

The economic impact of the arts on the health and wellbeing of children and young people: A systematic review

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Abstract

Background

Arts engagement can improve children and young people's health and wellbeing, but the economic impacts from these improvements are rarely reported. We aimed to systematically review the evidence and assess reporting quality.

Methods

CINAHL, Embase.com, MEDLINE, PsycInfo, Web of Science, Google, Google Scholar, and Semantic Scholar were searched for records published between 2005 – 2025. Records were eligible if they involved an arts modality, reported economic outcomes, and participants were between ages 5 – 24. Reporting quality was assessed using design-specific checklists including AACODS checklist for grey literature and Consolidated Health Economic Evaluation Reporting Standards 2022 checklist. Findings were grouped by arts modality and synthesised through a narrative approