X	X	X	X	X	X	-	X	-	X	X	X	X	-	X
Social Return on Investment	-	X	X	X	-	X	X	X	-	X	-	X	-	O	X	O	X
Socio-Economic Assessment Toolbox	-	X	X	X	-	X	X	X	-	X	-	-	X	X	X	-	-
Stakeholder Value Added	-	-	-	X	-	-	X	-	X	-	-	-	X	-	X	-	X
Toolbox for Analysing Sustainable Ventures	X	X	X	X	X	-	X	X	-	X	X	X	X	X	X	-	O
Wellventure Monitor	-	-	X	X	-	-	X	-	X	-	X	X	X	X	X	-	-

References: [8, 9]; Abbreviations: "X" = Yes; "-" = no; "O" = partially

1.3 Special focus: Social Return on Investment

Social Return on Investment (SROI) was initially developed by a non-profit organisation (formerly Roberts Enterprise Development Fund) in 1996. The aim was to create an analysis to place a monetary value on ventures in its portfolio with social as well as market objectives. SROI is based on the method of cost-benefit analyses, but combines it with the method economists use to assess non-profit ventures and the tools of financial analyses for the private sector [7, 9, 10].

Social Return on Investment (SROI) ähnlich Kosten-Nutzen-Analyse (CBA)

Basically, SROI-analyses try to relate invested resources and potential impacts to monetary value. The result is presented as an aggregated value (SROI-ratio) [13, 14].

Aufwände und Wirkungen in Geldwerten

This means, in particular, that a certain amount of money is invested in an organisation or programme. With these investments, certain interventions for certain stakeholders (e.g. children, mothers, patients) are provided that have a certain impact. For instance, children have, due to a respective intervention, a better health or better education. These impacts need to be addressed and quantified and it needs to be addressed for whom these impacts are applicable. The impacts or effects are then quantified in monetary values [7, 12, 13].

Theorie: Geld für Programm, damit Intervention mit bestimmter Wirkung

Moreover, in accordance with section 1.1, to calculate the impact, "what would have happened anyway" needs to be subtracted. Meaning, if the respective intervention (or programme, etc.) was not existing, what would have been the consequences [10, 13].

„Impact" immer abzüglich dem, was ohnehin eingetreten wäre

Finally, when the impacts for the stakeholders are collected and monetized, the impacts are summed up and related to the invested resources. The result – the SROI-ratio – is a number for the potential return on investment. This ratio is an indicator of how much money can be expected as a return for every Euro invested [5, 13].

SROI-Rate ist Summe aller Wirkungen in Bezug zu benötigten Ressourcen

Thus, SROI is a framework to measure and account for a broader concept of value. Actually, it is the most common method for a comprehensive return on investment analysis. To conduct a SROI-study, six stages have to be fulfilled (see Figure 1.3-1) [5, 9, 10].

SROI besteht aus 6 Schritten, beginnend mit Identifizierung der Stakeholder

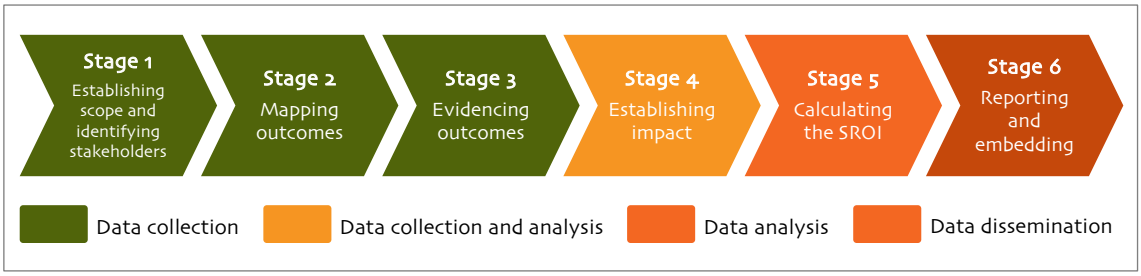

Figure 1.3-1: Stages of the SROI-process (References: [5, 14])

The SROI-process is stakeholder-oriented: first of all, the relevant stakeholders and their input for the assessed project (intervention, programme, etc.) are identified. Stakeholders are those, who are directly or indirectly involved and affected by the intervention, for instance public investors, private inves-

SROI ist Stakeholder-orientiert

tors, the community, the public in general, or the recipients of the intervention. Then, the potential positive and negative impacts (or effects) for the identified stakeholders are investigated – mostly based on literature or expert opinions [5, 13].

zunächst Bestimmung Effekte mittels Befragung, danach Identifikation und Monetarisierung von Proxies

In qualitative surveys, it is determined whether the presumed effects actually occur and which additional effects may still exist. In further steps, the effects are quantified and monetised. In order to measure and monetise the effects, appropriate indicators are assigned to the effects and populated with data. During this step, verbally described effects are "translated" into different indicators. Frequently, "proxy indicators or proxies" are used to quantify or monetise the effects. Proxies are instruments which replace variables, which are not directly measurable and/or monetisable (e.g. reduced stigma for people living with AIDS) [5, 13, 14].

1.4 Social Return on Investment in the context of traditional economic evaluations

„Social Impact Measurement" Spielart gesundheitsökonomischer Evaluationen

Social impact measurement frameworks (see section 1.2), including SROI, are concepts that usually relate effects and inputs and, therefore, have an economic focus. Basically, these frameworks are variations of health economic evaluations. However, the core approach of health economic evaluations is the inclusion of costs in the analysis of an intervention. The applied costs are focussing on inputs that are invested in an intervention or programme. Opportunity costs are considered, at the most, as effects [10].

SROI „umfassender" als gesundheitsökonomische Evaluationen, SROI vergleichbar mit Kosten-Nutzen-Analyse

Therefore, SROI is a more "holistic" approach of calculating the "value for money" than "classic" health economic evaluations like cost-effectiveness analysis (CEA) or cost-benefit analysis (CBA, not to be confused with SCBA, described in section 1.2) [5, 10, 12]. SROI is often described as an extended CBA, basically due to the addition of broader socio-economic and environmental outcomes. This is achieved, for instance by the use of financial proxies (see chapter 0) [5, 10].

Kosten-Nutzen-Analysen und SROIs viele Gemeinsamkeiten

Both, CBAs and SROIs are intended to proof that an intervention is worth an investment. The costs and benefits are given in monetary values. The benefits in CBAs and SROIs are capturing health and non-health impacts in monetary values or welfare benefits, whereas in SROIs, this is additionally underpinned by the "triple bottom line" – including social, environmental, and economic impacts. In both, CBAs and SROIs, the analysis can be prospective and/or retrospective, and future values should be discounted. In SROIs, however, stakeholders are involved and the analysis is based on the theory of change[1]. The result as CBAs and SROIs is a ratio, quoting whether the intervention is worthwhile the investment or not (ratio > 1 is worthwhile the investment) [5, 10]. The differences and similarities of SROIs and CBAs, also in contrast to cost-effectiveness analyses (CEA) are summarised in Table 1.4-1.

[1] The theory of change clarifies how and under which circumstances certain effects can be achieved. This is mainly based on existing evidence.

Table 1.4-1: SROI in comparison to traditional economic evaluations

Category	Cost-effectiveness analysis	Cost-benefit analysis	Social Return on Investment
Main objective	To compare costs + impact of alternatives within same domain	To proof if an intervention is worth the investment	To evaluate if an intervention is worth the investment
Costs	Monetary value	Monetary value	Monetary value
Benefits	Benefits linked to health improvements Reported as natural units (e.g. lives saved)	Captures health and non-health impacts Reported as monetary value of welfare benefit (lists benefits that cannot be monetised)	Captures health + non-health impacts (Socially, economically and environmentally) Reported as monetary value or welfare benefit
Level of application	Intervention	Intervention (usually)	Uses financial proxies to estimate monetary value of benefits that cannot be directly monetised
Timeline of analysis	Retro-/prospective	Retro-/prospective	Retro-/prospective
Discounting of future value	Yes	Yes	Yes
Stakeholder engagement	No	No	Yes
Theory of change	No	No	Yes
Main output of analysis	Incremental Cost-Effectiveness Ratio (ICER)	Benefit-Cost Ratio (BCR)	Social Return on Investment Ratio (SROI-ratio) Additionally: Payback period + Net Present Value (NPV)
Interpretation of main output of analysis	The lower the ICER the better	BCR > 1 is worthwhile investment	SROI-ratio > 1 is worthwhile the investment
Relevance	Priority setting and resource allocation	Priority setting + resource allocation	Priority setting, resource allocation, stakeholder relationship building, accountabilty framework, management tool

References: [5, 10]

2 Project aims and research questions

The main aim of this report is to give an overview of "social impact measurement" in the field of child and adolescence health. The main focus will be on studies calculating the Social Return on Investment (SROI).

Überblick von „Social Impact Measurement" im Bereich der Kinder- und Jugendgesundheit zu Krankheitsbildern, Kosten und Methoden

Therefore, this review will give a detailed overview of:

- Diseases and disorders that are assessed,
- Cost types or relevant cost areas that are analysed, and
- Methods that are used in the analyses.

Moreover, explicit cases that are reported and described in the identified literature will be taken up and analysed.

Beschreibung etwaiger Fallbeispiele

Finally, based on the results of this report, four to five diseases or disorders (or equal subjects) shall be identified that are eligible, in particular, for a further SROI-analysis for the Austrian context in a future project.

Identifikation von Krankheitsbildern für mögliches Folgeprojekt

Based on the background, the following research questions shall be answered:

Forschungsfragen:

- For which diseases and disorders of children and teenagers do studies of "social impact measurement" exist? The main focus will be on SROIs.

Welche Krankheitsbilder?

- Which outcomes can be identified?

Welche Outcomes?

- Which costs are reported (e.g. direct/indirect) and in which areas are these costs manifested (health, education, etc.)?

Welche Kosten(bereiche)?

- What are the costs of the individual interventions/programmes in the identified literature and what is the predicted return on investment?

Was sind die Kosten und die Benefits?

- How is the benefit of the interventions in the respective analyses methodically justified? Are there hints which methods were used for choosing outcomes?

Was sind die Methoden?

- Which explicit cases are reported in the identified literature?

Welche Fallbeispiele gibt es?

- Which specific disorders and diseases of children and teenagers are eligible for a further economic analysis (especially for Austria) in a future project?

Welche Krankheitsbilder?

3 Methods

3.1 Inclusion and exclusion criteria

Einschlusskriterien gemäß PIKO-Fragestellung

Since this report is supposed to give an overview of existing studies evaluating the Social Return on Investment, the inclusion criteria for studies were kept relatively broad. An overview of the relevant inclusion criteria, according to PICO, can be found in Table 3.1-1.

Population

Fokus Kinder und Jugendliche bis 18 Jahre

Regarding population, we focussed on children and adolescent at the age of -9 months (beginning of the pregnancy of the mother) until the age of 18 years[2].

Einschluss Studien auch, wenn Intervention für Mütter oder Eltern

However, studies were also included when the intervention was for pregnant women or even parents, but the impact also affected the condition of the children (e.g. anti-smoking programmes for mothers during pregnancy).

Intervention

jedwede gesundheitsbezogene Intervention akzeptiert

Every kind of health-related intervention for children or adolescents was considered relevant. This could be, for example, any health education (e.g. classes for healthy nutrition in schools), care programmes (e.g. social workers for families of low socio-economic status), health promotion (e.g. developing and implementing nutrition policies for schools), or medical treatments (e.g. interventions for anxiety disorders).

Control

jegliche Art von Vergleichsintervention akzeptiert

Every kind of control was considered relevant. Ideally, the control should be "no intervention", to compare the effect (or impact) of the intervention with the status quo.

Outcome

jegliche Art von Outcome akzeptiert

Since one of the research questions asked for "which outcomes can be identified", studies were not excluded based on the reported outcomes.

Kosteneinsparungen jedoch nicht nur gesundheitsbezogen

However, we exclusively included studies where the return on investment was not only based on health-related effects. Therefore, the studies had to show impacts also for other domains like education or crime.

Types of studies, language, type of publication

Sprache: Englisch und Deutsch

We exclusively included primary studies in German or English generated from a search in databases and from a hand search in grey literature.

ursprünglich Fokus auf SROI-Studien, aber auch Kosten-Nutzen-Analysen eingeschlossen

Initially, we focused on the inclusion of studies of "social impact measurement", especially SROI-studies. However, the literature search also generated cost-benefit analyses (CBAs). Thus, we included CBAs that calculated an impact from the societal perspective (or general public) in further areas than "health" (e.g. benefits for the economy).

[2] We included three studies, even though the participants were partly over 18 years. This decision was made because these three programmes were considered as highly relevant for answering our research questions.

Table 3.1-1: Inclusion criteria

Population	✿ Patients aged between -9 months and +18 years
Intervention	✿ Any health-related intervention (or programme, activity, etc.)
Control	✿ Any control ✿ Ideally "no intervention"
Outcome	✿ Every kind of outcome, which is not exclusively health-related
Types of studies	✿ Primary studies calculating a (social) return on investment
Language	German/English
Type of publication	(un)published journal articles and research reports

Kriterien für ausgeschlossene Studien

We excluded studies, when:

- the population was/the participants were not exclusively 18 years old or younger,
- the intervention was for pregnant women or parents, but the effects for the children were not considered,
- the reported effects/impacts were only health-related or were not calculated for the general public or society,
- the intervention was not conducted in high-income countries (like Australia, New Zeeland, Japan, and countries in Europe and North America),
- the evaluation was not for a certain programme/intervention (e.g. the calculations were for a hypothetical intervention, like the general provision of vaccination or childcare),
- the publication-types were abstracts, posters, comments, letters, or books.

3.2 Literature search and selection

Suche in acht Datenbanken

Initially, we conducted a systematic literature search in the following databases:

- Cochrane,
- Centre for Research and Dissemination (CRD),
- EconLit,
- Embase,
- Medline,
- PsycInfo,
- Trip-database (Turning Research Into Practice),
- WoS-database (Web of Science).

Suchbegriffe, wie „return on investment"

We searched for terms like "return on Investment", "SROI", and "social impact". Moreover, we limited the search to the respective population.

genaue Suchstrategie im Anhang

The detailed search strategy including the search terms used is described in the Appendix. Furthermore, an additional hand search, especially for grey literature via Scopus and Google was conducted.

A total of 1,102 records were identified through database and hand search. Two review authors (SF, MS) included and excluded the literature independently from each other, whereas differences were discussed between the authors. A PRISMA flowchart is shown in Figure 3.2-1 outlining the number of citations considered at each stage of the systematic review.

insgesamt 1.102 Treffer

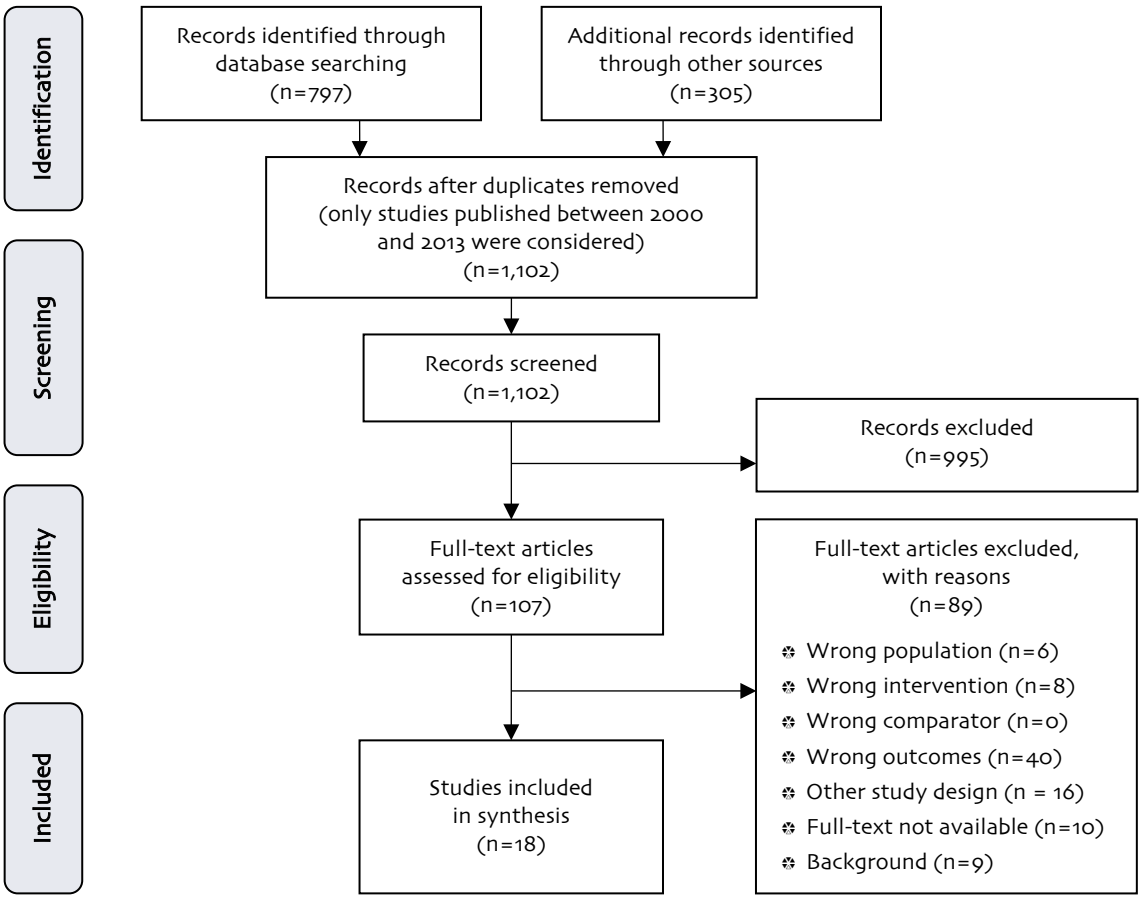

Figure 3.2-1: Summary of the process used to identify and select studies for the review (PRISMA Flow Diagram)

A total of 995 records were excluded, based on the screening of the respective abstracts. The exclusion of these records was due to obvious reasons, for instances when studies were from low or middle-income countries (e.g. India, China, or Ghana), the interventions were not for children (e.g. interventions for employees), or when articles did not assess a certain intervention.

995 Artikel auf Abstract-Basis ausgeschlossen

The individual reasons for exclusion, based on full-texts, were as follows:

Gründe für Ausschluss von Volltexten:

- **Wrong population:** six studies were excluded because the analysed interventions were not focussing on children or adolescents (e.g. studies were focussing on employees or parents only),

abweichende Population

- **Wrong intervention:** eight studies were excluded since they did not analyse a certain programme (e.g. the analysed intervention was hypothetical),

abweichende Intervention

- **Wrong outcomes:** a total of 40 studies were excluded due to the fact that they considered wrong or incomplete outcomes, as described in section 3.1 (e.g. when studies exclusively considered health-related effects),

abweichende Outcomes

abweichende Studiendesigns

- **Other study design:** 16 studies were excluded because these studies were reviews collecting data from several studies (though, the references of these studies were scanned for relevant studies),

Volltext nicht verfügbar

- **Full-text not available:** for 10 studies, there were no full-text articles available (e.g. only abstracts were available),

9 Studien für Hintergrund

- Besides, nine studies were excluded, but they were considered as **background** literature.

3.3 Data extraction and analysis

Erstautor extrahierte Studiendaten, Zweitautor kontrollierte

One author extracted the data (SF) of the included studies and the second author controlled the extracted data (MS). If the same data were duplicated in multiple articles, only results from the most comprehensive or most recent article were included. Furthermore, if multiple publications of the same programme or intervention were available, only the two most recent publications were included (to eventually show differences in the results over time and to consider the most recent research at the same time).

Studien sortiert nach Name der Intervention

The studies in the extraction tables are sorted alphabetically by the name of the intervention or programme.

extrahierte Charakteristika:

The following **study characteristics** were extracted:

Autor, Publikationsjahr

- Author, year of publication:
  - The first author of the study and
  - The respective year, when the study was published.

Land

- Country:
  - The country in which the study or the programme was conducted.

Studientyp

- Study type:
  - Whether the study was an SROI-analysis or a CBA.

Studienpopulation

- Study population:
  - Which participants (children, families, e.g.),
  - At what age, and
  - How many participants were included in the programme/study.

Intervention

- Intervention:
  - The main content of the intervention and
  - The name of the respective programme.

Dauer der Intervention

- Duration of the intervention:
  - How long the intervention lasted.

Zeithorizont der Kalkulationen

- Time horizon of calculations:
  - For which time period the calculations of the costs and benefits were done.

Jahr der Kostendaten, Diskontrate

- Year of cost data and discount rate:
  - What year were the cost calculations based on and
  - At which rate were future costs and benefits discounted.

Kostenperspektive

- Cost perspective:
  - From which perspective were the costs and benefits considered,
  - The perspectives are e.g. society, general public, or participants.

- General methods and approaches: — allgemeine Methoden
  - Brief description of the methods and the approaches of the studies to identify and measure outcomes and/or benefits.
- Outcomes used to value (future) benefits [sources]: — Outcomes, um Benefits zu bewerten
  - Naming of the individual outcomes that were measured and
  - Naming the respective sources where these outcomes came from.
- (Avoided) cost categories taken into account to estimate impact/benefit: — in Betracht gezogene (vermiedene) Kostenkategorien, um Impact zu bewerten
  - The costs or cost areas that were used to estimate the impact or benefit of the programmes.
  - The areas are e.g. education, employment, crime/justice, or health.
- Detailed description of the intervention: — detaillierte Beschreibung Intervention
  - Further information on and amount of the individual interventions (e.g. hours of care).
- Control/comparator: — Vergleichsintervention
  - The kind of intervention the individual programmes were compared with.

These are the respective **study results** that were extracted: — Studienergebnisse:

- Costs for the intervention: — interventionsbezogene Kosten
  - Contains exclusively the costs for the programme itself.
- Total costs for intervention: — Gesamtkosten der Intervention
  - Contains the costs for the programme plus the "peripheral" costs,
  - E.g. training or implementation.
- Costs for control: — interventionsbezogene Kosten der Vergleichsintervention
  - Contains exclusively the costs for the control intervention itself.
- Total costs for control: — Gesamtkosten Vergleichsintervention
  - Contains the costs for the control intervention plus the "peripheral" costs,
  - E.g. costs for occurring diseases.
- Avoided costs/benefits in total: — vermiedene Kosten/Benefits gesamt
  - Contains the total monetary benefits of the programme/intervention (in some studies the term "avoided costs" and in some studies the term "benefits" was used synonymously).
- Avoided costs/benefits per cost category: — vermiedene Kosten/Benefits pro Kostenkategorie
  - Contains the monetary benefits of the programme/intervention per considered cost area (see above).
- Net value: — „Nettonutzen"
  - The net value is calculated by subtracting the total costs for the intervention from the avoided costs or benefits in total.
- (S)ROI: — „(gesellschaftliche) Rendite"
  - Shows the (social) return on investment,
  - Is the result of the total costs divided by the total benefits.

für bessere Vergleichbarkeit Konvertierung Kosten in österreichische Euros (Jahr 2016)

For a better comparison of the study results, the costs were converted into Euros for the year 2016 and for Austria (the value of one Euro in terms of purchasing power differs between countries in the Eurozone). Therefore, the online tool of the "Campbell and Cochrane Economics Methods Group" (CCEMG) and of the "Evidence for Policy and Practice Information and Coordinating Centre" (EPPI-Centre) was used [15]. For the purchasing power parity (PPP) values, the IMF dataset (International Monetary Fund) was used, since the OECD dataset did not provide a conversion into 2016 Euros (the year 2016 was chosen, because two of the identified studies presented costs for 2016).

wenn Kostenjahr nicht erwähnt, dann Publikationsjahr

In case the year of cost data was not clearly stated in a study, the most likely year was used to convert the costs into Euros 2016. For instance, when several years could have been considered, the latest year was used and when no year date was mentioned, the year of the publication was considered[3].

Kosten pro TeilnehmerIn, bei Bedarf berechnet

Furthermore, costs in the results section were presented per participant, if possible. However, when studies showed exclusively total costs, the costs per participant were calculated by the authors of this report (costs divided by number of participants).

Kosten pro Familie als Kosten pro TeilnehmerIn

Moreover, when studies showed costs per families, it was assumed that these costs are equivalent to costs per participant. Though, it is possible that more than one child of these families was part of the programme.

bei mehreren Publikationen zu einer Intervention, Kosten zusammengefasst

When several studies presented the results of the same programme/intervention, the converted (total) costs for the intervention were summarised because it was assumed that these should be similar. The impacts, though, were presented for each study separately because it was assumed that the longer the time horizon, the bigger the impacts.

(S)ROI nicht konvertiert

The (social) return on investment was not converted. It was assumed that a financial return is independent of the year and the currency. Thus, the (S)ROI was given without the respective currency.

Studienergebnisse in „originaler" Währung in Tabelle in Anhang

The study results, including the costs in the "original" currency and year plus the total costs per intervention, can be found and inspected in detail in the appendix (see Table 8.3-1).

keine Qualitätsbewertung der Studien

Since this report is a "landscape overview" and the intention was not to evaluate the methods and results of the studies, no quality assessment of the included studies was performed.

[3] The publication year was chosen because it cannot be generalised whether the cost data is one, two, three, or more years older than the publication.

3.4 Quality assurance

interner und externer Review

This report has been reviewed by an internal reviewer and an external reviewer. The latter was asked for the assessment of the following quality criteria:

- Technical correctness: Is the report technically correct (evidence and information used)?
- Does the report consider the latest findings in the research area?
- Adequacy and transparency of method: Is the method chosen adequate for addressing the research question and are the methods applied in a transparent manner?
- Logical structure and consistency of the report: Is the structure of the report consistent and comprehensible?
- Formal features: Does the report fulfil formal criteria of scientific writing (e.g. correct citations)?

als Methode der Qualitätssicherung

The LBI-HTA considers the external assessment by scientific experts from different disciplines a method of quality assurance of scientific work. The final version and the policy recommendations are under full responsibility of the LBI-HTA.

4 Results

Overall, 18 publications were included in this report. Nine of these articles were published in journal articles [1-3, 16-21] and nine arose from "grey literature" [13, 22-29]. Five articles were identified by the systematic search [2, 16-19] and 13 by hand search, including Scopus [1, 3, 13, 20-29].

18 Publikationen inkludiert, 5 Artikel durch systematische Suche

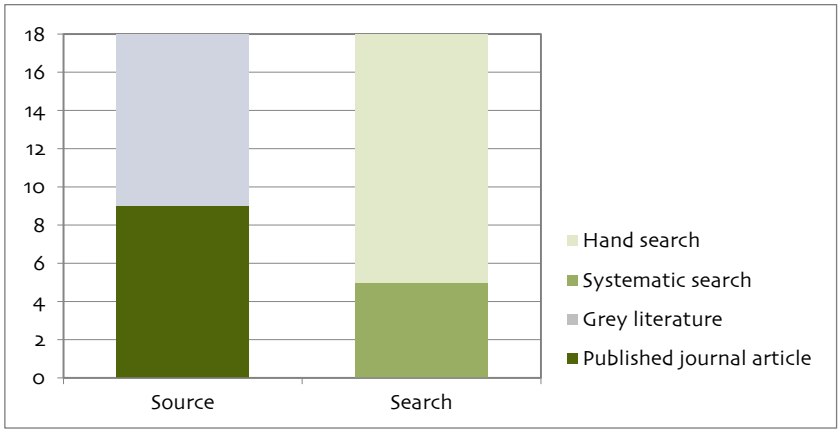

Figure 3.4-1: Origins of included articles

Since the literature search has also generated cost-benefit analyses, it was decided to include these types of studies as well. This decision was based on the fact that CBAs are similar to SROI-analyses (see also section 1.4).

Kosten-Nutzen-Analysen auch eingeschlossen

4.1 Characteristics and methods of interventions/programmes and the respective studies

4.1.1 General

In the 18 included publications, a total of 15 programmes/interventions were evaluated. Thus, for one programme, the "High/Scope Perry Preschool Programme", three studies [1-3] and for another programme, the "Child-Parent Center Education Program", two studies [20, 21] were included. An overview of the characteristics of the programmes and the respective studies can be found in Table 4.1-1 at the end of this section.

in 18 Studien insgesamt 15 Interventionen evaluiert

4.1.2 Study types

Overall, different organisations from the public, profit, and non-profit area evaluated various interventions. For eight programmes, cost-benefit analyses were identified [1-3, 17-21, 24, 27, 28] and for six programmes, SROIs were conducted [13, 22, 23, 25, 26, 29]. For one intervention, both a CBA and an SROI was calculated [16].

8 SROI-Analysen vs. 6 Kosten-Nutzen-Analysen, eine Studie beides

4.1.3 Countries and publication years

Großteil Studien aus USA und in letzten 7 Jahren publiziert

Most of the identified programmes, namely five [1-3, 16, 18, 20, 21, 24], were conducted in the USA, followed by the UK with three programmes [22, 23, 26]. All the studies evaluating the programmes were published between 2002 and 2017, whereas most of the evaluations were published within the past seven years. An overview is shown in Figure 4.1-1. For the "Child-Parent Center Education Program" and the "High/Scope Perry Preschool Programme", only the oldest publication was considered in the diagram.

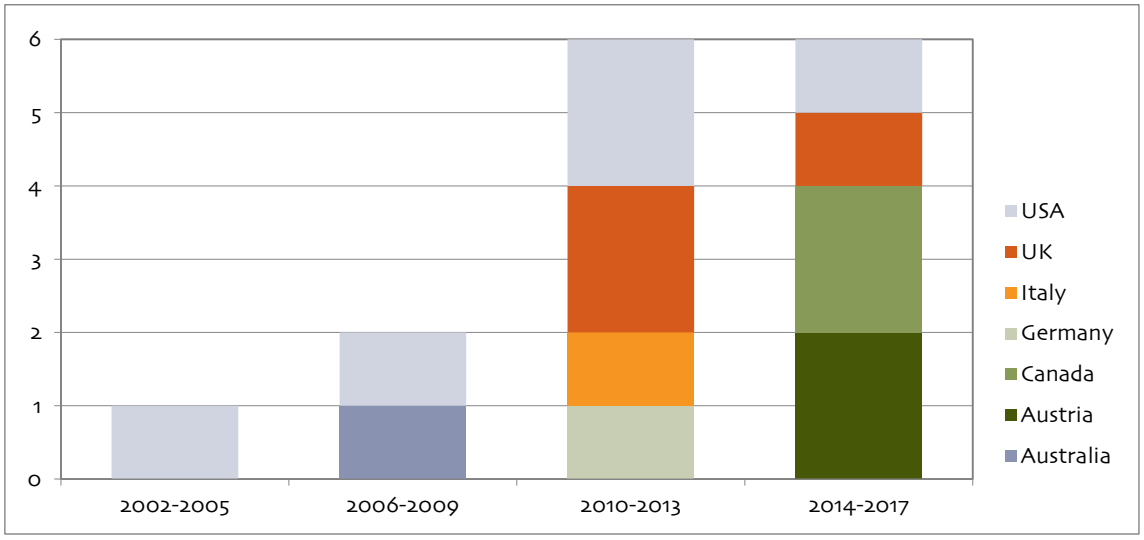

Figure 4.1-1: Number of studies published by year in countries

4.1.4 Study population

Number of participants

zwischen 4 und 2.405 TeilnehmerInnen, TeilnehmerInnen in Kontrollgruppen oft unbekannt

In the individual programmes, there were between 4 and 2,405 participants in the intervention groups [18, 27] and between 65 and 2,002 participants in the control groups [1-3, 18]. The studies can be categorised in three groups: for six programmes, the calculations were based on a smaller number of participants (less than 100) [1-3, 13, 25-28] and for another six programmes, the calculations were based on a large number of participants (200 and more) [18-23, 29]. For two programmes, the number of participants was in between 100 and 200 [16, 24]. However, in a few publications, it was not stated how many participants were involved in the programme [17] or in the control group [13, 22, 23, 25-29].

Kontrollgruppen oft hypothetisch

The unclear number of participants in the control groups was mainly due to the fact that the control groups were hypothetical. Meaning that there were no "real" comparison groups and it was assumed that the control groups did not receive any intervention. For further information see also section "*Control interventions/comparators*".

Age of participants

The interventions were for children covering the ages 0 to 20[4]. As Figure 4.1-2 shows, most of the programmes were covering the ages 13-17, followed by ages 0-8. For the ages between 8 and 13, there were fewer interventions.

StudienteilnehmerInnen 0-20 Jahre

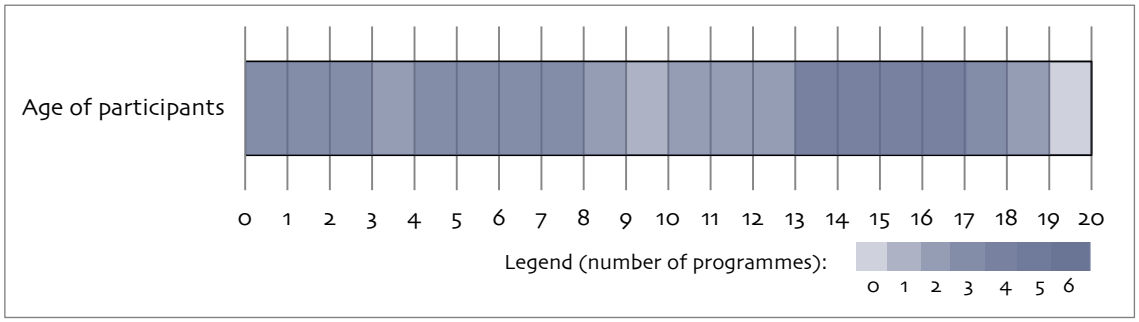

Figure 4.1-2: Number of programmes and the respective ages of participants

4.1.5 Information on interventions/programmes

Types of interventions/programmes

The 15 identified interventions/programmes are partly providing similar contents and features. The interventions can be summarised in seven categories, ranging from "education" and "sexual health", to "vaccination" (see Figure 4.1-3). Four programmes consisted of various interventions [13, 19, 27, 28], providing individual assistance for children and families. Three programmes can be found in the field of "education/skill development" [1-3, 20, 21, 24] and „mental health/addiction and delinquency" [18, 25, 26], respectively. In the category "sexual health/sex education", two evaluations were identified [22, 23] – while the "Teens and Toddlers Programme" offers interventions also in the field of education and skill development [23].

Interventionen unterteilbar in sieben Kategorien: mentale Gesundheit, Bildung, sexuelle Gesundheit …

One study can be categorised into "hospital intervention" [16] and one into "vaccination" [17], respectively. The study on "hospital intervention", though, provided also various additional interventions, but the main content is hospital-related (see also section 4.3) [16]. Another study [29] was categorised as "nutritional intervention" because it provided breakfast to children in schools.

… sowie diverse Interventionen, Krankenhaus-interventionen, Impfung und Ernährung

[4] Three studies [22, 23, 25] were included, even though the participants were partly over 18 years. This decision was made because these three programmes were considered as highly relevant.

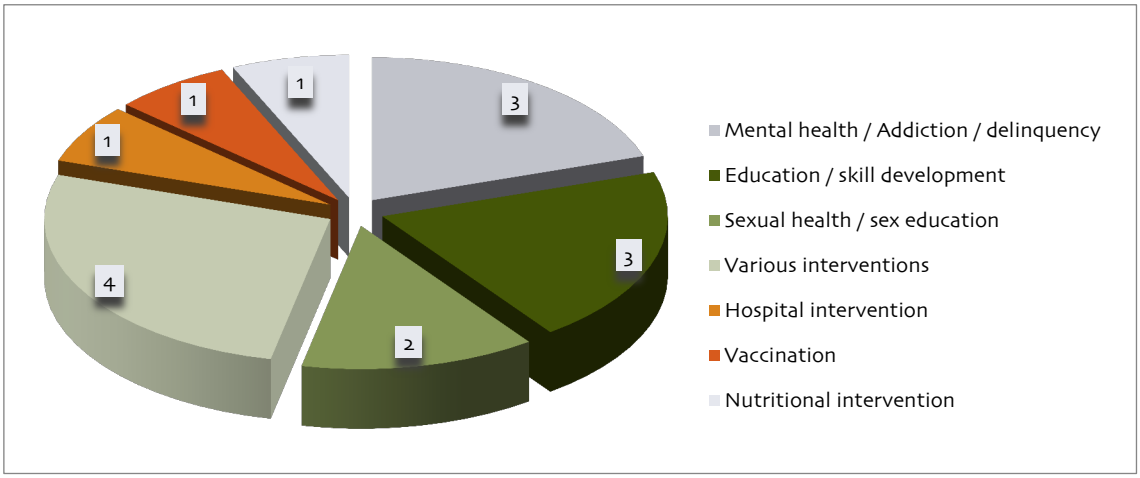

Figure 4.1-3: Summary of types of interventions in programmes

Intentions of interventions/programmes

Prävention und Unterstützung im Fokus der Interventionen

Most of the programmes did not aim at the treatment of specific disorders or diseases, but rather at prevention and support. Figure 4.1-4 visualises the distribution of the several intentions of the interventions.

vier Programme für Kinder aus sozial oder sozio-ökonomisch schwachen Umfeld

The intention of four programmes was to support children and their families from socio-economical or socially disadvantaged environments (e.g. families, neighbourhoods): the "Better Beginnings, Better Future Initiative", the "Child-Parent Center Education Program", the "Grow Together", and the "High/Scope Perry Preschool Programme" [1-3, 13, 19-21].

drei Programme zur Prävention/Assistenz bei bestimmten Krankheiten

A total of three programmes aimed at the prevention of, or the assistance with, specific diseases: the "Boston Children's Hospital Community Asthma Initiative", which aimed at lowering the morbidity of paediatric asthma [16], the "Carolina Abecedarian Project (ABC) and the Carolina Approach to Responsive Education (CARE)", which aimed at the enhancement of early-life skills of socio-economic disadvantaged children [24], and the "hepatitis B vaccination in Italy" [17].

zwei Programme Unterstützung bei Sucht der Eltern oder der Jugendlichen

Two programmes provided addiction assistance for children or young people: the "Moving Parents And Children Together" programme supported children or young people who were experiencing the effects of parental substance misuse [26]. The "Pine River Institute Program" provided therapies for substance abusing youth [25].

sechs Programme für Kinder/Jugendliche allgemein

A total of six interventions were not targeting a specific population. These interventions were for children (and their families) in general. "The Breakfast Club", provided by Daystar Foundation, which provided breakfast in schools to enhance health [29], the "Community Safer Sex Project", which provided health services to improve sexual health and reduce unplanned pregnancies [22], the "Communties That Care" that provided a prevention system to improve adolescent behaviour (especially in terms of smoking and delinquency) [18], the "Frühe Hilfen", which supported families in the episode of early childhood in general [27], the "Guter Start in Kinderleben" that aimed at strengthening of the child-parent relationships and competencies to prevent neglect and abuse [28], and the "Teens and Toddlers Programme" that assisted young "at-risk" people with early pregnancies on how to care for children [23].

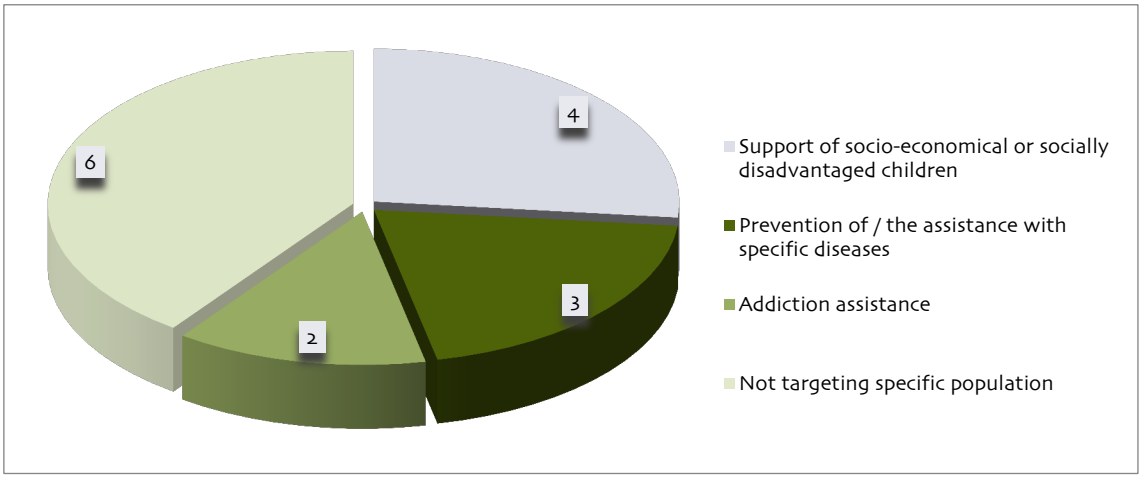

Figure 4.1-4: Summary of intentions of interventions/programmes

Duration of interventions/programmes and time horizon of calculations

einmalige bis achtjährige Interventionen

The duration of the programmes ranged from one-time interventions, like vaccination against hepatitis B in Italy [17], to over 15 weeks [23], to eight years [24].

Zeithorizont für Berechnung des Impacts von ein Jahr bis 68 Jahre

The time horizon for calculating the impact ranged from one year to 68 years [17, 26]. As is visible in Figure 4.1-5, the individual time horizons of calculations differed between the publications, whereas several had a short and others had a very long horizon for their calculations (Figure 4.1-5 shows the maximum time periods of calculations for each programme).

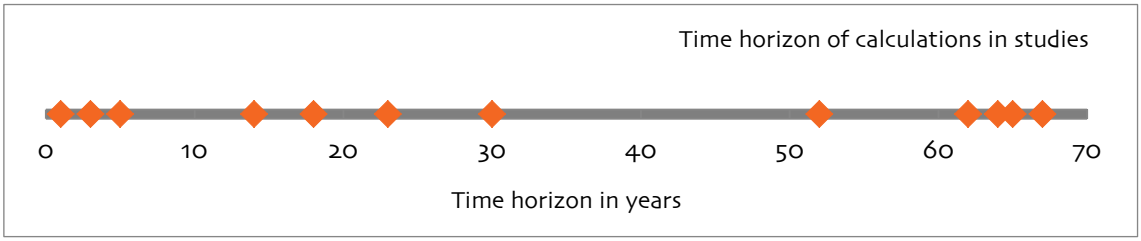

Figure 4.1-5: Time horizon for calculations the impacts of the individual programmes

für fünf Programme Langzeitbeobachtungen von 10 Jahren und mehr vorhanden

Several of the identified publications are based on programmes that were introduced or conducted many years ago. For instance "The High/Scope Perry Preschool Programme", which was initiated in the 1960s [3], the "Child-Parent Center Education Program", which started in 1967 [20], or the "Hepatitis B vaccination in Italy", which was carried out in 1991 [17]. These three programmes provide comprehensive long-time results of 20 years or more. The "Better Beginnings, Better Future Initiative" [19] and the "Carolina Abecedarian Project and Carolina Approach to Responsive Education" [24] provided observational data of at least 10 years.

Control interventions/comparators

Großteil der Studien verglichen mit „keiner Intervention"

A total of two programmes were compared with an active intervention: one received diaper plus formula and the other full-day kindergarten care [20, 21, 24]. A total of 12 programmes were compared with no intervention [1-3, 13, 16-19, 22, 23, 25, 27, 28], of which in seven, the control group was hypothetical [13, 17, 22, 23, 25, 27, 28].

4.1.6 Information on methods and outcomes to evaluate programmes

Methods in general

Studiendesigns prägen Methoden

Overall, the methods used in the evaluations were predominantly affected by the study designs:

SROI-Analysen: Einbeziehung Stakeholder, Definition + Messung Proxies, Monetarisierung Proxies

At first, the "pure" SROI-analyses basically followed the steps described in section 1.3: stakeholder involvement, mapping the potential changes, identifying financial proxies, and evaluating these proxies [13, 22, 23, 25, 26, 29]. The stakeholders were primarily children, but also parents, programme staff, or the government. The used proxies varied from education-related outcomes, like improved learning [29] or improved school-attendance [26], over health-related endpoints like reduction in hospitalisation rates [25] or less depressions [13], to crime-related endpoints like reduced crime [29] or decrease in police contacts [25]. These proxies were then monetised, for instance by linking the measures of the study sample with appropriate costs of the "real world" [23].

Kosten-Nutzen-Analysen meist auf eigenen Beobachtungen beruhend

The methods of CBAs, though, were mainly based on the standard procedures of economic evaluations (see also section 1.4). On the one hand, most of these CBAs were based on the observations of the underlying (effectiveness) study [1-3, 16-21, 24]. On the other hand, there were two studies in which the estimation of impacts was based on the existing literature [27, 28].

Abschätzung Impact entweder retro- oder prospektiv

Thus, the estimation of impacts or effects of the respective interventions can be categorised in two approaches: either the programme provided retrospective data on impacts or the estimations of future effects was based on existing literature and/or expert opinions. In some cases, based on the retrospective data, potential future effects were estimated, as it happened for instance in the "Hepatitis B vaccination in Italy" [17] or the "High/Scope Perry Preschool Programme" [1-3].

Outcomes

gemessene (Wirksamkeits-) Outcomes monetarisiert

For the majority of programmes, outcomes were measured in the studies and were "translated" afterwards into impacts that might occur in the future [1-3, 18, 20, 21, 23-26]. For instance, tobacco use was measured for the "Communities That Care" and then linked with empirical data and national datasets to estimate the future effects on health care or health services [18].

Kategorien bezogen auf:

The outcomes used in the studies to measure (and then directly or indirectly monetise) the effects of the interventions can roughly be summarised as follows[5]:

Gesundheit

- **Health-related**: e.g. child health [19], parent health [19], emergency department visits [16], reduced obesity [29], reduction of sexually trans-

[5] The listed outcomes are a selection.

mitted diseases, blood pressure [24], mortality [22], hepatitis B virus infections [17], reduction in mental health hospitalisation rates [25], responsibility for sexual health and pregnancy [23].

- **Behavioural-related** (or social-related): e.g. child social functioning [19], cognitive development [20, 21], more considered choices [22], better social behaviour [13], improved school behaviour [26], empowered to make choices about education and employment [23]. — Verhalten
- **Education-related**: School completion [29], years of education [24], special education [20, 21], educational attainment [1-3], improved school attendance [26], reduced school absence [23]. — Bildung
- **Earnings-related**: employment and income [24], earning profiles [1-3], increase in labour force [25]. — Einkommen
- **Crime-related** (or justice-related): reduced crime [29], arrests [24], criminal activity [1-3], decrease in police contact [25]. — Kriminalität

Moreover, there were further outcomes that could not been categorised. These were, for instance: reduced likelihood of parents becoming early grandparents [22] or structuring of time and reduction of distress for parents [13]. — weitere nicht kategorisierbare Outcomes

4.1.7 Information on cost data

Moreover, the years of cost data ranged from 1998 to 2016 [20, 27] and the applied discount rate[6] from 0 to 10% [16, 27]. In some studies, the discount rate varied for sensitivity analysis [1, 24, 25]. — Kostendaten aus 1998-2006, Diskontierung 0-10 %

In nine studies for six programmes, results were calculated from different perspectives like the society, government, health care system, participants, or even taxpayers [1-3, 17-22]. A total of four studies exclusively presented the results from the societal (or governmental) perspective [16, 23, 25, 29]. In five studies, it was not exactly stated, which cost perspective was chosen, but, from the description and results, it was assumed that in these studies, the societal perspective was used as well [13, 24, 26-28]. Thus, for our report, we also took the societal perspective to present cost data in section 4.2. — hauptsächlich gesellschaftliche Kostenperspektive

Eventually, in all studies, various categories of costs used to calculate the benefit or impact. The main domains that were identified were: — 5 Bereiche potenzieller Kosteneinsparungen:

- Education, — Bildung,
- Economic status/earnings, — Einkommen,
- Health care/health services, — Gesundheitswesen,
- Social services/welfare, — Sozialwesen,
- Crime/justice. — Kriminalität

The cost data of the studies was allocated to these five categories. For “Grow Together” [13], “Guter Start ins Kinderleben” [28], the “hepatitis B vaccination in Italy” [17], and the “Frühe Hilfen” [27], it was not possible to clearly assign all the costs to the above stated five categories. Thus, these four studies are not considered in this section. — bei vier Programmen Kosten den Bereichen nicht zuzuordnen

[6] A discount rate is applied to discount future effects and costs.

Kosten zu Bereichen:

Bildung: z. B. Kosten für zweiten Bildungsweg

Einkommen: z. B. Einkommen der Eltern

Gesundheitswesen: z. B. Kosten für Krankenhausaufenthalt

Sozialwesen: z. B. Besuch SozialarbeiterIn

Kriminalität: z. B. Kosten für Polizeikontakte

The corresponding costs of the five categories were for instance:

- **Education:** special education services [19], public costs of primary and secondary education [24], grade retention [20, 21], costs due to less further education [1-3], costs of not being in education [23].
- **Economic status/earnings**: parental labour income [24, 25], earnings (mainly future earnings of the children) [1-3, 20-22], costs of being unemployed [22, 23].
- **Health care/health services:** visits of physicians [19], hospitalisations [16, 25], costs of diabetes type II [29], medical expenditures for heart diseases [24], costs for depression [20, 21], costs for termination [22, 23], decreased medical expenditures [18].
- **Social services/welfare:** visits of a social worker [19], child welfare savings [20, 21], supporting a young person who is not in education, employment or training [22], welfare payments [1-3], no longer on child protection plan [26].
- **Crime/justice**: costs for crimes [24, 29], juvenile crime victim savings [20, 21], or costs for police contacts [25].

Bereich Gesundheitswesen in 10 von 11 Programmen, Einkommen in 9 von 11 Programmen

The category "education" was considered for the evaluation of seven programmes [1-3, 16, 19-21, 23, 24, 26], "economic status/earnings" was considered for nine programmes [1-3, 16, 18, 20-26], "health care/health services" was considered for nearly all programmes (10 of 11 considered programmes) [16, 18-26, 29], "social services/welfare" was considered for the evaluation of five programmes [1-3, 19-22, 26], and the category "crime/justice" was considered for six programmes [1-3, 18, 20, 21, 24, 25, 29].

Bereich Gesundheitswesen am meisten vertreten

The category "health care/health services" was considered for the evaluation of the majority of programmes, followed by "economic status/earnings" (see also Figure 4.1-6).

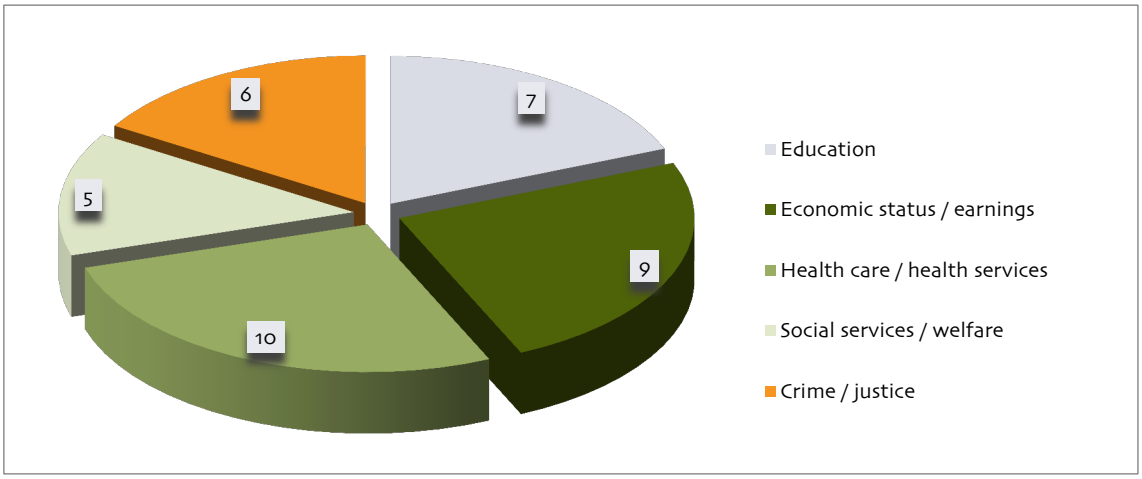

Figure 4.1-6: Numbers of programmes considering which cost category to estimate financial impact

einige Kosten nicht eindeutig zuzuordnen

In two studies, there were additional costs that did not exactly fit in the five categories. These costs were e.g. for counselling or courses such as stress management [22, 23].

Table 4.1-1: Characteristics and methods of the interventions/programmes and the respective studies (part 1)

Name of intervention/ programme	Better Beginnings, Better Future (BBBF) Initiative	Boston Children's Hospital Community Asthma Initiative (CAI)	Breakfast Club, provided by Daystar Foundation	Carolina Abecedarian Project (ABC) and Carolina Approach to Responsive Education (CARE)	Child-Parent Center (CPC) Education Program
Author, year of publication, reference number	Peters 2016 [19]	Bhaumik 2013 [16]	Varua 2009 [29]	García 2016 [24]	Reynolds 2002 [20] Reynolds 2011 [21][7]
Country	Canada	USA	Australia	USA	USA
Study type	CBA[8]	CBA (+SROI)	SROI	CBA[9]	CBA
Study population [IG vs. CG]	Children aged 4-8[10] [401 vs. 225]	661 children aged 2-18 [102 vs. 559]	School-aged children[11] [500 vs. n/a][12]	Children aged 0-8 [188 vs. 77]	Children aged 3-9 in high-poverty neighbourhood **Reynolds 2002:** 841 vs. 445 **Reynolds 2011:** 893 vs. 480
Intervention	Community-based early intervention project for young children living in socioeconomically disadvantaged neighborhoods	Lowering the morbidity of pediatric asthma	Provision of breakfast to school-aged children	Enhancement of early-life skills of socio-economic disadvantaged children	Preschool and school-age services for economically disadvantaged children
Duration of intervention (in yrs.)	4	n/a[13]	n/a[14]	8	7
Time horizon of calculations (in yrs.)	10-14[15]	3	n/a[16]	22-30[17]	**Reynolds 2002:** 11-18 **Reynolds 2011:** 16-23[18]
Year of cost data/ discount rate	2014/3%	2006/10%	n/a[19]/n/a	2014/3% (0 + 7% for sensitivity analysis)	**Reynolds 2002:** 1998/3% **Reynolds 2011:** 2007/3%
Cost perspective	Ontario government/tax payers	Society	Society	Society[20]	General public, society[21]

[7] Reynolds 2002 showed follow-up results at age 21 and Reynolds 2011 showed follow-up results at age 26 of participants.

[8] Authors declared study as cost-savings analysis, which is comparable with CBA.

[9] It was not clearly stated, what kind of cost analysis was conducted. From the information it seems likely that a CBA was conducted.

[10] Project is for children of two age groups: birth to age 4 and age 4 to 8. This study focused only intervention for children aged 4 to 8 (plus their families and communities).

[11] Exact age of participants was not stated.

[12] Calculations were based on 500 children, but were done for 2,500 children.

[13] One time intervention.

[14] Permanent intervention for the time of attending school.

[15] Calculations were done until participants reached age 18.

[16] Calculations were estimated for every single domain or outcome / impact.

[17] Calculations were estimated until age 30 of participants.

[18] Calculations were done at age 20-21 and age 25-26.

[19] It seems likely that cost data from 2006-2007 was used.

Name of intervention/ programme	Better Beginnings, Better Future (BBBF) Initiative	Boston Children's Hospital Community Asthma Initiative (CAI)	Breakfast Club, provided by Daystar Foundation	Carolina Abecedarian Project (ABC) and Carolina Approach to Responsive Education (CARE)	Child-Parent Center (CPC) Education Program
General methods and approaches	✿ Analysis based on efficacy results of BBBF study ✿ Method based on typical economic analyses of early intervention programmes ✿ Monetisable outcomes were based on utilisation of government resources in health, social services, education	✿ Analysis based on efficacy results of CAI study ✿ Method based on typical economic analyses on health and social sector interventions ✿ Analysis was based on a conventional return on investment computation for payers and an social return on investment computation at the societal level	✿ Stakeholder involvement: ✿ Children ✿ Volunteers ✿ Impact map drawing ✿ Identification of indicators capturing inputs, outputs, outcomes + impacts	✿ Analysis based on efficacy results of ABC and CARE study ✿ Paper shows several and different methods to quantify and estimate future outcomes	✿ Analysis based on efficacy results of CPC study ✿ Method based on standard econominc procedures
Outcomes used to value (future) benefits [sources]	✿ Child social functioning [study sample assessment, applies for all outcomes] ✿ Child emotional + behavioral problems ✿ Child attitudes towards school & school functioning ✿ Child health ✿ Parenting behavior ✿ Parent social + emotional functioning ✿ Parent health + health promotion ✿ Family functioning ✿ Social and health service utilization + access ✿ Parent involvement in the neighborhood ✿ Neighborhood quality	✿ Emergency department visits [hospital data] ✿ Hospitalisations [hospital data] ✿ Quality of life [study sample assessment]	✿ School completion, improved learning, reduced truancy [n/a] ✿ Reduced obesity [national study data on Type II diabetes] ✿ Reduced crime [national data]	✿ Parental labor income [observation of study sample + based on prediction model, applies for all outcomes, when not otherwise stated] ✿ Drug use, blood pressure, hypertension ✿ Employment, income ✿ Graduation, years of education ✿ Arrests [public police records]	✿ Cognitive development, word analysis, reading achievement, consumer skills [study sample assessment, applies for all outcomes] ✿ Positive ratings of parent involvement in school ✿ Grade retention, special education ✿ Reports of abuse/neglect ✿ Petition of juvenile courts ✿ High school completion, highest grade completion

[20] It was not exactly stated, which cost perspective was used. From the information, it seems that the costs from a societal perspective were calculated.

[21] Only results for society are presented in Table 4.2-1 and Table 8.3-1.

Name of intervention/ programme	Better Beginnings, Better Future (BBBF) Initiative	Boston Children's Hospital Community Asthma Initiative (CAI)	Breakfast Club, provided by Daystar Foundation	Carolina Abecedarian Project (ABC) and Carolina Approach to Responsive Education (CARE)	Child-Parent Center (CPC) Education Program

(Avoided) costs + categories taken into account to estimate impact/benefit	• *Education:*
	  • Special education services
	  • School grade repetition
	  • Failed high school courses
	• *Heatlh care/Health services:*
	  • Visits nurse practicioner, family physician, emergency room
	  • Serious unjuries
	  • Hospital stays
	  • Overweight/obesity
	• *Social services/welfare:*
	  • Visits social worker
	  • Social welfare assistance
	  • Diability support programme
	  • Diability payment/ worker's compensation
		• *Education*
		  • Missed school days for children
		• *Economic status/earnings:*
		  • Missed workdays for parents/caregivers
		• *Heatlh care/health services:*
		  • Emergency Department visits
		  • Hospitalisations
			• *Heatlh care/Health services*
			  • Costs of diabetes Type II
			• *Crime/justice*
			  • Costs of crime for assault, poperty damage, stolen goods, etc.
				• *Education*:
				  • Public costs of primary + secondary education
				  • Costs for post-secondary education
				• *Economic status/earnings*:
				  • Parental labour income
				• *Heatlh care/Health services*:
				  • Medical expenditures for diabetes, heart diseases, etc.
				• *Crime/justice*:
				  • Costs of crimes
				  • Expenditures to crime victims
					• *Education*:
					  • Grade retention
					  • Special education
					  • College tuition
					• *Economic status/earnings*:
					  • Earnings
					  • Taxes on earnings
					• *Heatlh care/Health services*[22]*:*
					  • Depression
					  • Substance missuse
					• *Social services/welfare:*
					  • Child care
					  • Child welfare savings
					  • Abuse/neglect victim savings
					• *Crime/Justice:*
					  • Juvenile justice savings
					  • Juvenile crime victim savings

Detailed description of intervention	Consists of several programmes (e.g. in-class and in-school programmes, home visits, parent support groups, family camps, community events, safety initiatives in neighbourhoods) to promote healthy child development, prevent social, emotional, behavioral, physical, and cognitive problems in young children; and to enhance family and community environments.	Individual nurse case management, family education, home visiting, environmental remediation, and connection to primary care, combined with community education, outreach, and advocacy.	Providing breakfast services to children in schools to reduce truancy, obesity, helath and lifestyle, to improve learning.	Center-based, individualised childcare (and family education), supporting language, motor and cognitive development plus socio-emotional competencies.	Government-funded early educational intervention in public schools of Chicago, containing enriched all-day kindergarten and preschool, containing child education (e.g. skill acquisition in language, arts + maths) and family-support services.
Control/comparator	No intervention	No intervention	n/a	Diapers from birth to age 3 and formula from birth to 15 months, many received alternative childcare.	Full-day kindergarten programme (without CPC)[23]

Abbreviations: CBA=cost -benefit analysis; CG=control group; IG=intervention group; n/a=not applicable; QoL=Quality of life, yrs.=years

[22] Only in Reynolds 2011 measured.

[23] This is the usual early intervention.

Table 4.1-1: Characteristics and methods of the interventions/programmes and the respective studies (part 2)

Name of intervention/ programme	Communties That Care (CTC)	Community Safer Sex Project (CSSP) [24]	Frühe Hilfen	Grow Together[25]	Guter Start ins Kinderleben
Author, year of publication, reference number	Kuklinski 2012 [18]	Bradly 2010 [22]	Juraszovich 2017 [27]	Pervan-Al Soquaer 2016 [13]	Meier-Gräwe 2011 [28]
Country	USA	UK	Austria	Austria	Germany
Study type	CBA	SROI	CBA	SROI	CBA
Study population [IG vs. CG]	4,407 students aged 10-14 [2,405 vs. 2,002]	Young people[26] [696[27] vs. n/a]	Families with children aged 0-3 [4 vs. n/a][28]	Families/mothers with children aged 0-2 [15 vs. n/a]	Families with children aged 0-3 [39 vs. n/a]
Intervention	Communities that care prevention system, designed to improve adoscelent behavior (smoking and delinquency)	Local community-based sexual health services	Programme provides (and coordinates) support of families in the episode of early childhood	Project accompanies and assist socially disadvantaged families in the first two life years of their children	Early promotion and strengthening of parents' relationship and education competencies to prevent neglect and abuse in early childhood
Duration of intervention (in yrs.)	5	n/a[29]	3-6[30]	2	3
Time horizon of calculations (in yrs.)	22-64[31]	n/a[16]	59-65[32]	n/a[16]	64-67[33]
Year of cost data/ discount rate	2004/3%	2009-2010[34]/3.5%	2016/0%	2015-2016/n/a	n/a[35]/n/a
Cost perspective	Participants, taxpayers, general public[36]	Participants, staff, health care, society[37]	Society[20]	Society[20]	Society[20]

[24] This study was included, even though it also included participants aged older than 18 years.

[25] This study was included, even though the intervention was more focusing on mothers than on children.

[26] The age of participants was not clearly stated. It seems likely that teenagers are the targeted (age 13-19) population.

[27] In addition, 1,134 visits and 50 staff were considered for calculations.

[28] Calculations were based on and for 4 individual families.

[29] Programme services can be used as needed (services were used 1.6 times in average).

[30] Normal duration is 3 years, under certain circumstances duration can be extended to 6 years.

[31] Benefits for smoking were estimated to age 74, benefits for delinquency were estimated to age 32.

[32] Calculations were estimated until age 65 of participants.

[33] Calculations were estimated until age 67 of participants.

[34] It seems likely that cost data from 2009 and/or 2010 was used.

[35] Year of cost data varied between individual cost areas.

[36] Only results for general public are presented in in Table 4.2-1 and Table 8.3-1.

Name of intervention/ programme	Communties That Care (CTC)	Community Safer Sex Project (CSSP) [24]	Frühe Hilfen	Grow Together[25]	Guter Start ins Kinderleben
General methods and approaches	✿ Analysis based on efficacy results of Communtiy Youth Development Study ✿ Analysis of benefits based on empirically supported, monetisable effects on adolescent tobacco use initiation + delinquency	✿ Stakeholder involvement: ✿ Consulting young people, parents/carers, programme staff ✿ State ✿ Development of 4 logic chains, explaining theory of change ✿ Identifying financial proxies ✿ Evaluating proxies	✿ Interventional costs based on projekt "NZFH" ✿ Method based on standard econominc procedures of CBA ✿ Future costs or benefits were exclusively estimated based on existing literature	✿ Stakeholder involvement: ✿ Children ✿ Parents ✿ Staff ✿ State ✿ Others ✿ Development of various logic chains, explaining theory of change for stakeholders ✿ Identifying financial proxies ✿ Evaluating proxies	✿ Interventional costs based on projekt "Guter Start ins Kinderleben" ✿ Method based on standard econominc procedures of CBA ✿ Future costs or benefits were exclusively estimated based on existing literature on neglect and abuse
Outcomes used to value (future) benefits [sources]	✿ Future adult tobacco use and crime [linking study sample assessment with empirical data + national datasets; applies for all outcomes] ✿ Mortality and health ✿ Crime and criminal justice system and victim costs	✿ Fewer teenage pregnancies [comparison with historical rate] ✿ Participants continue to engage with sexual health services [number of participants who visit + return to service within a year] ✿ More considered choices [number of participants using service for pregancy test + continue using service] ✿ Provision of emotional support [number visits recordes as "sexual health intervention"] ✿ Reduction of sexual transmitted diseases [number of Clamydia tests] ✿ Reduced likelihood of parents becoming early grandparents [reduction in pregnancies as above] ✿ Improved family life [reduced risk of early pregnancy(as above), multipled by the% of parents who felt reduced risk results in better family life] ✿ Improved skills of staff [% of staff reporting that they personally benefited, multiplied by number of staff trained]	✿ n/a[38]	✿ Children: better social behavior, less depressions, etc. [document analysis + research] ✿ Parents: structuring of time, reduction of distress, etc. [document analysis, research + interviews] ✿ Staff: employment, income, etc. [document analysis, research + interviews] ✿ State: tax revenues, etc. [document analysis + research] ✿ Others: savings of health-related services for insurance + local government, etc. [document analysis, research + interviews]	✿ n/a[38]

[37] Only results for society are presented in Table 4.2-1 and Table 8.3-1.

[38] Future costs or benefits were exclusively estimated based on literature.

Name of intervention/ programme	Communties That Care (CTC)	Community Safer Sex Project (CSSP) [24]	Frühe Hilfen	Grow Together[25]	Guter Start ins Kinderleben
(Avoided) costs + categories taken into account to estimate impact/benefit	✿ *Economic status/earnings*: ✿ Earnings ✿ Taxes (tax losses due to mortality) ✿ *Health care/health services* ✿ Decreased medical expenditures (e.g. hospital care, drug prescriptions, nursing homes) ✿ *Crime/justice*: ✿ Reduced criminal justice system costs ✿ Pain, suffering, QoL associated with crime	✿ *Economic status/earnings:* ✿ Unemployment ✿ Lower incomes ✿ *Health care/health services*: ✿ Termination ✿ Clamydia treatment ✿ *Social services/welfare:* ✿ Public spending for teenage birth ✿ Supporting young person who is not in education, employment or training ✿ *Others:* ✿ Counseling ✿ Stress management course (parents) ✿ Personal trainer (staff)	✿ *Education:*[39] ✿ Grants, preschool, etc. ✿ *Economic status/earnings*: ✿ (Un)employment, etc. ✿ *Health care/health services* ✿ Adipositas, medication,etc. ✿ *Social services/welfare* ✿ Costs for youth welfare, addiction aid, etc.	✿ Children (e.g. less depression)[40] ✿ Clients (e.g. reduction in distress) ✿ Employees (e.g. epmployment) ✿ Labour office (e.g. less spendings) ✿ Government (e.g. more taxes) ✿ Social insurance (e.g. less spendings) ✿ City of Vienna (less spendings) ✿ Donators ✿ Project	✿ *Education:*[41] ✿ Grants, etc. ✿ *Economic status/earnings*: ✿ Unemployment, etc. ✿ *Health care/health services* ✿ Adipositas, etc. ✿ *Social services/welfare* ✿ Costs for youth welfare, etc.
Detailed description of intervention	Guides community's prevention efforts through five-phases: assessing community; getting a commitment to the CTC process and forming a prevention coalition using epidemiologic data to assess needs; choosing tested and effective prevention policies, practices, and programmes based on assessment data; and implementing the new strategies and evaluating progress over time.	Preventive + reactive sexual health services for young people to improve sexual health, reduce unplanned pregnancies + enabling and encouraging clinical services. Offers tests for pregnancy + sexual transmitted infections, information and guidance for sexual health + relationships, provides condoms + information on contraception.	Provides appropriate support of families during pregnancy and during the first life years. Basis is regional network to coordinate multi-professional support and offers for parents + children.	Provides assistance, dependent on risk group of families: 2-3 times a week home visits, once per week mother-child group, maximum once a week psychotherapy for parents, plus child care and baby-sitting as required.	Provides systematic coordination of different and holistic offers for early childhood.
Control/comparator	No intervention	No intervenion[42]	No intervention[44]	No intervention[43]	No intervention[44]

Abbreviations: CBA=cost -benefit analysis; CG=control group; IG=intervention group; n/a=not applicable; QoL=Quality of life, yrs.=years

[39] For the "Guter Start ins Kinderleben" study, costs were assigned to different scenarios and it was not possible to clearly assign the costs to categories.

[40] For the "Grow Together" study, the costs were assigned to the stakeholders and it was not possible to clearly assign the costs to the categories. The costs were covering the categories like "education", "economic status", "health" and "welfare".

[41] For the "Guter Start ins Kinderleben" study, costs were assigned to different scenarios and it was not possible to clearly assign the costs to categories.

[42] As control group historical data was used (period before the co-ordinated Teenage Pregnancy Strategy).

[43] Control group was "hypothetical" (also described as "counterfactual").

[44] There was no "real" control group. It was assumed that the control group receives assistance after the age of 3. As reference, data from existing studies was used.

Table 4.1-1: Characteristics and methods of the interventions/programmes and the respective studies (part 3)

Name of intervention/ programme	Hepatitis B vaccination in Italy	High/Scope Perry Preschool Programme	Moving Parents And Children Together (M-PACT)	Pine River Institue Program (PRI)[24]	Teens and Toddlers (T&T) Programme[24]
Author, year of publication, reference number	Boccalini 2013 [17]	Belfield 2006 [3] Heckman 2010 [1] Schweinhart 2013 [2][45]	Interface Enterprise 2014 [26]	Hackett 2017 [25]	COUI 2010 [23]
Country	Italy	USA	UK	Canada	UK
Study type	CBA[9]	CBA	SROI	SROI	SROI
Study population [IG vs. CG]	Newborns + 12 years old adolescent [n/a][46]	123 African American children aged 3-4 [58 vs. 65]	Children/young people aged 8-17 [49 vs. n/a][47]	Young people aged 13-19 [75 vs. n/a]	Young people[48] [538 vs. n/a]
Intervention	Hepatitis B vaccination	Preschool programme on young children living in poverty	Supporting children/young people aged 8-17 who are experiencing the effects of parental substance missuse within the family	Mental health and addiction programme for young people	Targeting teens at risk of early pregnancy and sexual health issues
Duration of intervention (in yrs.)	n/a[13]	1-2	0.5 (9 weeks and review session 3 months later)	1.3[49]	~0.3-0.4 (15-20 weeks)
Time horizon of calculations (in yrs.)	20/68[50]	**Belfield 2006:** 61-62[51] **Heckman 2010:** 61-62[51] **Schweinhart 2013:** 36-37[52]	1 (+ scenario analysis for 2 years)	46-52[32]	5[53]
Year of cost data/ discount rate	2010/3%[54]	**Belfield 2006:** 2000/3 (and 7%) **Heckman 2010:** 2006/3% (0-7% for sensitivity analysis) **Schweinhart 2013:** 2013/3%	n/a[55]	2010-2015[56]/3% (2 + 5% for sensitivity analysis)	n/a

[45] Belfield 2006: calculations were estimated up to age 65 of participants, based on follow-up data at age 40; Heckman 2010: Re-evaluation of results for age 65, using follow-up data at age 40 of participants and different statistical methods; Schweinhart 2013: most recent calculations, using follow-up data at age 40 of participants.

[46] Number of participants was not stated.

[47] Calculations were based on a total of 49 families.

[48] The age of participants was not clearly stated. It seems likely that teenagers are the targeted (age 14-20) population.

[49] This is the mean duration, treatment duration varies between participants.

[50] For a time horizon of 20 years, past costs were used. For the time horizon of 68 years, future costs were estimated.

[51] Intervention started at ages 3-4 and data collection was at age 40. Costs until age 65 were estimated.

[52] Intervention started at ages 3-4 and follow-up was at age 40.

[53] Participants were followed-up for up to 5 years, when they were 19/20 years.

[54] Discount rate was applied for future costs, occurring after 2011 (until 2059).

[55] It seems likely that cost data from 2013 was used (and no discounting was applied).

[56] Individual cost data from 2010-2015 was used.

Name of intervention/ programme	Hepatitis B vaccination in Italy	High/Scope Perry Preschool Programme	Moving Parents And Children Together (M-PACT)	Pine River Institue Program (PRI)[24]	Teens and Toddlers (T&T) Programme[24]
Cost perspective	Health care system, society[57]	**Belfield 2006:** Participants, general public, society[37] **Heckman 2010:** Participants, Society[37] **Schweinhart 2013:** Society	Society[20]	Government	Society
General methods and approaches	✿ Retrospective analysis of costs and benefits for first 20 years of vaccination programme ✿ Estimation of costs and benefits for future 48 years, based on results for first 20 years	✿ Analysis based on observations of "High/Scope Perry Preschool Programme" ✿ Method based on standard econominc procedures	✿ Evaluative SROI, estimating return that has been achieved ✿ Stakeholder involvement: ✿ Children/young people ✿ Parents ✿ Others ✿ Development of various logic chains, explaining theory of change ✿ Costing the programme ✿ Identifying benefits	✿ General method unclear (based on previous SROI study from another institution) ✿ Monetisation of benefits, using data available on costs of outcomes + revenue generated	✿ Stakeholder involvement: ✿ Children ✿ Parents ✿ Secondary schools ✿ Nuseries ✿ Government ✿ Development of various logic chains, explaining theory of change for stakeholders ✿ Identifying financial proxies ✿ Evaluating proxies
Outcomes used to value (future) benefits [sources]	✿ Hepatitis B virus infections: acute hepatitis B, chronic hepatitis B, cirrhosis and hepatocellular carvinoma [national data] ✿ Annual medical and social costs of hepatitis B virus infections [calculated by Ministry of Health]	✿ Earning profiles [interviews with participants] ✿ Tax contributions [taxes based on earnings] ✿ Criminal activity + welfare [linking study sample assessment with empirical data + national datasets] ✿ Childcare + educational attainment [linking study sample assessment with empirical data + national datasets]	✿ No longer on child protection plan [linking study sample assessment with various datasets; applies for all outcomes] ✿ Improved school attendance ✿ Improved school behaviour ✿ Parents accessing drug treatment ✿ Improved health ✿ Moved into employment ✿ Reduced offending behaviour	✿ Reduction in mental health hospitalisation rates [linking study sample assessment with various datasets; applies for all outcomes] ✿ Reduction in substance use and related hospitalisation ✿ Decrease in police contact ✿ Increase in tax revenue from increase labour participation ✿ Increase in primary caregiver labour force ✿ Increase in secondary caregiver labour force	✿ Improved self-esteem [linking study sample assessment with costs of courses/beeing not in education] ✿ Empowered to make choices about education + employ-ment [linking study sample assessment with third party study, quantified via proxies around costs of trauncy + increased learning potential] ✿ Responsibility for sexual health + pregnancy [not quantified] ✿ Improved family function [Interviews, quantified by costs for family counseling courses] ✿ Reduced school absence [interviews] ✿ Reducing teenage pregnancy [own CBA] ✿ Prevention of being not in employment/education [based on another study]

[57] Only results for society are presented in in Table 4.2-1 and Table 8.3-1. It was not clearly stated which individual costs were taken into account to estimate the societal costs.

Name of intervention/ programme	Hepatitis B vaccination in Italy	High/Scope Perry Preschool Programme	Moving Parents And Children Together (M-PACT)	Pine River Institue Program (PRI)[24]	Teens and Toddlers (T&T) Programme[24]

(Avoided) costs + categories taken into account to estimate impact/benefit	• Hepatitis B[58] infection (acute, chronic),
	• Cirrhosis ((de)compensated),
	• Hepatocellular carcinoma,
	• Liver transplantations
	• Vaccination (preservation + administration)
	• Adverse reactions
	• Lost working days (for vaccination/treatment adverse reactions)
		• *Education:*
		  • E.g. cost savings due to less further education attainment
		• *Economic status:*
		  • E.g. earnings
		• *Social services/welfare:*
		  • E.g. welfare payments
		• *Crime:*
		  • E.g crimes like rapes, drugs, vehicle thefts
			• *Education:*
			  • Improved school attendance
			  • Improved school behaviour
			• *Economic status/earnings:*
			  • Employment
			• *Health care/health services*
			  • Improved health
			• *Social services/welfare:*
			  • No longer on child protection plan
			  • Parents accessing drug treatment
			  • Reduced offending behaviour
				• *Economic status/earnings:*
				  • Parental labour income (missed workdays)
				  • Taxes
				• *Health care/health services*
				  • Hospitalisation
				• *Crime/justice:*
				  • Costs for police contact
					• *Education:*[59]
					  • Costs of being not in education
					• *Economic status/earnings*:
					  • Costs of being not in employment
					• *Health care/health services*
					  • Costs for terminations + live births
					• *Others*:
					  • Costs of courses (e.g. Outward Bounds, dealing with anger management and NLP basic concepts)
					  • Cost of a series of family counseling sessions

Detailed description of intervention	One-time universal vaccination of newsborns and at 12 years of age.	Daily 2½-hour classes for children on weekday mornings and weekly 1½-hour home visits to each mother and child on weekday afternoons by programme teachers. Aimed at supporting children's cognitive + social-emotional development through active learning.	Programme works with parents and children, consists of 10 sessions (eight of these weekly) for 2.5 hours. Programme is run by experienced professionals.	Admitted youths (mature adoscelent) are placed on one of four treatment teams, consiting of a therapist, 3 residential youth counselours, and a team teacher. Treatment is experienced through mealtimes, school, and formal treatment programming and is guided by two approaches: Dialectical Behavioural Therapy for substance abusing youths, and the Satir Family Model of Therapy as supplement.	Provides at-risk young people with real life experience of mentoring and caring for a small child. Programme consists of 15 to 20-week course running one afternoon a week (~3 hours). It takes place in a nursery. Each young person is paired with a child (aged 3 to 5 years old). The teens typically work with vulnerable young children who come from families receiving assistance and/or from single-parent households.
Control/comparator	No intervention[60]	No intervention	n/a	No intervention[43]	No intervention[43]

Abbreviations: CBA=cost -benefit analysis; CG=control group; IG=intervention group; n/a=not applicable; QoL=Quality of life, yrs.=years

[58] For the "hepatitis B vaccination in Italy" the costs included medical and social costs for hepatitis B virus diseases. Therefore, it was not possible to clearly assign the costs to categories.

[59] For the "T&T", the costs were assigned to the stakeholders and it was not possible to clearly assign the costs to the categories.

[60] There was no "real" control group. Data for control group was obtained from clinical studies.

4.2 Results of programmes/interventions and the respective studies

4.2.1 General

Kosten pro TeilnehmerIn, gesellschaftliche Perspektive, Euro 2016

In this chapter, the average costs per participant and exclusively costs from the societal perspective will be presented[61]. The cost parameters of the programmes, converted into Euros for the year 2016, are presented in Table 4.2-1. The results of the programmes in their original currencies can be found in Table 8.3-1 in the appendix (including total costs as reported in the studies).

bei 6 Programmen Kosten pro TeilnehmerIn ermittelt

For eight programmes, the costs per participant were explicitly presented in the respective papers [1-3, 19-22, 24, 26-28]. For six interventions, the costs per participant were computed by dividing the given total costs by the number of participants [13, 16, 18, 23, 25, 29]. Therefore and due to the cost conversion into Euros 2016, it is possible that there are deviations between costs (e.g. the sum of the costs per category is not exactly resulting in the total costs due to rounding errors). Moreover, as mentioned in the beginning of section 4.1, for 15 programmes/interventions a total of 18 studies were included.

bei 1 Intervention Kosten pro TeilnehmerIn nicht ermittelbar

For one intervention, the "hepatitis B vaccination in Italy", the number of participants was not stated and only the total costs were given [17].

4.2.2 Costs

Costs for interventions/programmes

individuelle Programmkosten 670-72.200 Euro pro TeilnehmerIn

When considering exclusively the programme costs, the costs for the individual interventions of the programmes differed between 669 Euros for the "Communities That Care" from the USA [18] and 72,167 Euros per participant for the Austrian "Frühe Hilfen" [27].

Spanne von Kosten bei „Frühe Hilfen" Durchschnitt: 31.500 Euro

The costs of slightly more than 70,000 Euros for the "Frühe Hilfen" is caused by the fact that the costs of four individual cases were calculated, ranging from 14,344 to 72,167 Euros per participant [27]. When calculating the average costs of these four cases, the interventional costs would be 31,488 Euros[62].

Kosten Durchschnitt: 670-31.500 Euro

Therefore, the interventional costs over all programmes would range between 669 and 31,488 Euros [18, 27].

Kosten Programme gesamt: 810-79,100 Euro

The total costs per participant of the individual interventions, including also costs for e.g. training or implementation, differed between 813 Euros for the "Breakfast Club" [29] and 79,119 Euros for the "Carolina Abecedarian Project and Carolina Approach to Responsive Education" [24].

Übersicht in Diagramm, Y-Achse bei 40.000 Euro abgeschnitten

An overview of the interventional costs and the total costs for the interventions is shown in Figure 4.2-1. The figure presents the average costs per participant of 14 programmes [1-3, 13, 16, 18-29]. The "hepatitis B vaccination in Italy" is not included. Furthermore, not all studies presented interventional or total costs. Moreover, it needs to be mentioned that the y-scale is only

[61] For two programmes, though, only costs from the perspective of the general public [18] or the government [19] were available. Furthermore, for another intervention, exclusively the total costs were available [17].

[62] Calculated by: (14,344+20,022+72,167+19,420)/4.

covering 40,000 Euros, whereby the total costs of the Carolina Abecedarian Projects and Carolina Approach to Responsive Education are nearly 80,000 Euros. Without this "cut-off", the low costs for some programmes would not be properly seen in the diagram.

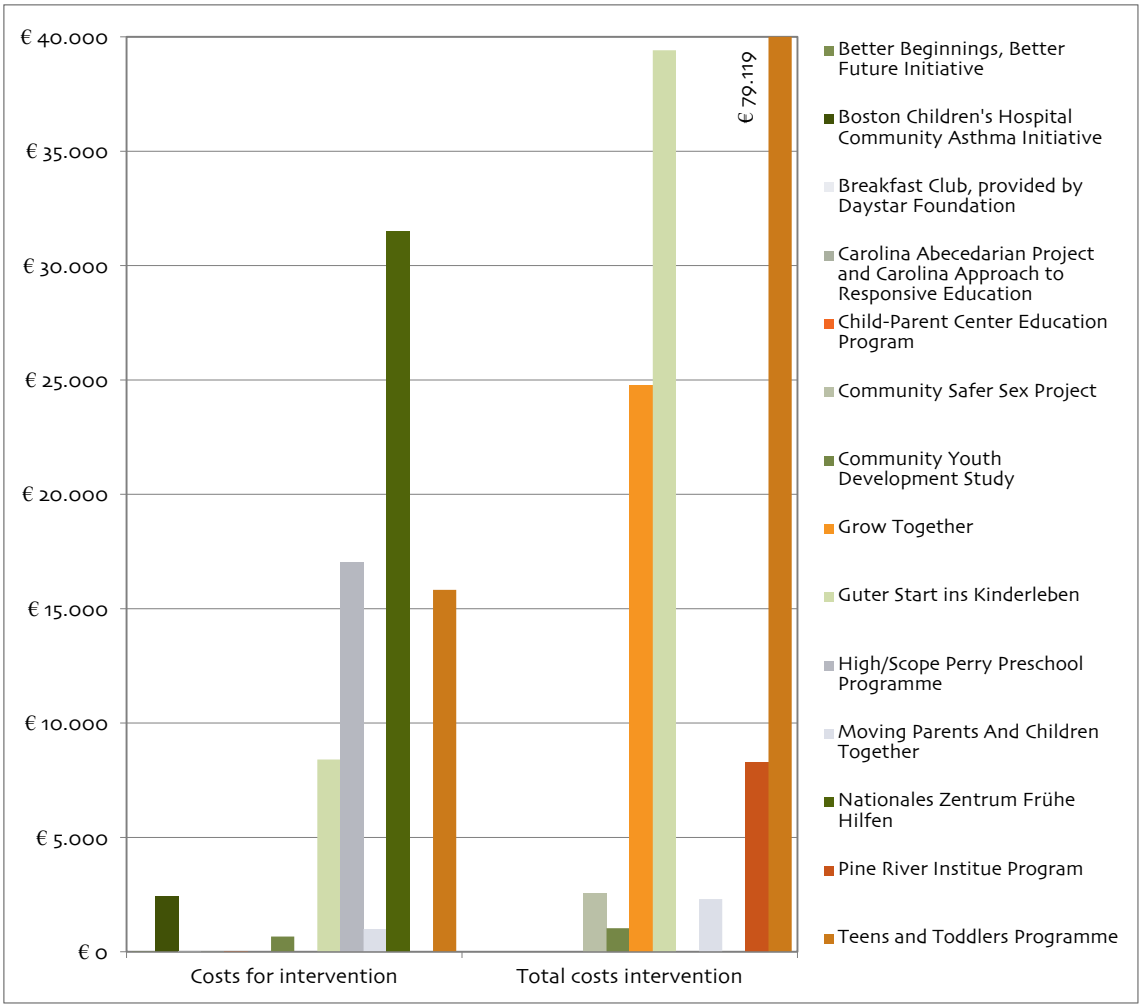

Figure 4.2-1: Costs for intervention and total costs for intervention per participant in Euros 2016

The interventional costs for the "hepatitis B vaccination in Italy" were 1.035 billion Euros and the total costs for the intervention were 830 million Euros after 20 years and 1.304 billion Euros after 68 years [17].

Kosten Hepatitis B Impfung in Italien bis zu 1,3 Mrd. Euro

Costs for control (groups)/comparators

For ten programmes, there was no comparison group and therefore, it was assumed that the interventional costs for the control were 0 for these studies [1-3, 16-19, 22, 23, 25, 27, 28].

bei zehn Programmen keine interventionellen Kosten für Kontrolle

The total costs for the active control interventions differed between 34,181 Euros per participant for the "Better Beginnings, Better Future Initiative" [19] and 1.8 million Euros per participant for the "Frühe Hilfen" [27]. These costs include, beside the costs for the control intervention, for instance the costs for occurring diseases or additional procedures [17, 19, 27, 28].

Gesamtkosten Vergleichsintervention 34.200-1,8 Mio. Euro

bei zwei Programmen Kostenspanne, Durchschnitt: 710.000-920.000 Euro

However, for the "Frühe Hilfen" and the "Guter Start ins Kinderleben", no average costs were presented, but ranges. When calculating the total costs of the control for these two studies, the costs would be 709,228 and 919,990 Euros on average, respectively [27, 28] (for further explanations, see section "Costs for interventions/programmes").

Vergleichsintervention: Ø 34.200-920.000 Euro

Thus, the total costs per participant for the control intervention over all studies would range from 34,181 Euros [19] to 919,990 Euros [28].

Vergleichsintervention bei Hepatitis B Impfung: 3,86 Mrd. Euro nach 68 Jahren

The total costs for the control of the "hepatitis B vaccination in Italy" (it was assumed that the control group did not receive vaccination) were 1.77 billion Euros after 20 years and 3.86 billion Euros after 68 years [17].

4.2.3 Avoided costs/benefits

Avoided costs/benefits in total

vermiedene Kosten bzw. Benefits 2.750-550.000 Euro

The costs that were avoided (synonymously the benefits) due to the individual programmes or interventions differed between 2,750 Euros per participant for "Moving Parents And Children Together" and 548,690 Euros per participant for "Grow Together" [13, 26].

Übersicht Diagramm, schneidet Kosten bei 300.000 Euro ab

An overview of the avoided costs per participant in total is shown in Figure 4.2-2. In the diagram, not all programmes are shown because not all studies presented avoided costs. Moreover, it needs to be mentioned that the y-scale is only covering 300,000 Euros, whereas the total costs of the "Grow Together" are nearly 550,000 Euros. Without this "cut-off", some programmes would not be properly seen in the diagram. Besides, since for the "Carolina Abecedarian and Carolina Approach to Responsive Education" [24], the "Guter Start in Kinderleben" [28] and the "Frühe Hilfen" [27] no avoided costs in total were presented in the evaluations, these three programmes are not included in the diagram.

Hepatitis B Impfung bis 2,55 Mrd. Euro vermieden

The avoided costs of the "hepatitis B vaccination in Italy" were 939 million Euros after 20 years and 2.55 billion Euros after 68 years [17].

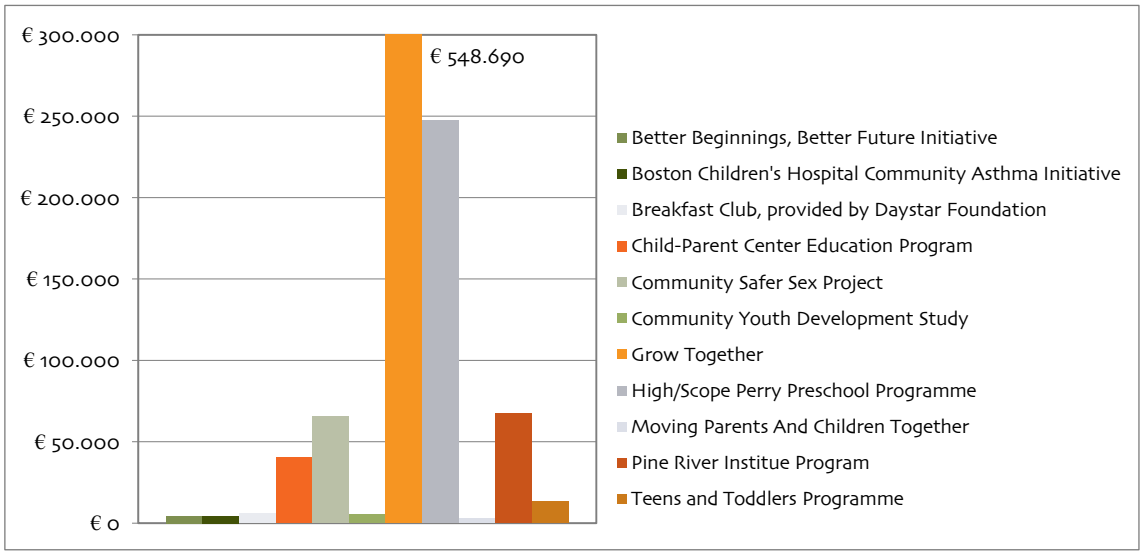

Figure 4.2-2: Overview of avoided costs per participant in total

Avoided costs/benefits per category

vermiedene Kosten bzw. Benefits je Bereich, außer für „Grow Together"

In this section, the costs are presented by categories that were identified in the section "Information on cost data". When going into detail, it is obvious that the avoided costs (alternatively the benefits) per category and the individual categories, and the costs belonging to the categories differed between studies. Moreover, for "Grow Together" [13], it was not possible to clearly assign the presented costs into categories, thus, the results for this programme are presented separately (see last paragraph in this section).

in zwei Studien im Bereich Gesundheitswesen und Bereiche „Projekt" Kosten höher als Benefits

First of all, in two articles, there were negative benefits: for the category *"health care/health services"*, the costs per participant were 619 Euros higher than the benefits for the "Better Beginnings, Better Future Initiative" [19]. Moreover, "Grow Together" calculated higher costs than benefits of 16,820 Euros per participant for the category "project" (meaning that the costs for the project were higher than the benefits) [13].

Bildung: 670-11.000 Euro

For the category "*education"*, the benefits were between 665 Euros for the "Boston Children's Hospital Community Asthma Initiative" [16] and 11,031 Euros for the "High/Scope Perry Preschool Programme" (reported in Belfield 2006 using a 3% discount rate) [3].

Einkommen: 600-76.400 Euro

The benefits related to *"economic status/earnings"* differed between 596 Euros for the "Boston Children's Hospital Community Asthma Initiative" [16] and 76,430 Euros for the "High/Scope Perry Preschool Programme" (reported in Heckman 2010) [1].

Gesundheitswesen: 80-10.100 Euro

For *"health care/health services"*, the benefits were between 80 Euros for "Moving Parents And Children Together" and 10,087 Euros for the "Pine River Institute Program" [25] (not considering the negative and above stated results for the "Better Beginnings, Better Future Initiative" [19]).

Sozialwesen: 240-11.200 Euro

In the category *"social services/welfare"*, the benefits differed from 240 Euros to 11,182 Euros for the "Child-Parents Education Program". The lower benefits were reported in Reynolds 2002 for the school-aged programme [20] and the higher benefits were reported in Reynolds 2011 for the preschool programme [21].

Kriminalität: 500-195.000 Euro

The savings for *"crime/justice"* were between 508 Euros for the "Child-Parents Education Program" (reported in Reynolds 2002 for the school-aged programme [20] and 194,520 Euros for the "High/Scope Perry Preschool Programme" (reported in Belfield 2006 using a 3% discount rate) [3].

größter Benefit im Bereich Kriminalität + Einkommen

In Figure 4.2-3, the benefits per category are summarised. From the diagram, it can be seen that the highest benefits were related to reduced crimes and to economic status or earnings. In health care/health services and education, there are potential savings possible as well, but they are reported to be considerably lower.

Diagramm: Durchschnittswerte, Y-Achse nur bis 30.000 Euro

For the "Child-Parent Center Education Program" and the "High/Scope Perry Preschool Programme", average costs were used (e.g. for "education" of the "Child-Parent Center Education Program", the average costs were calculated by (4,507 + 3,908 + 4,988 + 6,195 + 4,177 + 5,637) / 6). Furthermore, it needs to be mentioned that the y-scale is only presenting 30,000 Euros, whereby the costs for "economic status/earnings" and "crime/justice" of the "High/Scope Perry Preschool Programme" plus for "economic status/earnings" of the "Pine River Institute Program" were more than 40,000 Euros. Without this "cut-off" values, the programmes would not be properly seen in the diagram.

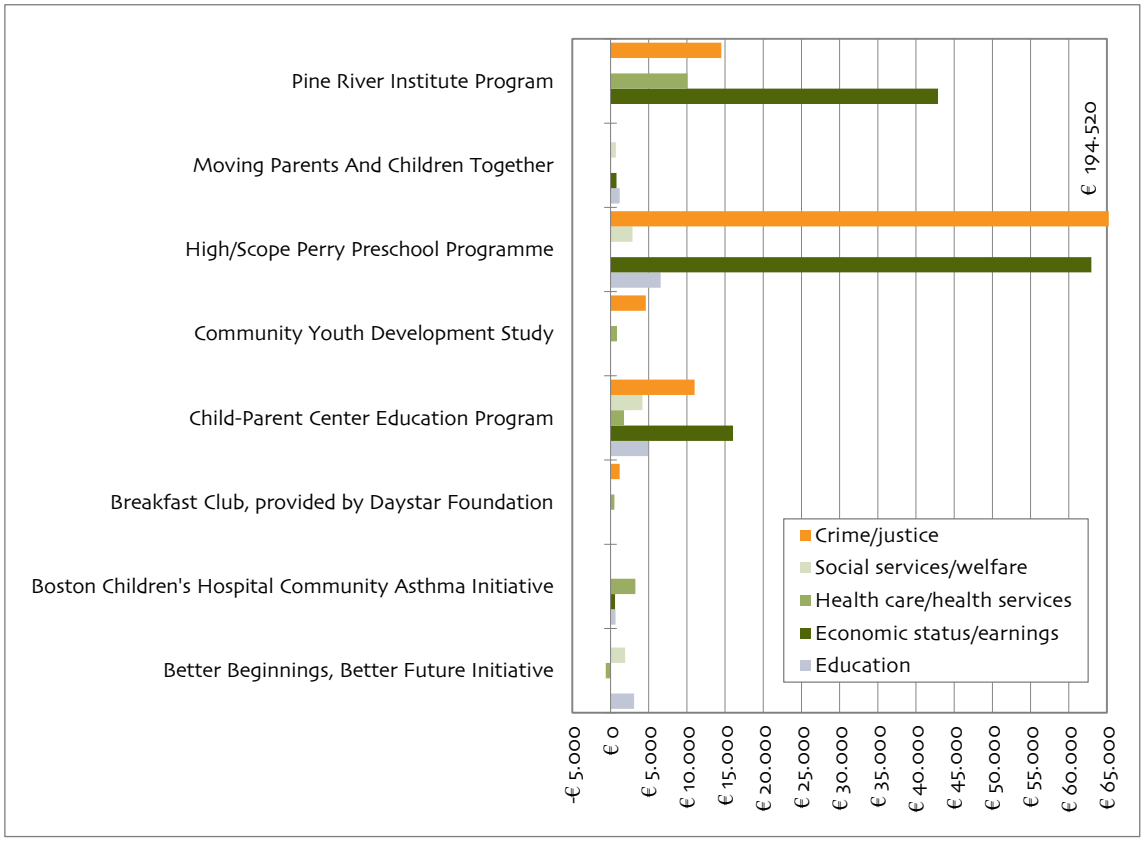

Figure 4.2-3: Costs per category of programmes

„Grow Together": höchste Einsparungen bei Kindern

Since the costs of "Grow Together" could not clearly be assigned to "our" categories, the results are presented separately: the highest savings were for the children in the programme (440,813 Euros). The benefits of the programme for the social insurance and the city of Vienna were 50,308 and 51,687 Euros per participant respectively [13].

4.2.4 Net value

„Nettonutzen": 360-1,75 Mio. Euro

The net value (see section 3.3) per participant was between 361 Euros for the "Moving Parents And Children Together" [26] and 1.75 million Euros for "Frühe Hilfen" [27].

bei zwei Programmen Kostenspanne, Durchschnitt: 680.000-880.000 Euro

However, for the "Frühe Hilfen" and the "Guter Start ins Kinderleben", no average costs were presented, but ranges [27, 28]. When calculating the total costs of the control for these two studies, the average costs would be 677,744 and 880,578 Euros, respectively [27, 28] (for further explanations, see section "Costs for interventions/programmes").

„Nettonutzen": Ø 360-880.000 Euro

Thus, the net value per participant over all studies would range from 361 Euros [26] to 880,578 Euros [28].

„Nettonutzen" Hepatitis B Impfung in Italien: bis zu 1,52 Mrd. Euro

The net value of the "hepatitis B vaccination in Italy" was 1.52 billion Euros, 68 years after the initial vaccination. However, the calculations for a time horizon of 20 years have shown that the costs were higher than the calculated benefit, resulting in a negative value of 96 million Euros [17].

4.2.5 (Social) return on investment

(S)ROI: 0,91-34,0

The (S)ROIs for each programme varied from 0.91 for the "hepatitis B vaccination in Italy" [17] to 34.0 for the "Guter Start ins Kinderleben" [28] (see Table 4.2-1).

mehrere ermittelte (S)ROI in einigen Studien

An overview of all (social) returns on investment is visualised in Figure 4.2-4. When there were several (S)ROIs of individual studies, they were summarised as mean values (e.g. for the "Child-Parent Center Education Program" [20, 21], the six available values were added and divided by six).

(S)ROI im Mittel: 1,19-23,5

Overall, the average returns were between 1.19 and 23.5. That means, for every Euro spent for the interventions, a benefit between 1.19 and 23.5 Euros can be expected.

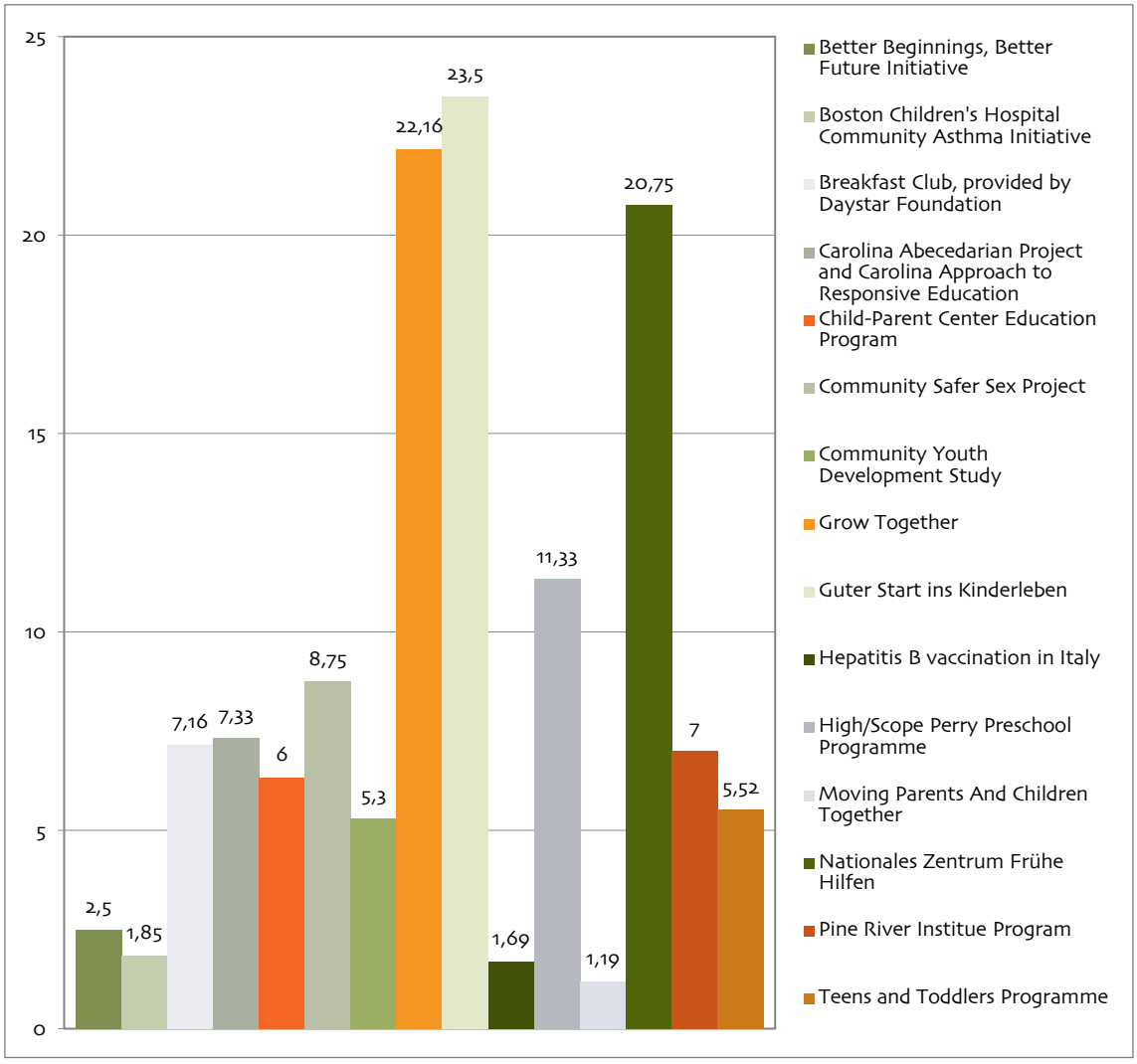

Figure 4.2-4: Overview of (social) returns in investments for each programme

detaillierte Betrachtungen:

When going into detail and analysing the changes over time, the following facts can be identified:

„Child-Parent Center" und Hepatitis B Impfung in Italien: (S)ROI steigt über Zeit

- The return of the "Child-Parent Center" was in average 4.97 after a follow-up of 18 years and 7.68 after 23 years [20, 21]. This means the return on investment was increasing over time.
- In accordance with the net value, the return of the "hepatitis B vaccination in Italy" was 0.91 after 20 years and 2.47 after 68 years [17]. That means that after 20 years, the return was negative, but after 68 years the return was positive.

„High/Scope Perry Preschool Programme": keine Änderung (S)ROI über Zeit

- Moreover, the "High/Scope Perry Preschool Programme" showed no difference in the return on investment after 36-37 years [2] and 61-62 years [3] of follow-up. The (S)ROI was 16.14 at any time. However, one publication made some re-calculations of the results using different methodological approaches and calculated a return on investment between 8.3 and 9.2 after 61-62 years [1].

Table 4.2-1: Results of the interventions/programmes and the respective studies in Euros 2016 (part 1)

Name of intervention/programme	Better Beginnings, Better Future (BBBF) Initiative[63]	Boston Children's Hospital Community Asthma Initiative (CAI)[64]	Breakfast Club, provided by Daystar Foundation[65]	Carolina Abecedarian Project (ABC) and Carolina Approach to Responsive Education (CARE)	Child-Parent Center (CPC) Education Program
Author, year, reference number	Peters 2016 [19]	Bhaumik 2013 [16]	Varua 2009 [29]	García 2016 [24]	Reynolds 2002 [20] Reynolds 2011 [21][66]
Costs for intervention, per participant[67] (only programme costs)	€ 1,734	€ 2,442	n/a	€ 15,824	Preschool | School-age | Extended programme € 7,883-8,123 | 3,512-3,619 | 4,779-4,927
Total costs for intervention, per participant[67] (including training, implementation, etc.)	€ 29,800	n/a	€ 813	€ 79,119	n/a
Costs for control, per participant[67] (only interventional costs)	€ 0[68]	€ 0[68]	n/a	n/a	n/a
Total costs control, per participant[67] (including costs for diseases, etc.)	€ 34,181	n/a	n/a	n/a	n/a
Avoided costs/benefits in total, per participant[67]	€ 4,381	€ 4,508[69]	€ 5,816[69]	n/a	**Reynolds 2002:** Preschool | School-age | Extended programme: € 56,258 | 5,824 | 29,181 **Reynolds 2011:** Preschool | School-age | Extended programme: $ 92,220 | 15,064 | 42,520
Avoided costs/benefits per category, per participant[67]	*Education:* € 3,082 *Health care/health services:* € -619[70] *Social services/welfare:* € 1,919	*Education:* € 665[69] *Economic status/earnings:* € 596[69] *Health care/health services:* € 3,247[69]	*Health care/Health services:* € 515[69] *Crime/justice:* € 1,202[69] *Others:* n/a[71]	n/a	**Reynolds 2002:** Preschool | School-age | Extended programme: *Education:* € 4,507 | 3,908 | 4,988 *Economic status/earnings:* € 32,700 | 1,167 | 13,723

63 Currency is in Canadian Dollars.

64 Currency is in Australian Dollars.

65 Year 2007 was considered for cost conversion.

66 Reynolds 2002 showed follow-up results at age 21 and Reynolds 2011 showed follow-up results at age 26 of participants.

67 If not otherwise declared, costs are presented per participant.

68 Since control group did not receive any intervention, it was assumed that the interventional costs for the control group were 0.

69 Own calculations, based on study information.

70 Costs were higher than benefits.

Name of intervention/programme	Better Beginnings, Better Future (BBBF) Initiative[63]	Boston Children's Hospital Community Asthma Initiative (CAI)[64]	Breakfast Club, provided by Daystar Foundation[65]	Carolina Abecedarian Project (ABC) and Carolina Approach to Responsive Education (CARE)	Child-Parent Center (CPC) Education Program
Avoided costs/benefits per category, per participant[67] *(continuation)*					*Health care/health services:* n/a *Social services/welfare:* € 2,859 | 240 | 2,504 *Crime/justice:* € 14,438 | 508 | 7,965 **Reynolds 2011:** Preschool | School-age | Extended programme: *Education:* € 6,195 | 4,177 | 5,637 *Economic status/earnings:* € 27,527| 7,816 | 13,254 *Health care/health services:* € 3,143 | 0 | 409 *Social services/welfare:* € 11,182 | 1,213 | 7,039 *Crime/justice:* € 40,523 | 1,421 | 14,666
Net value, per participant[67] (="Avoided costs/benefits in total" minus "(total) costs for intervention")	€ 2,648	€ 2,066[69]	€ 5,004[69]	€ 544,160	**Reynolds 2002:** Preschool | School-age | Extended programme: € 48,375 | 2,312| 24,402 **Reynolds 2011:** Preschool | School-age | Extended programme: € 79,886 | 10,758 | 35,651
(S)ROI	2.50[72]	1.85	7.16	7.33	**Reynolds 2002:** Preschool | School-age | Extended programme: 7.14 | 1.66 | 6.11 **Reynolds 2011:** Preschool | School-age | Extended programme: 10.83 | 3.97 | 8.24

Abbreviations: CBA=cost -benefit analysis; CG=control group; ED = Emergency department; IG=intervention group; n/a=not applicable; QoL=Quality of life, yrs.=years; (S)ROI = (social) return on investment

[71] There were further avoided costs. However, these were not properly mentioned in the study.

[72] Calculated until the children were 18 years old.

Table 4.2-1: Results of the interventions/programmes and the respective studies in Euros 2016 (part 2)

Name of intervention/programme	Communities That Care (CTC)	Community Safer Sex Project (CSSP) [73]	Frühe Hilfen[74]	Grow Together[74]	Guter Start ins Kinderleben[75]
Author, year, reference number	Kuklinski 2012 [18]	Bradly 2010 [22]	Juraszovich 2017 [27]	Pervan-Al Soquaer 2016 [13]	Meier-Gräwe 2011 [28]
Costs for intervention, per participant[76] (only programme costs)	€ 669	n/a	€ 14,344-72,167	n/a	€ 8,406
Total costs for intervention, per participant[67] (including training, implementation, etc.)	€ 1,033	€ 7,487	n/a	€ 24,762	€ 39,411
Costs for control, per participant[67] (only interventional costs)	€ 0[68]	€ 0[68]	€ 0[68]	n/a	€ 0[68]
Total costs control, per participant[67] (including costs for diseases, etc.)	n/a	n/a	€ 319,294-1,824,360	n/a	€ 500,312-1,339,667
Avoided costs/benefits in total, per participant[67]	€ 5,472	€ 65,485[77]	n/a	€ 548,690[69]	n/a
Avoided costs/benefits per category, per participant[67]	*Economic status/earnings*: n/a[78] *Health care/health services*: € 846 *Crime/justice:* € 4,626	n/a	n/a	*Clients:*[79]*:* € 16,972[69] *Children:* € 440,813[69] *Employees:* € 536[69] *Labour office:* n/a *Government:* € 2,909[69] *Social insurance*: € 50,308[69] *City of Vienna:* € 51,687[69] *Donators:* n/a *Project:* € -16,820[69,70] *Others*: € 2,288[69]	n/a

[73] Year 2010 was considered for cost conversion.

[74] Costs were not converted, since programme was Austrian and cost data from 2016 was used.

[75] Year 2011 was considered for cost conversion.

[76] If not otherwise declared, costs are presented per participant.

[77] It was not exactly stated whether the given costs are per county or per participant. However, since the costs per county were considered too low, it was assumed the costs are per participant.

[78] Economic status/earnings was recorded, but not reported.

[79] For the "Grow Together" study, the costs were assigned to the stakeholders and it was not possible to learly assign the costs to the categories.

Name of intervention/programme	Communities That Care (CTC)	Community Safer Sex Project (CSSP) [73]	Frühe Hilfen[74]	Grow Together[74]	Guter Start ins Kinderleben[75]
Net value, per participant[67] (="Avoided costs/benefits in total" minus "(total) costs for intervention")	€ 4,439	€ 57,997[77]	€ 299,272-1,752,193[80]	€ 523,928[69]	€ 460,900-1,300,256[80]
(S)ROI	5.30	8.75	16.0-25.0	22.16	13.0-34.0

Abbreviations: CBA=cost -benefit analysis; CG=control group; ED = Emergency department; IG=intervention group; n/a=not applicable; QoL=Quality of life, yrs.=years; (S)ROI = (social) return on investment

Table 4.2-1: Results of the interventions/programmes and the respective studies in Euros 2016 (part 3)

Name of intervention/programme	Hepatitis B vaccination in Italy	High/Scope Perry Preschool Programme	Moving Parents And Children Together (M-PACT) [81]	Pine River Institue Program (PRI) [82]	Teens and Toddlers (T&T) Programme[83]
Author, year, reference number	Boccalini 2013 [17]	Belfield 2006 [3] Heckman 2010 [1] Schweinhart 2013 [2][84]	Interface Enterprise 2014 [26]	Hackett 2017 [25]	COUI 2010 [23]
Costs for intervention, per participant[85] (only programme costs)	€ 1,035,451,775 (in total)	€ 16,298-17,399 (Ø17,048)[86]	€ 997	n/a	n/a
Total costs for intervention, per participant[67] (including training, implementation, etc.)	€ 830,904,402 | 1,304,859,960 (in total, after 20|68 yrs.)	n/a	€ 2,301	€ 8,302	€ 2,555
Costs for control, per participant[67] (only interventional costs)	€ 0[68]	€ 0	n/a	€ 0[68]	€ 0[68]
Total costs control, per participant[67] (including costs for diseases, etc.)	€ 1,769,696,020 | 3,858,558,721 (in total, after 20|68 yrs.)	n/a	n/a	n/a	n/a

[80] Calculated by "total costs control" minus "(total) costs intervention".

[81] Year 2013 was considered for cost conversion.

[82] Year 2015 was considered for cost conversion.

[83] Year 2010 was considered for cost conversion.

[84] Belfield 2006: calculations were estimated up to age 65 of participants, based on follow-up data at age 40; Heckman 2010: Re-evaluation of results for age 65, using follow-up data at age 40 of participants and different statistical methods; Schweinhart 2013: most recent calculations, using follow-up data at age 40 of participants.

[85] If not otherwise declared, costs are presented per participant.

[86] Calculated by: (17,204+16,298+17,399+17,391)/4.

Name of intervention/programme	Hepatitis B vaccination in Italy	High/Scope Perry Preschool Programme	Moving Parents And Children Together (M-PACT) [81]	Pine River Institue Program (PRI) [82]	Teens and Toddlers (T&T) Programme[83]
Avoided costs/benefits in total, per participant[67]	€ 938,791,617 | 2,553,698,761 (in total, after 20|68 yrs.)	**Belfield 2006:** € 277,716 | 112,042 (at 3 | 7% discount rate) **Heckman 2010:** € 149,717 **Schweinhart 2013:** € 396,875	€ 2,750	€ 67,470[69]	€ 13,443[69]
Avoided costs/benefits per category, per participant[67]	n/a	**Belfield 2006:** *Education:* € 11,031 | 6,725 (at 3|7% dicount rate) *Economic status/earnings*: € 73,199 | 25,795 (at 3|7% discount rate) *Social services/welfare*:€ 2,592 | 1,699 (at 3|7% discount rate) *Crime/justice:* € 194,520 | 79,134 (at 3|7% discount rate) **Heckman 2010:** *Education:* € 4,238 *Economic status/earnings*: € 76,430 *Social services/welfare*: € 3,623 *Crime/justice:* € 65,427 **Schweinhart 2013:** n/a[87]	*Education:* € 1,192 *Economic status/earnings:* € 779 *Health care/health services:* € 80 *Social services/welfare:* € 689	*Economic status/earnings:* € 42,876[69] *Health care/health services:* € 10,087[69] *Crime/justice:* € 14,506[69]	n/a
Net value, per participant[67] (="Avoided costs/benefits in total" minus "(total) costs for intervention")	€ -96,660,158[88] | 1,518,246,956 (in total, after 20|68 yrs.)	**Belfield 2006:** € 260,511 | 95,744 (at 3|7% discount rate) **Heckman 2010:** € 132,318 **Schweinhart 2013:** € 296,875	€ 449	€ 59,168[69]	€ 10,888[69]
(S)ROI	0.91 | 2.47 (after 20 | 68 yrs.)	**Belfield 2006:** 16.14 | 6.87 (at 3|7% discount rate) **Heckman 2010**: 8.3-9.2 **Schweinhart 2013:** 16.14	1.19	7.0	5.52

Abbreviations: CBA=cost -benefit analysis; CG=control group; ED = Emergency department; IG=intervention group; n/a=not applicable; QoL=Quality of life, yrs.=years; (S)ROI = (social) return on investment

[87] It was only stated that 88% of the return came from crime savings.

[88] For the 20 years horizon, the costs were higher than the savings/benefits-

4.3 Description of the interventions/programmes

zwei Studien mit expliziten Fallbeispielen

beide Publikationen jedoch nicht gänzlich passend

Originally, we intended to include case reports described in the identified literature included in this report. There were two papers which described specific cases [23, 27]. However, one of them, the evaluation of the Austrian "Frühe Hilfen" is recent and – we assume – also well-known to health policy makers. Furthermore, the benefits calculated for this programme were not based on the observation of the respective study sample. Thus, we decided not to reproduce the results in our report. The second publication that described individual cases concerned the "Teens and Toddlers Programme" [23]. However, the descriptions of the cases in this study did not include any costs.

keine Fallbeispiele, sondern Beschreibung der 15 Programme

Thus, we concentrate on the 15 identified interventions/programmes (see 4.1 and 4.2) and give information on the participants, the interventions and respective SROI(s) as the final result.

4.3.1 Better Beginnings, Better Future (BBBF) Initiative

Kinder 4-8 Jahre, aus ökonomisch benachteiligten Nachbarschaften, verschiedene Interventionen, Gewinn von 2,50 Euro pro investiertem Euro

In the economic evaluation of the BBBF the participants were children, aged 4-8 from economically disadvantaged neighbourhoods in Ontario, Canada. The BBBF is not a specific programme. It consists of different interventions that are not only child-focused (e.g. child care enhancements or after-school activities), but also parent/family-focused (e.g. home visits or family camps) and neighbourhood-focused (e.g. community field trips or adult education). The programme follows three goals: the promotion of child health development; the prevention of social, emotional, behavioural, physical, and cognitive problems in young children; and the enhancement of the family and community environments in which children live. Overall, for every Euro invested in the programme, a return of 2.50 Euros was calculated by the time the children were 18 years old [19].

4.3.2 Boston Children's Hospital Community Initiative (CAI)

Kinder 2-18 Jahre, individualisierte Betreuung durch Pflegepersonal, individualisierter Gewinn von 1,85 Euro pro investiertem Euro

The CAI programme serves children aged 2-18 in Boston, USA. For the evaluation, children with a history of asthma-related hospitalisation or visit of the emergency department were enrolled. The children come mainly from low income areas. The intervention itself contains individual nurse case management, home visits by nurses and/or community health workers, family education, environmental remediation, and connection to primary care, combined with community education, outreach, and advocacy. The aim of CAI is to lower the morbidity rates of paediatric asthma. Altogether, the calculated SROI from the project was 1.85 over a three year period [16].

4.3.3 Breakfast Club, provided by Daystar Foundation

Bereitstellung Frühstück in Schulen, Ziel der Verbesserung der Lernfähigkeit, Gewinn von 7,16 Euro pro investiertem Euro

The Breakfast Club provides breakfast for school-aged children in primary and secondary schools in Sydney, Australia (the exact age of the participants was not stated in the study). The objective is to increase the learning ability of the children, who generally would skip breakfast due to varying circumstances. The calculated SROI for the Breakfast Club is 7.16. The time period of calculations, however, was done individually for each domain of outcome [29].

4.3.4 Carolina Abecedarian Project (ABC) and Carolina Approach to Responsive Education (CARE)

Kinder 0-8 Jahre, u. a. Kinderbetreuung, Gewinn von 7,33 Euro pro investiertem Euro

Both, the ABC and CARE are programmes for socio-economicly disadvantaged children aged 0-8 years in Chapel Hill and Durham, North Carolina (the programmes start at eight weeks of life). The ABC and CARE are virtually identical early childhood programmes, offering individualised treatment to enhance early-life skills by supporting language, motor, and cognitive developments as well as socio-emotional competencies that were considered crucial for school success. The interventions contained centre-based childcare (e.g. stimulation, medical care, and nutrition), home visitation (only part of CARE, e.g. social and mental stimulation), and school-age treatment (parent-teacher meetings). The programmes generate a return of 7.33 Euros for every Euro invested [24].

4.3.5 Child-Parent Center (CPC) Education Program

Kinder 3-9 Jahre, Unterstützung Bildung und Familie, Gewinn von 7,68 Euro pro investiertem Euro

The CPC is a programme for children aged 3-9 from high-poverty neighbourhoods in Chicago, USA. The programme is a centre-based early intervention that provides comprehensive educational and family-support services from preschool to early elementary school. Four programme features are emphasized: early intervention, parent involvement, a structured language and basic skills learning approach, and programme continuity between the preschool and early school-age years. The programme theory is that children's readiness for school entry and beyond can be enriched through systematic language learning activities and opportunities for family support experiences through direct parent involvement in the centres. Finally, the programme generates a median return on investment of 4.97, when the children turn 21 years, and 7.68, when children turn 26 years [20, 21].

4.3.6 Communities That Care (CTC)

Kinder und Jugendliche 10-14 Jahre, vornehmlich Prävention von Rauchen und Kriminalität, Gewinn von 5,30 Euro pro investiertem Euro

The CTC focuses on youth in late childhood and early adolescence, mainly aged 10-14 years. CTC is a public health approach to reduce risk, enhance protection, and reduce the prevalence of adolescent health and behaviour problems, mainly smoking and delinquency, in communities in the states of Colorado, Illinois, Kanas, Maine, Oregon, Utah, and Washington State. The programme guides prevention through five phases: assessing the individual community; getting a commitment to the CTC process and forming a prevention coalition, using epidemiologic data to assess needs; choosing tested and

effective prevention policies, practices, and programmes based on assessment data; implementing the new strategies; and evaluating progress over time. The findings of the evaluation suggest that the return of every Euro invested is at least 5.30 Euros [18].

4.3.7 Community Safer Sex Project (CSSP)

Jugendliche 13-19 Jahre, präventive und reaktive Angebote zur Verbesserung Sexualgesundheit, Gewinn von 8,75 Euro pro investiertem Euro

The CSSP is targeting young people in general (mainly teenagers, aged 13-19) in the areas of Leicester and Rutland in the UK. For the main part, the programme team trains practitioners who are working with the young people in their community. The practitioners are then offering preventive and reactive health services to improve sexual health, to reduce unplanned pregnancies, and to enable and encourage clinical services. These services contain, for instance, tests for pregnancy and sexually transmitted diseases, information on for sexual health, relationships, contraception, and the provision of condoms. Overall, the evaluation calculated that for every Euro invested in the CSSP within a year, a return of 8.75 Euros was created [22].

4.3.8 Frühe Hilfen

Kinder 0-3 Jahre, Koordination bestehender Hilfen, Gewinn von 16-25 Euro pro investiertem Euro

The Austrian programme "Frühe Hilfen" is directed at families with children aged 0-3 years. The programme provides and coordinates customised and appropriate support of families, during pregnancy and the first years of life. Basically, every family in Austria has access to the services of "Frühe Hilfen". The programme is a regional network to coordinate multi-professional support and services for parents and their children. The return on investment was calculated for four individual cases and therefore differed between 16 and 25 Euros(the average would be 20.75) [27].

4.3.9 Grow Together

Kinder 0-2 Jahre, individuelle Betreuung, Gewinn von 22,16 Euro pro investiertem Euro

"Grow Together" supports socially disadvantaged mothers and families in the first two years of life of their children in Vienna, Austria. The project provides assistance depending on the individual risk group the mothers and families belong to. The assistance contains home visits 2-3 times a week, mother-child groups once a week, psychotherapy for parents maximum once a week, and child care and babysitting as required. The aim of the project is that the children can grow up at their families. The calculated SROI of Grow Together is 22.16 Euros [13].

4.3.10 Guter Start ins Kinderleben

Kinder 0-3 Jahre, systematische Koordination bestehender Angebote, Gewinn von 13-34 Euro pro investiertem Euro

"Guter Start in Kinderleben" is a programme that takes place in various regions in Germany. The programme is targeting families, mainly in precarious life situations, with children aged 0-3. The project provides early promotion and strengthening of parents' relationships and impacts competencies to prevent neglect and abuse in early childhood. The main content of the intervention is the provision of systematic coordination of different, already existing, offers for early childhood. In the end, a return on investment of 13.0 and 34.0 Euros was estimated (in the study two scenarios were calculated) [28].

4.3.11 Hepatitis B vaccination in Italy

Impfung gegen Hepatitis B aller Kinder in Italien, Gewinn von 2,47 Euro pro investiertem Euro

The evaluation of the vaccination against hepatitis B covered all children in Italy. The vaccination took place shortly after birth and at the age of 12 years. The net return on investment 20 years later was still negative, with 0.91 Euros for every Euro spent. However, 68 years after the initial vaccination, a return on investment of 2.47 Euros can be expected. The break-even point (the time point when the cumulated savings and costs were equal) occurred after 21 years [17].

4.3.12 High/Scope Perry Preschool Programme

Kinder 3-4 Jahre, Unterstützung bei kognitiver und sozial-emotionaler Entwicklung, Gewinn von 6,87-16,40 Euro pro investiertem Euro

The evaluation of the "High/Scope Perry Preschool Programme" is based on a study that was conducted in the 1960s. The participants entered the study as three- and four-years-old African American children, with no physical handicap, but selected on the basis of low parental education and socio-economically disadvantaged background (children living in poverty). The intervention, lasting one or two short academic years, contained a centre-based programme of 2.5 hours morning classes per day for each workday with one teacher for five children, home visits to each mother and child in the afternoon by programme teachers for 1.5 hours per weekday, and group meetings of parents. Overall, the programme was supposed to support preschool cognitive and social-emotional development of the participants through active learning. The calculated return on investment was 16.40 Euros in two studies and 6.87 Euros in an additional analysis that used different methodological approaches (see also the end of section 4.2) [1-3].

4.3.13 Moving Parents And Children Together (M-PACT)

Kinder und Jugendliche 8-17 Jahre, Unterstützung bei Suchtmittelmissbrauch der Eltern, Gewinn von 1,19 Euro pro investiertem Euro

M-PACT is a programme for children and young people aged 8-17. It supports the children and adolescent who are experiencing the effects of parental substance misuse within the family. The programme is available in several areas in England, for instance Essex, Guernsey, and London Borough. M-PACT is comprised of 10 sessions: an individual family assessment is followed by eight consecutive weekly core sessions and a reunion for all families, three months after the end of the programme. Experienced professionals are working with the young people and parents aiming at the reduction of the harmful impact of parental substance misuse and addiction on family life. Overall, for every Euro spent on M-PACT it generates 1.19 Euros of savings [26].

4.3.14 Pine River Institute Program (PRI)

Jugendliche 13-19 Jahre, Hilfe bei Suchtverhalten und anderen psychischen Problemen, Gewinn von 7 Euro pro investiertem Euro

PRI, located in Shelburne, Canada, is a residential treatment centre and outdoor leadership experience for youth aged 13-19 struggling with addictive behaviours and often other mental health issues. The programme's approach focuses on helping adolescents using a developmental and relational model. Admitted youth are placed on one of four treatment teams, each of which has assigned to it a therapist, three residential youth counsellors, and a team teacher. The treatment is immersive and experienced during mealtimes, school,

and formal treatment programing, and is guided by the "Dialectal Behavioural Therapy" and the "Satir Family Model of Therapy". The programme is supplemented with peer mentorship and outdoor experiences. Finally, the return on investment is 7 Euros for every Euro spent in the PRI [25].

4.3.15 Teens and Toddlers (T&T) Programme

für junge Menschen allgemein, zur Verminderung von Teenager-Schwangerschaften und nicht in Ausbildung, Arbeit oder Schulung, Gewinn von 5,52 Euro pro investiertem Euro

T&T targets young people in general. The programme takes place in the UK and is an intervention to reduce teenage pregnancies and related situations of being not in education, employment, or training (NEET). T&T provides young people at risk of teenage pregnancy with real life experience of mentoring and caring for a small child. The programme consists of a course of 15-20 weeks, running one afternoon a week for around three hours, taking place in a nursery. In this course, each young person is paired with a child, aged 3-5 years. These children are mostly from families receiving assistance and/or from single-parent households. Furthermore, in group sessions, the teenagers are educated in personal development and healthy interpersonal skills (e.g. impact of early pregnancy and importance of sexual health). Overall, the calculated return on investment is 5.52 Euros for T&T [23].

5 Discussion

This report was supposed to be a "landscape overview" providing a comprehensive summary of existing studies, evaluating the Social Return on Investment (SROI) of interventions for children and adolescents. Overall, investments in children and adolescents are an important foundation for the well-being of the individuals and the society as well – both physiologically and economically. This is mainly caused by the high follow-up costs (respective the economic burden) in the children's later life that are associated with (untreated) disorders or diseases [30]. However, the benefits and impacts for the individuals and the society – in particular in the long run – are difficult to measure and to monetise. Thus, we wanted to summarise existing studies on this topic and take a closer look on the methods used and the results presented in the literature.

Bericht gedacht als Überblick

Investments in Kinder und Jugendliche sind eine gute Anlage

hohe Kosten im Alter

Folgen jedoch schwer messbar

5.1 Summary of results

In this part, the crucial results of the identified studies are presented. A summary of the most meaningful study characteristics and results is shown in Table 5.1-1. All cost values in this part are in 2016 Euros for Austria (the value of a Euro differs between countries in the Eurozone).

Zusammenfassung der wichtigsten Ergebnisse (in Euro 2016)

In our report, we performed an extensive search for studies, measuring the return on investment of interventions for children and adolescent (and their families). Initially, we wanted to concentrate on studies of "social impact measurement", in particular on Social Return on Investment analyses (SROIs). However, our search generated cost-benefit analyses (CBAs) that also measured the social impact and therefore, we decided to include these studies. Finally, approximately half of the 15 included studies were SROIs, the other half were CBAs.

neben SROI-Analysen auch Kosten-Nutzen-Analysen eingeschlossen

All studies calculated the costs and benefits from the societal perspective (two studies, though, presented results from the perspective of the tax payers and the general public and two studies made the calculations from the perspective of the government). Most of the identified programmes were conducted in the USA, followed by the UK. All the studies were published between 2002 and 2017, whereas most of the evaluations were published within the past seven years.

Studien: gesellschaftliche Perspektive, 2002-2017 veröffentlicht, meist USA

The interventions in the evaluated programmes were for children and/or adolescents (and their families) aged 0-20 years. Most of the programmes, though, covered the ages 13-17. The programmes provided several interventions, from one-time interventions (e.g. vaccination) to interventions lasting eight years (e.g. education/skill development). The time horizons of calculating the impacts (or benefits) differed from around one year to 68 years. A total of five studies were able to base their calculations on long-term observational data (at least 10 years) of their study participants [1-3, 17, 19-21, 24].

für Jugendliche 13-17 die meisten Interventionen, Zeithorizont Kalkulationen bis 68 Jahre

Interventionen zu: mentale Gesundheit, Ernährung, sexuelle Gesundheit, Impfung, Bildung, etc.

The interventions that the studies evaluated can be divided in seven categories: "mental health/addiction/delinquency", "education/skill development", "sexual health/sex education", "hospital interventions", "vaccination", "various interventions" (providing different interventions), and "nutritional intervention" (providing breakfast at schools).

Prävention und Unterstützung im Fokus der Interventionen

The intention of four programmes was to support children and their families from poor socio-economic or socially disadvantaged environments (e.g. families, neighbourhoods): [1-3, 13, 19-21]. Three programmes aimed at the prevention of or the assistance with specific diseases. [16, 17, 24]. Two programmes provided addiction assistance for children or young people [25, 26]. Six interventions were not targeting a specific population. These interventions were for children (and their families) in general [18, 22, 23, 29].

Herangehensweisen in Studien sehr unterschiedlich

The methodical justification and the methods used to identify outcomes of the identified studies varied significantly. At first, the methods were determined by the respective analysis (SROI or CBA). The chosen outcomes to measure the benefits and impacts were mainly effectiveness-related and collected from the programme in a short term and then monetised and estimated for the future. Only in some cases, the participants were followed-up for a long time period of 10 years and more. In a few studies, though, the benefits were estimated based on literature. Moreover, the determination of the benefits and impacts – either directly or indirectly – was done using a vast range of outcomes.

Kosten der Programme 670-72.200 Euro, Einsparungen bis zu 79.100 Euro im Bereich Kriminalität

The interventional costs for the programmes differed between 669 and 72,167 Euros per participant. Between 665 and 11,031 Euros were avoided in the field of "education", e.g. due to higher rates of graduation. A total of 596 to 76,430 Euros were saved in the area of "economic status/earnings", e.g. due to higher salaries (and therefore higher tax payments). For "health care/health services", the benefits were between -619 Euros and 10,087 Euros (the negative value means that the costs were higher than the benefits), e.g. due to better health or less spending for treatments. The benefits for "social services/ welfare" were 240 to 11,182 Euros, e.g. due to less child neglect. And finally, the savings in the area of "crime/justice" were 508 to 79,134 Euros, e.g. due to less criminal activities or less police contacts.

höchste Einsparungen bei Kriminalität und Einkommen

Thus, the highest benefits were related to crimes and to economic status or earnings. The areas of health care/health services and education present potential savings as well, but they were reported to be lower.

durchschnittliche „Sozialrendite" 1,19-23,5

Over all studies, a positive return on investment of 1.19 to 23.5 on average was calculated. In one study (vaccination of hepatitis B), though, the return was 0.91 after 20 years, but after 68 years, it was 2.47 (the average return was 1.69).

„Sozialrendite" zum Teil über Zeit gestiegen

Moreover, for three programmes, calculations for different time horizons were available [1-3, 17, 20, 21]. For two interventions, the (social) return on investment increased over time [17, 20, 21]. For one programme, the (social) return on investment did not show differences between 40 and 65 years of follow-up [2, 3].

Table 5.1-1: Summary of study characteristics and results of interventions/programmes (in Euros, 2016)

Category of programme/ intervention(s)	No. of interventions/ programmes identified	Costs of programme/ intervention(s) per participant	Avoided costs per participant and per categories	mean (S)ROI	Reference(s)
Mental health/addiction/ delinquency	3	€ 669-997	Education: € 1,192 Economic status/earnings: € 779-42,876 Health care/health services: € 80-10,087 Social services/welfare: € 689 Crime/justice: € 4,626-14,506	1.19-7.0	[18, 25, 26]
Education/ skill development	3	€ 3,512-17,399	Education: € 3,908-11,031 Economic status/earnings: € 1,167-76,430 Health care/health services: € 0-3,143 Social services/welfare: € 240-11,182 Crime/justice:€ 508-79,134	1.66-16.14	[1-3, 20, 21, 24]
Sexual health/ sex education	2	€ 2,555-7,487 (incl. training, etc.)	n/a	5.52-8.75	[22, 23]
Hospital interventions	1	€ 2,422	Education: € 665 Economic status/earnings: € 596 Health care/health services: € 3,247 Social services/welfare: n/a Crime/justice: n/a	1.85	[16]
Vaccination	1	n/a (1.035 billion Euros in total)	n/a	0.91-2.47	[17]
Various interventions	4	€ 1,734-72,167	Education: € 3,082 Economic status/earnings: n/a Health care/health services: € -619 Social services/welfare: € 1,919 Crime/justice: n/a	2.50-34.0	[13, 19, 27, 28]
Nutritional interventions	1	€ 813 (incl. training, etc.)	Education: n/a Economic status/earnings: n/a Health care/health services: € 515 Social services/welfare: n/a Crime/justice: € 1,202	7.16	[29]
All programmes	15	€ 669-72,167	Education: € 665-11,031 Economic status/earnings: € 596-76,430 Health care/health services: € -619-10,087 Social services/welfare: € 240-11,182 Crime/justice: € 508-79,134	0.91-34.0	[1-3, 13, 16-29]

Abbreviations: incl. = inclusive; no. = number; (S)ROI = (social) return on investment

5.2 Interpretation and limitations of study results

alle Studien zeigten, dass Interventionen vorteilhaft

First of all, all studies have shown that the investment in children and adolescents can be cost saving and all studies were conducted in recent years. However, the studies showed a high variation in the applied methods and in the results. Plus, the evaluated interventions were very inconsistent, ranging from vaccination over sex education to nutritional support. In addition, the results of the studies highly depended on the methodological approaches.

Outcomes, benefits, and measurements

Methoden und Herangehensweisen in Studien sehr unterschiedlich

Even though the studies followed largely the methods of SROIs and CBAs, the determination of the outcomes and benefits or impacts varied considerably between studies. For instance, some studies considered crime or education-related outcomes and benefits, some did not. Moreover, benefits were measured by a vast number of outcomes. E.g. health-related benefits were measured by outcomes like child health, emergency department visits, reduced obesity, reduction of sexually transmitted diseases, reduced blood pressure, mortality, fewer hepatitis B virus infections, improved health, reduction in mental health hospitalisation rates, or responsibility for sexual health and pregnancy.

unterschiedliche Stakeholder in SROI-Analysen

In addition, for SROI-analyses, there is no existing consensus on which stakeholders should be included to account for the outcomes of the interventions assessed. In some studies, only those stakeholders were included who benefitted directly from the intervention and not other potential stakeholders.

Annahme direkter (ungeprüfter) Kausalitäten

Several studies assumed direct correlations of measured outcomes and (future) economic benefits/impacts. This was done using so-called proxies, especially in the SROI-analyses. For instance, a reduction of blood pressure results in increased health and therefore, less spending for health care. This process could be described as: measuring surrogates, monetise them, and relate them to financial impacts. In SROI-analyses, this process is defined as identifying and evaluating proxies. However, it is uncertain whether these assumed correlations do exist in reality.

Data origin, data preparation, and statistical analyses

Robustheit Daten in Studien unterschiedlich

einige Studien mit Langzeitbeobachtungen

Furthermore, the robustness of data the studies relied on differed as well. On the one hand, the five programmes with robust long follow-up data of at least 10 years should be mentioned especially: the “Better Beginnings, Better Future Initiative”, the “Abecedarian Project and Carolina Approach to Responsive Education”, the “Child-Parent Center Education Program”, the “hepatitis B vaccination in Italy” and the ”High/Scope Perry Preschool Programme” [1-3, 17, 19-21, 24]. On the other hand, there were studies that calculated the benefits/impacts of the interventions/programmes based on assumptions and data from literature, particularly for the “Guter Start ins Kinderleben” and the “Frühe Hilfen” [27, 28]. These two studies did not base their benefit calculations on their own data, but partly on data from other programmes that are included in our report like the ”High/Scope Perry Preschool Programme”.

Demografien mit Österreich z. T. schwer vergleichbar

Most of the programmes in the studies were performed in the USA. However, participants in the US-studies may poorly reflect the Austrian demographics and behaviour. Furthermore, in the US-studies, crime-related benefits are likely to have a bigger impact on the return of an intervention than in other countries.

fehlende (echte) Kontrollgruppen

Another drawback were missing control groups: in seven studies, the control group was hypothetical [13, 17, 22, 23, 25, 27, 28] and in two studies, there was no control group [26, 29]. This means that for these seven programmes, it was assumed that the control group did not receive an intervention, but in fact, there was no control group. However, in accordance with section 1.1, the impact is defined as "outcomes" minus "what would have happened anyway" and that can be hardly estimated without an appropriate control group.

Monetarisierung sehr unterschiedlich

In addition, the monetisation in the studies was based on different parameters. For instance, impacts that were connected to health care or health services contained the costs for obesity to chlamydia treatment in one study and costs for termination in another study. Besides, in several studies, benefits in various categories were considered, but the avoided costs in these categories were not presented.

Zeithorizonte und Diskontraten der Studien sehr unterschiedlich

Moreover, the time frames of the interventions and the estimate of (future) benefits varied strongly. And, of course, a longer time horizon to estimate (future) benefits and a more comprehensive reflexion of possible outcomes could imply a greater benefit. In five studies, it was not explicitly stated, which cost perspective was chosen [13, 24, 26-28]. Moreover, the applied discount rates differed from 0 to 10% [16, 27]. However, a low discount rate advantages interventions that have a long payback period. When looking at details, one study needs to be mentioned, that showed the smallest positive return of just 1.19 [26]. But from the information gathered, it seems that no discount rate was applied in this study. Thus, with an applied discount rate, the return would have been lower or even negative. Moreover, in the evaluation of the "High/Scope Perry Preschool Programme" [3], it was quite obvious that a variation of the discount rate had major effects on the benefits.

fehlende statistische Auswertungen

Furthermore, the estimates of returns were partly presented without standard errors, leaving readers uncertain as to whether the estimates are statistically significant. Some studies did not conduct a sensitivity analysis for the effects of alternative assumptions, nor did they present a standard error for the estimated rate of return. Another disadvantage of some studies was the small sample size, which implies weaker results and fragile estimated impacts.

Résumé

Heterogenität der Studien

The studies showed a remarkable heterogeneity. This heterogeneity can be traced back to the variety of interventions on the one hand and the methods – like the variety of measured and considered outcomes plus benefits – and the statistical analyses, on the other hand.

Auswirkungen der Methoden auf Ergebnisse

The effects of the methods on the results of the studies were very obvious for the "High/Scope Perry Preschool Programme". For this programme, we included an additional evaluation [1] that used different methods. The results of this study varied considerably compared to the other two evaluations of the intervention [2, 3].

Studienergebnisse nur bedingt generalisierbar

Thus, even though the studies showed positive benefits and impacts, the results should be read and generalised carefully.

5.3 Limitations of "our" report

Literature search and inclusion criteria

Fokus Studien auch auf Kosten-Nutzen-Analysen ausgeweitet

Originally, this report was planned to focus on studies on "social impact measurement" (see section 2). However, we also identified highly relevant cost-benefit analyses and included these as well. Nevertheless, CBAs and SROIs are methodologically slightly different, mainly due to the consideration of broader social-economic and environmental outcomes in SROI-analyses.

drei Programme mit TeilnehmerInnen älter als 18 Jahre

Three studies [22, 23, 25] were included, even though the participants in the programmes were partly older than 18 years. This decision was made because these three programmes were considered to be highly relevant.

Verletzung Projektprotokoll

In the end, our report summarised different study types and not just the planned population. Thus, we certainly violated our project protocol for this project.

keine Suche speziell nach Kosten-Nutzen-Analysen

Given that we did not specifically search for CBAs, but half of the studies are CBAs, it is likely that there are more CBAs measuring the ROI from a societal perspective. Thus, it might have been more adequate to just concentrate on studies on social impact measurement and analyse and compare these, but we wanted to show a broader insight in the depth and breadth of the topic. Besides, we only found SROI-analyses. Other "social impact measurement frameworks", like Social Cost-Benefit Analyses or Social Cost Effectiveness Analyses were not identified.

Großteil Studien über Handsuche

Most of the included studies were identified via hand search and were generated from "grey literature". However, we decided at a certain point in time to stop our search. It is very likely that there are further studies we did not find.

einige Volltexte nicht gefunden

Furthermore, we also had to exclude studies because we could not identify any full-text. In some cases, we also contacted the respective authors, but did not receive any answer.

Data preparation

Anpassungen, dadurch Gefahr von Verzerrung

In addition, we made some adjustments, mainly to make the study results more comparable. Thereby, we increased the risk of bias.

Annahmen bei Jahreszahlen

Firstly, in case the year of cost data was not clearly stated in a study, the most likely year was used to convert the costs into 2016 Euros. For instance, when several years could have been considered, the latest year was used and when no year date was mentioned, the year of the publication was considered.

Kosten pro TeilnehmerIn z. T. ermittelt

Secondly, costs in the results section were presented per participant, if possible. However, when studies showed exclusively total costs, the costs per participant were calculated by the authors of this report (costs divided by number of participants).

Annahme, dass Kosten pro Familie gleich Kosten pro TeilnehmerIn

Thirdly, when studies showed costs per families, it was assumed that these costs are equivalent to costs per participant. Though, it is possible that more than one child from these families was participating in the programme.

Answering research questions

Versuch alle Forschungsfragen ausreichend zu beantworten

Altogether, we tried to comprehensively answer the seven research questions (see section 2) and succeeded to a different extent directly or indirectly. The first research questions – which diseases and disorders of children and teenagers studies do exists, which outcomes can be identified, which costs are re-

ported, in what areas are these costs manifested, and what are the costs of the interventions/programmes, and what is the predicted return on investment – were answered directly (see also section on "Summary of results").

Frage nach Hinweisen zu den methodischen Zugängen nicht angemessen zu beantworten

However, due to the heterogeneity of the studies and the methods, the research question on the applied methods in the studies for choosing outcomes and estimating the benefits could not be answered properly (question number five). The chosen outcomes and cost areas and therefore considered benefits, were too diverse to be summarised in an appropriate way.

zwei Forschungsfragen nicht ausreichend zu beantworten

Finally, it was not possible to sufficiently answer two research questions (see section 2). On the one hand, we could not identify any appropriate study presenting individual cases and therefore, we further described the 15 identified programmes (see section 4.3). On the other hand, it was hardly possible to give an explicit advice on the specific disorders or diseases that are eligible for a further economic analysis in a future project. This was mainly due to the large variety of interventions. Moreover, it is highly questionable to transfer the results of the identified studies (particularly those from the US context) for an economic analysis in Austria.

dennoch: Ergebnisse zu sechs Programmen mögliche Basis für weitere ökonomische Analyse

Nevertheless, the most eligible studies of the programmes had a focus on socio-economically disadvantaged children. These programmes were: the "Better Beginnings, Better Future Initiative" and the "Child-Parent Center Education Program", the "Grow Together", and the "High/Scope Perry Preschool Programme" [1-3, 13, 19-21]. All four studies are potentially relevant as a basis for a further analysis: "Grow Together" is an Austrian programme and the three other programmes are based on long-term observations. Besides, of the three programmes which aimed at the prevention of, or the assistance with, specific diseases, the "Carolina Abecedarian Project (ABC) and the Carolina Approach to Responsive Education (CARE)" [24] provided the most relevant information. And, from the two programmes that provided addiction assistance for children or young people, the "Pine River Institute Program" [25] might be a good basis for a future project.

Résumé

Bericht hat gezeigt:

Our report offers several potentially important observations and gives an overview of a topic that gets increasing political attention. The main messages are:

- There are numerous studies existing that are evaluating the Social Return on Investment of a vast variety of interventions for children and adolescents. — zahlreiche Studien zum Thema
- The investment in children and adolescents can be fruitful, especially on the long-run. — Investment in Kinder kann sich lohnen
- However, estimating the social impact is difficult and there is no consensus on methods. — „Social Impact" schwer zu messen

Ergebnisse in Einklang mit anderen systematischen Reviews

Finally, the results of our report are in conformity with the results of other reviews on similar topics, even though these systematic reviews were on public health interventions in general or CBAs for early childhood interventions. Nevertheless, the return on investment was comparable with the same amount of heterogeneity of the underlying studies and drawbacks in general in the field of social impact measurement [4-6].

6 Conclusion

Bericht gedacht als Überblick

This report was supposed to be a "landscape overview" providing a comprehensive summary of existing studies and evaluating the Social Return on Investment of interventions for children and adolescent.

Vielfalt an Möglichkeiten der Messung von Nutzen

From the studies, it can be concluded that there are a variety of possibilities to identify and measure outcomes and benefits or impacts of these interventions. Also, there is no common agreement in terms of which outcomes and benefits should be definitely considered to economically evaluate the interventions and the respective impacts. This is mainly due to the fact that social impact is difficult to measure and quantify.

kein Konsensus über bewährte Herangehensweisen

An intervention can produce a wide range of impacts – positive as well as negative – which makes it difficult to integrate all of them into a comprehensive framework. Social impacts can arise in the short-term and in the long-term and many components can contribute to the impacts. Thus, it can be difficult to detect that possible impacts are definitely caused by the intervention. Moreover, there is no consensus on best practices and benchmarks.

dennoch: bei allen Interventionen positiver Nutzen für Gesellschaft

Nevertheless, even the most rudimentary analyses consistently suggested that interventions for children and adolescents can be cost-saving and can offer substantial returns in investments, even though these benefits arise later in childrens' lives. These returns are not only health-related. The returns seem particularly located in the field of income – and therefore for instance, in an increase of tax revenues – and avoidance of crime. Even though, this has to be seen in the context of the absence of studies focusing on specific diseases like attention deficit hyperactivity disorder, autism, or anxiety disorders.

7 Literature

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8 Appendix

8.1 Overview of social impact measurement frameworks

Table 8.1-1: Overview of social impact measurement frameworks

Framework	Year	Description
Acumen Scorecard	2001	❖ Assesses the social ventures investments in Acumen's portfolio of for-profit and non-profit organisations. ❖ Tracks progress on short-term and long-term outcomes by tracking outcome milestones and benchmarks.
Atkisson Compass Assessment for Investors (ACAFI)	2000	❖ Uses a point rating system with five key areas: N: Nature (environmental benefits and impacts), S: Society (community impacts and involvement), E: Economy (financial health and economic influence), W: Well-being (effect on individual quality of life), +: Synergy (links between the other four areas and networking). ❖ Designed to integrate with major CSR reporting standards (including Global Reporting Initiative and Dow Jones Sustainability Index). ❖ Peer reviewed by corporate executives, economic academics, and investment professionals.
Balanced Scorecard	1992	❖ Proposes that corporations measure operational performance using measuring beyond solely financial. ❖ Collects and integrates a range of metrics along the impact value chain. ❖ Helps to coordinate evaluation, internal operations metrics, and external benchmarks.
Best Available Charitable Option (BACO)	2006	❖ Quantifies an investment's social impact and compares it to the universe of existing charitable options for that particular social issue. ❖ Helps to inform investors where their philanthropic capital will be most effective by providing a dollar value for social output generated over the investment's life relative to the best available charitable option.
Bottom of the Pyramid (BoP) Impact Assessment Framework	2007	❖ Aims to understand who at the base of the pyramid is affected by BoP ventures and how they benefit. ❖ Contributes to a deeper knowledge of the relationship between profits and poverty alleviation.
Center for High Impact Philanthropy Cost Per Impact	2007	❖ Aims to help philanthropists assess costs per impact, thereby helping them get the most impact for their philanthropic dollar. ❖ Provides impact and analytical tools to help philanthropists assess impact and costs.
Charity Assessment Method of Performance (CHAMP)	2006	❖ Provides indicators to measure effectivess and efficiency across five different levels: 1. Impact on society, 2. Impact on the public, 3. Outputs, 4. Activities, 5. Inputs.
Foundation Investment Bubble Chart	n/a	❖ A visualization tool that plots the quantifiable impact on the x-axis, the percentage of implementation on the y-axis, and the relative size of the foundation's grant in a given field. ❖ Allows for easy comparison of the performance of corporations across a portfolio.
Hewlett Foundation Expected Return	2008	❖ Calculates the expected return on investment. ❖ Allows foundations to ask and answer the right questions for every investment portfolio: 1. What's the goal? 2. How much good can it do? 3. Is it a good choice? 4. How much difference will it make? 5. What's the price tag? ❖ Based on cost-effectiveness analysis and cost-benefit analysis.

Framework	Year	Description
Local Economic Multiples	n/a	❖ A central concept in Keynesian and post-Keynesian economics. ❖ A factor of proportionality that measures how much an endogenous variable changes in response to a change in some exogenous variable. ❖ Based on the idea that dollars spent in locally owned stores will affect the local economy two or three times more in comparison to dollars spend in national retailers.
Measuring Impact Framework	2008	❖ Designed to help corporations understand their contributions to society and to use this understanding to inform their operational and long-term investment decisions, and to have better-informed conversations with stakeholders. ❖ Based on a four-step methodology that attempts to merge the business perspectives of its contribution to development with the societal perspectives of what is important where that business operates. ❖ Requires consultation among internal and external stakeholders.
Millennium Development Goal (MDG)-Scan	2009	❖ Designed for corporations to measure the positive contribution to the Millennium Development Goals (MDGs) and demonstrate their role in the global initiative to reach these eight MDGs. ❖ Measures each corporation's MDG impact by entering critical data on core business and community investment activities. Once the corporation approves the publication of its results, they will be publicly visible. ❖ Real-time results generation quickly provides easy-to understand insights on a global, country, or sector basis.
Measuring Impacts Toolkit	2004	❖ Provides a way for corporations to look at the impact of volunteering on the volunteer, the service user, the corporation, and the wider community. ❖ Allows for comparison of results over time. ❖ Provides positive and negative results. ❖ Allows intended and unintended impacts to be explored.
Ongoing Assessment of Social Impact (OASIS)	1999	❖ A customized, comprehensive, and ongoing social management information system. ❖ Entails both designing an information management system that integrates with non-profit agencies' information tracking practices and needs and implementing the tracking process to track progress on short- to medium-term outcomes.
Participatory Impact Assessment	Early 1990s	❖ Seeks to answer the question: "What difference are we making?" through a participatory approach for measuring impact on livelihoods. ❖ Offers a tool for discovering what change has occurred and a way of understanding why it has occurred. ❖ Does not aim to provide a rigid or detailed step-by-step formula or set of tools to carry out project impact assessments, but describes an eight-stage approach, and presents examples of tools which may be adapted to different contexts.
Poverty Social Impact Assessment (PSIA)	2000	❖ A systematic analytical approach to the analysis of the distributional impact of policy reforms on the well-being of different stakeholder groups, with a particular focus on the poor and vulnerable. ❖ Not a tool for impact assessment in and of itself, but rather a process for developing a systematic impact assessment for a given project. ❖ Emphasizes the importance of setting up the analysis by identifying the assumptions on which the programme is based, the transmission channels through which programme effects will occur, and the relevant stakeholders and institutional structures
Public Value Scorecard (PVSc)	2003	❖ Based on the concept of the Balanced Scorecard, with three crucial differences: 1. In the PVSc, the ultimate value to be produced by the organization is measured in non-financial terms. 2. The PVSc focuses not just on customers who pay for the service, or clients who benefit from the non-profit's operations, but also on the third-party funders. 3. The PVSc focuses attention on productive capabilities for achieving large social results outside the boundary of the non-profit itself.
Robin Hood Foundation Benefit-Cost Ratio	2004	❖ Seeks to know the value of similar and dissimilar programmes. ❖ Consits of: 1. A common measure of success for programmes of all types, 2. A benefit/cost ratio is calculated for the programme, dividing the estimated total earnings boost by the size of Robin Hood's grant. The ratio for each grant measures the value it delivers to poor people per dollar of cost to Robin Hood – comparable to the commercial world's rate of return.

Framework	Year	Description
Social Compatibility Analysis (SCA)	2003	• Defines objective criteria according to which social compatibility is evaluated. • Follows a three-step approach: 1. Systems are divided into a number of subsystems (e.g. a product could be divided into subsystems of life cycle phases). 2. Relevant evaluation criteria are selected. 3. Subsystems are asssigned to classes (highly relevant social problems to no relevance).
Social Cost-Benefit Analysis (SCBA)	n/a	• A traditional economic tool for performance management adapted to include impacts on society. • Costs and social impacts of an investment are expressed in monetary terms and then assessed according to one or more of three measures: 1. Net present value (the aggregate value of all costs, revenues, and social impacts, discounted to reflect the same accounting period). 2. Benefit-cost ratio (the discounted value of revenues and positive impacts divided by discounted value of costs and negative impacts). 3. Internal rate of return (the net value of revenues plus impacts expressed as an annual percentage return on the total costs of the investment).
Social Cost Effectiveness Analysis (SCEA)	n/a	• A traditional economic tool for performance management adapted to include impacts on society. • Aims to quantify how factors (e.g. intervention cost, number of people reached, risk behaviors, and the effectiveness of the intervention in changing behavior) combine to determine the overall value of a programme. • Can determine whether an intervention is cost-saving or cost-effective.
Social e-valuator	2007	• A web-based tool based on the Social Return on Investment (SROI) methodology (see 4 lines below).
Social Footprint	2006	• A context-based measurement tool that takes actual human and social conditions in the world into account as a basis for measuring the social sustainability performance of corporations. • Can be seen as an adaptation of the concept of ecological footprint, in that both attempt to measure gaps. • Numerators express actual impacts on vital capitals in the world, and denominators express norms for what such impacts ought to be in order to ensure human well-being.
Social Impact Assessment (SIA)	1994	• Includes adaptive management of impacts, projects, and policies (as well as prediction, mitigation, and monitoring) and therefore needs to be involved (at least considered) in the planning of the project or policy from inception. • Can be applied to a wide range of interventions and actors. • Understood to be an umbrella or overarching framework that embodies all human impacts.
Social Return Assessment (SRA)	2000	• Entails tracking progress specifically on the number and quality of jobs created by PCV's portfolio corporations. • Method is separate from financial performance assessment.
Social Return on Investment (SROI)	1996	• Places a dollar value on ventures in its portfolio with social as well as market objectives. • Combines tools of benefit-cost analysis, the method economists use to assess non-profit projects and programmes, and the tools of financial analysis used in the private sector. • Accessible to a broad range of users, substituting readily understood terms and methods for technical jargon and complicated techniques.
Socio-Economic Assessment Toolbox (SEAT)	2003	• Builds upon a number of existing steps to provide a unique approach: 1. Profiling an organization's operations and host community. 2. Identifying and engaging with stakeholders. 3. Assessing the impacts of operations – both positive and negative – and the community's key socioeconomic development needs. 4. Developing a management plan to mitigate any negative aspects of an organization's presence and to make the most of the benefits operations bring. 5. Working with stakeholders and communities to help address some of the broader development challenges they would face even without an organisation's presence. 6. Producing a report with stakeholders to form the basis for ongoing engagement with and support for the community.

Framework	Year	Description
Stakeholder Value Added (SVA)	2001	❖ Based on the stakeholder approach or standard setting and strategic management of corporations, which is used to analyse relations between stakeholders and corporations. ❖ Measures the contribution to corporation value due to stakeholder relations (stakeholder value) in four steps: 1/2. Calculate the return on stakeholder (RoSt – the stakeholder's relative value contribution to the value of the corporation) for the corporation in question and the reference corporation (e.g. market average). 3. Subtract RoSt of the reference corporation from the corporation in question. 4. Multiply the value from step 3 by the corporation's stakeholder costs to obtain the stakeholder value added.
Toolbox for Analyzing Sustainable Ventures in Developing Countries	2009	❖ Answers questions related to the identification of opportunities, the understanding of the determinants of success, and the assessment of costs and benefits that appear repeatedly. ❖ Can be used to systematically identify, evaluate, advise, and promote sustainable ventures. ❖ Addresses initiatives that support sustainable ventures including donor programmes, award schemes, private and public investors, professional education programmes, and policy makers. ❖ Responds to three questions that appear repeatedly in the process of building and managing a sustainable venture: 1. Where are opportunities to create value by meeting needs better and more efficiently? 2. What factors determine the success of the venture? 3. What are costs and benefits of the venture for the business, society, and the environment?
Wellventure Monitor™	2006	❖ Clarifies how the target group benefits from the project, as well as how the corporation, employees, and social organization gains. ❖ Makes it possible to see the long-term benefits of community investments by combining the sum of impacts from multiple projects. ❖ Encourages organisations to create a survey of the project to be completed by funders, non-profits, and target groups.

References: [8, 9]

8.2 Details of the search strategy

Search strategy for Cochrane

ID	Search
#1	Return on Investment* (Word variations have been searched)
#2	SROI:ti,ab,kw (Word variations have been searched)
#3	"social impact" near (measur* or assess* or evaluat* or monitor* or analy*) (Word variations have been searched)
#4	#1 or #3
#5	intervention* or program* or treatment* or therap* or technolog* or service* or measure* (Word variations have been searched)
#6	#4 and #5
#7	newborn* or neonate* or baby or babies or toddler* or infant* or child* or adolescent* or teen* or young person* or young people or youth or paediatric or pediatric* (Word variations have been searched)
#8	#6 and #7

48 Hits

Search strategy for CRD (Centre for Research and Dissemination)

1	(Return on Investment*)
2	(SROI)
3	(social impact NEAR (measur* OR assess* OR evaluat* OR monitor* OR analy*))
4	#1 OR #3
5	(newborn* OR neonate* OR baby OR babies OR toddler* OR infant* OR child* OR adolescent* OR teen* OR young person* OR young people OR youth OR pediatric* OR paediatric*)
6	#4 AND #5

14 Hits

Search strategy for EconLit

No.	Query	Results
S1	Return on Investment*	5,712
S2	TI SROI OR AB SROI	8
S3	social impact N5 (measur* OR assess* OR evaluat* OR monitor* OR analy*)	610
S4	S1 OR S2 OR S3	6,317
S5	intervention* OR program* OR treatment* OR therap* OR technolog* OR service* OR measure*	472,852
S6	S4 AND S5	2,776
S7	TI newborn* OR neonate* OR baby OR babies OR toddler* OR infant* OR child* OR adolescent* OR teen* OR young person* OR young people OR youth OR pediatric* OR paediatric	13,677
S8	AB newborn* OR neonate* OR baby OR babies OR toddler* OR infant* OR child* OR adolescent* OR teen* OR young person* OR young people OR youth OR pediatric* OR paediatric*	26,883
S9	(AB newborn* OR neonate* OR baby OR babies OR toddler* OR infant* OR child* OR adolescent* OR teen* OR young person* OR young people OR youth OR pediatric* OR paediatric*) AND (S7 OR S8)	31,628
S10	S6 AND S9	93

93 Hits

Search strategy for Embase

No.	Query Results	Results	Date
#12	return on investment*' OR sroi:ti,ab OR impact' NEAR/4 (measur* OR assess* OR evaluat* OR monitor* OR analy*) AND (intervention* OR program* OR treatment* OR therap* OR technolog* OR service* OR measure* OR 'health program'/exp OR 'treatment'/exp OR 'therapy'/exp OR 'medical technology'/exp OR 'health service'/exp) AND ([adolescent]/lim OR [child]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim) OR ('return on investment*' OR sroi:ti,ab OR 'social impact' NEAR/4 (measur* OR assess* OR evaluat* OR monitor* OR analy*) AND (intervention* OR program* OR treatment* OR therap* OR technolog* OR service* OR measure* OR 'health program'/exp OR 'treatment'/exp OR 'therapy'/exp OR 'medical technology'/exp OR 'health service'/exp) AND (newborn* OR neonate* OR toddler* OR infant* OR child* OR adolescent* OR teen* OR 'young person*' OR pediatric* OR paediatric* OR 'newborn'/exp OR newborn OR 'neonate'/exp OR neonate OR 'baby'/exp OR baby OR babies OR 'toddler'/exp OR toddler OR 'infant'/exp OR infant OR 'child'/exp OR child OR 'adolescent'/exp OR adolescent OR teen OR 'young person' OR 'young people'/exp OR 'young people' OR 'youth'/exp OR youth OR 'pediatric'/exp OR pediatric OR 'paediatric'/exp OR paediatric))	227	9 Jun 2017
#11	'return on investment*' OR sroi:ti,ab OR 'social impact' NEAR/4 (measur* OR assess* OR evaluat* OR monitor* OR analy*) AND (intervention* OR program* OR treatment* OR therap* OR technolog* OR service* OR measure* OR 'health program'/exp OR 'treatment'/exp OR 'therapy'/exp OR 'medical technology'/exp OR 'health service'/exp) AND (newborn* OR neonate* OR toddler* OR infant* OR child* OR adolescent* OR teen* OR 'young person*' OR pediatric* OR paediatric* OR 'newborn'/exp OR newborn OR 'neonate'/exp OR neonate OR 'baby'/exp OR baby OR babies OR 'toddler'/exp OR toddler OR 'infant'/exp OR infant OR 'child'/exp OR child OR 'adolescent'/exp OR adolescent OR teen OR 'young person' OR 'young people'/exp OR 'young people' OR 'youth'/exp OR youth OR 'pediatric'/exp OR pediatric OR 'paediatric'/exp OR paediatric)	227	9 Jun 2017
#10	newborn* OR neonate* OR toddler* OR infant* OR child* OR adolescent* OR teen* OR 'young person*' OR pediatric* OR paediatric* OR 'newborn'/exp OR newborn OR 'neonate'/exp OR neonate OR 'baby'/exp OR baby OR babies OR 'toddler'/exp OR toddler OR 'infant'/exp OR infant OR 'child'/exp OR child OR 'adolescent'/exp OR adolescent OR teen OR 'young person' OR 'young people'/exp OR 'young people' OR 'youth'/exp OR youth OR 'pediatric'/exp OR pediatric OR 'paediatric'/exp OR paediatric	4,531,292	9 Jun 2017
#9	'newborn'/exp OR newborn OR 'neonate'/exp OR neonate OR 'baby'/exp OR baby OR babies OR 'toddler'/exp OR toddler OR 'infant'/exp OR infant OR 'child'/exp OR child OR 'adolescent'/exp OR adolescent OR teen OR 'young person' OR 'young people'/exp OR 'young people' OR 'youth'/exp OR youth OR 'pediatric'/exp OR pediatric OR 'paediatric'/exp OR paediatric	3,914,947	9 Jun 2017
#8	newborn* OR neonate* OR baby OR babies ORtoddler* OR infant* OR child* OR adolescent* OR teen* OR 'young person*' OR 'young people' OR youth OR pediatric* OR paediatric*	4,489,816	9 Jun 2017
#7	'return on investment*' OR sroi:ti,ab OR 'socialimpact' NEAR/4 (measur* OR assess* OR evaluat* OR monitor* OR analy*) AND (intervention* OR program* OR treatment* OR therap* OR technolog* OR service* OR measure* OR 'health program'/exp OR 'treatment'/exp OR 'therapy'/exp OR 'medical technology'/exp OR 'health service'/exp) AND ([adolescent]/lim OR [child]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim)	118	9 Jun 2017
#6	'return on investment*' OR sroi:ti,ab OR 'social impact' NEAR/4 (measur* OR assess* OR evaluat* OR monitor* OR analy*) AND (intervention* OR program* OR treatment* OR therap* OR technolog* OR service* OR measure* OR 'health program'/exp OR 'treatment'/exp OR 'therapy'/exp OR 'medical technology'/exp OR 'health service'/exp)	1,687	9 Jun 2017
#5	intervention* OR program* OR treatment* OR therap* OR technolog* OR service* OR measure* OR 'health program'/exp OR 'treatment'/exp OR 'therapy'/exp OR 'medical technology'/exp OR 'health service'/exp	17,482,697	9 Jun 2017
#4	'return on investment*' OR sroi:ti,ab OR 'socialimpact' NEAR/4 (measur* OR assess* OR evaluat* OR monitor* OR analy*)	1,928	9 Jun 2017
#3	social impact' NEAR/4 (measur* OR assess* OR evaluat* OR monitor* OR analy*)	188	9 Jun 2017
#2	sroi:ti,ab	28	9 Jun 2017
#1	'return on investment*'	1,718	9 Jun 2017

227 Hits

Search strategy for Medline

1	Return on Investment*.mp. (1392)
2	SROI.ti,ab. (24)
3	(social impact adj5 (measur* or assess* or evaluat* or monitor or analy*)).mp. (167)
4	1 or 2 or 3 (1570)
5	(intervention* or program* or treatment* or therap* or technolog* or service* or measure?).mp. (9075818)
6	4 and 5 (1204)
7	limit 6 to ("all infant (birth to 23 months)" or "all child (0 to 18 years)" or "all adult (19 plus years)" or "newborn infant (birth to 1 month)" or "infant (1 to 23 months)" or "preschool child (2 to 5 years)" or "child (6 to 12 years)" or "adolescent (13 to 18 years)") (296)
8	(newborn* or neonate* or baby or babies or toddler* or infant* or child* or adolescent* or teen* or young person* or young people or youth or p?ediatric*).mp. (3870525)
9	6 and 8 (185)
10	7 or 9 (346)
11	remove duplicates from 10 (330)

330 Hits

Search strategy for PsycInfo

1	Return on Investment*.mp. (708)
2	SROI.ti,ab. (16)
3	(social impact adj5 (measur* or assess* or evaluat* or monitor or analy*)).mp. (161)
4	1 or 2 or 3 (869)
5	(intervention* or program* or treatment* or therap* or technolog* or service* or measure?).mp. (1865306)
6	4 and 5 (628)
7	limit 6 to (100 childhood <birth to age 12 yrs> or 120 neonatal <birth to age 1 mo> or 140 infancy <2 to 23 mo> or 160 preschool age <age 2 to 5 yrs> or 180 school age <age 6 to 12 yrs> or 200 adolescence <age 13 to 17 yrs>) (39)
8	(newborn* or neonate* or baby or babies or toddler* or infant* or child* or adolescent* or teen* or young person* or young people or youth or p?ediatric*).mp. (877024)
9	6 and 8 (56)
10	7 or 9 (70)

70 Hits

Search strategy for Turning Research Into Practice (TRIP)

("Return on Investment*" OR "SROI") AND intervention* OR program* OR treatment* OR therap* OR technolog* OR service* OR measure*) AND newborn* OR neonate* OR baby OR babies OR toddler* OR infant* OR child* OR adolescent* OR teen* OR young person* OR young people OR youth OR pediatric* OR paediatric*)

102 Hits

Search strategy for Web of Science (WoB)

No.	Query	Results
#1	TS="Return on Investment*"	4,339
#2	TOPIC: (SROI)	57
#3	TS=("social impact" NEAR/5 (measur* OR assess* OR evaluat* OR monitor OR analy*))	793
#4	#3 OR #2 OR #1	5,150
#5	TOPIC: (intervention* OR program* OR treatment* OR therap* OR technolog* OR service* OR measure*)	12,958,904
#6	#5 AND #4	2,999
#7	TOPIC: (newborn* OR neonate* OR baby OR babies OR toddler* OR infant* OR child* OR adolescent* OR teen* OR young person* OR young people OR youth OR pediatric* OR paediatric*)	2,277,056
#8	#7 AND #6	151

151 Hits

8.3 Results of the programmes and respective studies in original currencies

Table 8.3-1: Results of the interventions/programmes and the respective studies in original currencies (part 1)

Name of interevntion/programme	Better Beginnings, Better Future (BBBF) Initiative[89]	Boston Children's Hospital Community Asthma Initiative (CAI)	Breakfast Club, provided by Daystar Foundation[90]	Carolina Abecedarian Project (ABC) and Carolina Approach to Responsive Education (CARE)	Child-Parent Center (CPC) Education Program
Author, year, reference number	Peters 2016 [19]	Bhaumik 2013 [16]	Varua 2009 [29]	García 2016 [24]	Reynolds 2002 [20] Reynolds 2011 [21][91]
Costs for intervention, per participant[92] (only programme costs)	$ 2,505	$ 2,492[93] $ 254,196 (in total, per year)	n/a	$ 18,514	**Reynolds 2002:** Preschool | School-age | Extended programme: $ 6,692 | 2,981 | 4,057 **Reynolds 2011:** Preschool | School-age | Extended programme: $ 8,512 | 3,792 | 5,163
Total costs for intervention, per participant[92] (including training, implementation, etc.)	$ 43,060	n/a	$ 1,163[93] $ 581,294.10 (in total)	$ 92,570	n/a
Costs for control, per participant [92] (only interventional costs)	$ 0[94]	$ 0[94]	n/a	n/a	n/a
Total costs control, per participant[92] (including costs for diseases, etc.)	$ 49,391	n/a	n/a	n/a	n/a
Avoided costs/benefits in total, per participant	$ 6,331	$ 4,601 [93] $ 469,296 (in total)	$ 8,323[93] $ 4,161,311 (in total)	n/a	**Reynolds 2002:** Preschool | School-age | Extended programme: $ 47,759 | 4,944 | 24,772 **Reynolds 2011:** Preschool | School-age | Extended programme: $ 92,220 | 15,064 | 42,520

[89] Currency is in Canadian Dollars.

[90] Currency is in Australian Dollars.

[91] Reynolds 2002 showed follow-up results at age 21 and Reynolds 2011 showed follow-up results at age 26 of participants.

[92] If not otherwise declared, costs are presented per participant.

[93] Own calculations, based on study information.

[94] Since control group did not receive any intervention, it was assumed that the interventional costs for the control group were 0.

Name of interevntion/programme	Better Beginnings, Better Future (BBBF) Initiative[89]	Boston Children's Hospital Community Asthma Initiative (CAI)	Breakfast Club, provided by Daystar Foundation[90]	Carolina Abecedarian Project (ABC) and Carolina Approach to Responsive Education (CARE)	Child-Parent Center (CPC) Education Program
Avoided costs/benefits per category, per participant[92]	*Education:* $ 4,453 *Heatlh care/health services:* $ -894[95] *Social services/welfare:* $ 2,773	*Education:* $ 679[93] $ 69,259 (in total) *Economic status/earnings:* $ 608[93] $ 61,978 (in total) *Health care/health services*: $ 3,314 [93] $ 338,059 (in total)	*Health care/health services:* $ 737[93] $ 368,675 (in total) *Crime/justice:* $ 1,720[93] $ 3,225,00 (in total) *Others:* n/a[96]	n/a	**Reynolds 2002:** Preschool | School-age | Extended programme: *Education:* $ 4,315 | 3,318 | 4,234 *Economic status/earnings:* $ 27,760 | 991 | 11,650 *Health care/health services:* n/a *Social services/welfare*: $ 2,427 | 204 | 2,126 *Crime/justice:* $ 12,257 | 431 | 6,762 **Reynolds 2011:** Preschool | School-age | Extended programme: *Education:* $ 6,491 | 4,377 | 5,907 *Economic status/earnings:* $ 28,844 | 8,190 | 13,888 *Health care/health services:* $ 3,294 | 0 | 429 *Social services/welfare*: $ 11,717 | 1,271 | 7,376 *Crime/justice:* $ 42,462 | 1,489 | 15,368
Net value, per participant[92] (="Avoided costs/benefits in total" minus "(total) costs for intervention")	$ 3,826	$ 2,109[93] $ 215,100 (in total)	$ 7,160[93] $ 3,580,016 (in total)	$ 636,674	**Reynolds 2002:** Preschool | School-age | Extended programme: $ 41,067 | 1,963| 20,715 **Reynolds 2011:** Preschool | School-age | Extended programme: $ 83,708 | 11,273 | 37,357
(S)ROI	2.50[97]	1.85	7.16	7.33	**Reynolds 2002:** Preschool | School-age | Extended programme: 7.14 | 1.66 | 6.11 **Reynolds 2011:** Preschool | School-age | Extended programme: 10.83 | 3.97 | 8.24

Abbreviations: CBA=cost -benefit analysis; CG=control group; ED = Emergency department; IG=intervention group; n/a=not applicable; QoL=Quality of life, yrs.=years

[95] Costs were higher than benefits.

[96] There were further avoided costs. However, these were not properly mentioned in the study.

[97] Calculated until the children were 18 years old.

Table 8.3-1: Results of the interventions/programmes and the respective studies in original currencies (part 2)

Name of interevntion/programme	Communities That Care (CTC)	Community Safer Sex Project (CSSP)	Frühe Hilfen	Grow Together	Guter Start ins Kinderleben
Author, year, reference number	Kuklinski 2012 [18]	Bradly 2010 [22]	Juraszovich 2017 [27]	Pervan-Al Soquaer 2016 [13]	Meier-Gräwe 2011 [28]
Costs for intervention, per participant[98] (only programme costs)	$ 642[93] $ 225,572 (per community)	n/a	€ 14,344-72,167	n/a	€ 7,274
Total costs for intervention, per participant[92] (including training, implementation, etc.)	$ 991 $ 637,014 (per community)	£ 5,694[99]	n/a	€ 24,762[93] € 371,437 (in total)	€ 34,105
Costs for control, per participant [92] (only interventional costs)	$ 0[94]	£ 0[94]	€ 0[94]	n/a	€ 0[94]
Total costs control, per participant[92] (including costs for diseases, etc.)	n/a	n/a	€ 319,294-1,824,360	n/a	€ 432,950-1,159,295
Avoided costs/benefits in total, per participant	$ 5,250	£ 49,800[99]	n/a	€ 548,690[93] € 8,230,353 (in total)	n/a
Avoided costs/benefits per category, per participant[92]	*Economic status/earnings:* n/a *Health care/health services:* $ 812 *Crime/justice:* $ 4,438	n/a	n/a	*Clients:*[100] € 16,972[93] €254,580 (in total) *Children:* € 440,813[93] € 6,612,200 (in total) *Employees:* € 536[93] € 8,039 (in total) *Labour office:* n/a *Government:* € 2,909[93] € 43,637 (in total)	n/a

[98] If not otherwise declared, costs are presented per participant.

[99] It was not exactly stated whether the given costs are per county or per participant. However, since the costs per county were considered too low, it was assumed the costs are per participant.

[100] For the "Grow Together" study, the costs were assigned to the stakeholders and it was not possible to clearly assign the costs to the categories.

Name of interevntion/programme	Communities That Care (CTC)	Community Safer Sex Project (CSSP)	Frühe Hilfen	Grow Together	Guter Start ins Kinderleben
Avoided costs/benefits per category, per participant[92] *(continuation)*				*Social insurance*: € 50,308[93] € 754,626 (in total) *City of Vienna:* € 51,687[93] € 775,311 (in total) *Donators:* n/a *Project:* € -16,820 [93,95] € -252,360[95] (in total) *Others*: € 2,288[93] € 34,320 (in total)	
Net value, per participant[92] (="Avoided costs/benefits in total" minus "(total) costs for intervention")	$ 4,259	£ 44,106[99]	€ 299,272-1,752,193[101]	€ 523,928[93] € 7,858,916 (in total)	€ 398,845-1,125,190[101]
(S)ROI	5.30	8.75	16.0-25.0	22.16	13.0-34.0

Abbreviations: CBA=cost -benefit analysis; CG=control group; ED = Emergency department; IG=intervention group; n/a=not applicable; QoL=Quality of life, yrs.=years

[101] Calculated by "total costs control" minus "(total) costs intervention".

Table 8.3-1: Results of the interventions/programmes and the respective studies in original currencies (part 3)

Name of interevntion/programme	Hepatitis B vaccination in Italy	High/Scope Perry Preschool Programme	Moving Parents And Children Together (M-PACT)	Pine River Institue Program (PRI)[89]	Teens and Toddlers (T&T) Programme
Author, year, reference number	Boccalini 2013 [17]	Belfield 2006 [3] Heckman 2010 [1] Schweinhart 2013 [2][102]	Interface Enterprise 2014[26]	Hackett 2017[25]	COUI 2010 [23]
Costs for intervention, per participant[103] (only programme costs)	€ 872,002,316 (in total)	**Belfield 2006:** $ 15,166 | 14,367 (at 3 | 7% discount rate) **Heckman 2010:** $ 17,759 **Schweinhart 2013:** $ 20,019	£ 802	n/a	n/a
Total costs for intervention, per participant[92] (including training, implementation, etc.)	€ 699,743,417 | 1,098,883,535 (in total, after 20|68 yrs.)	**Belfield 2006:** n/a **Heckman 2010:** n/a **Schweinhart 2013:** n/a	£ 1,852	$ 11,933[93] $ 894,965 (in total)	£ 1,943[93] £ 1,045,555 (in total)
Costs for control, per participant [92] (only interventional costs)	€ 0[94]	$ 0[104]	n/a	$ 0[94]	£ [94]
Total costs control, per participant[92] (including costs for diseases, etc.)	€ 1,490,343,69 | 3,249,472,570 (in total, after 20|68 yrs.)	n/a	n/a	n/a	n/a
Avoided costs/benefits in total, per participant	€ 790,600,281 | 2,150,589,035 (in total, after 20|68 yrs.)	**Belfield 2006:** $ 244,812 | 98,767 (at 3 | 7% discount rate) **Heckman 2010:** $ 152,813 **Schweinhart 2013:** $ 341,732	£ 2,213	$ 96,976[93] $ 7,273,226 (in total)	£ 10,223[93] £ 5,500,000 (in total)

[102] Belfield 2006: calculations were estimated up to age 65 of participants, based on follow-up data at age 40; Heckman 2010: Re-evaluation of results for age 65, using follow-up data at age 40 of participants and different statistical methods; Schweinhart 2013: most recent calculations, using follow-up data at age 40 of participants.

[103] If not otherwise declared, costs are presented per participant.

[104] Since control group did not receive any intervention, it was assumed that the interventional costs for the control group were 0.

Name of interevntion/programme	Hepatitis B vaccination in Italy	High/Scope Perry Preschool Programme	Moving Parents And Children Together (M-PACT)	Pine River Institue Program (PRI)[89]	Teens and Toddlers (T&T) Programme
Avoided costs/benefits per category, per participant[92]	n/a	**Belfield 2006:** *Education:* $ 9,724 | 5,928 (at 3|7% dicount rate) *Economic status/earnings*: $ 64,526 | 22,739 (at 3|7% discount rate) *Social services/welfare*: $ 2,285 | 1,498 (at 3|7% discount rate) *Crime/justice:* $ 171,473 | 69,758 (at 3|7% discount rate) **Heckman 2010:** *Education:* $ 4,325 *Economic status/earnings:* $ 78,010 *Social services/welfare:* $ 3,698 *Crime/justice:* $ 66,780 **Schweinhart 2013:** n/a[105]	*Education:* £ 960 *Economic status/earnings*: £ 627 *Health care/health services:* £ 64 *Social services/welfare*: £ 562	*Economic status/earnings*: $ 61,627[93] $ 4,622,052 (in total) *Health care/health services:* $ 14,499 [93] $ 1,087,461 (in total) *Crime/justice:* $ 20,850[93] $ 1,563,713 (in total)	n/a
Net value, per participant[92] (="Avoided costs/benefits in total" minus "(total) costs for intervention")	€ -81,402,035[106] | 1,278,586,719 (in total, after 20|68 yrs.)	**Belfield 2006:** $ 229,645 | 84,400 (at 3|7% discount rate) **Heckman 2010:** $ 135,054 **Schweinhart 2013:** $ 341,732	£ 361	$ 85,043[93] $ 6,378,261 (in total)	£ 8,280[93] £ 4,454,445 (in total)
(S)ROI	1.02 | 2.47 (after 20 | 68 yrs.)	**Belfield 2006:** 16.14 | 6.87 (at 3|7% discount rate) **Heckman 2010**: 8.3-9.2 **Schweinhart 2013:** 16.14	1.19	7.0	5.52

Abbreviations: CBA=cost -benefit analysis; CG=control group; ED = Emergency department; IG=intervention group; n/a=not applicable; QoL=Quality of life, yrs.=years

[105] It was only stated that 88% of the return came from crime savings.

[106] For the 20 years horizon, the costs were higher than the savings/benefits.

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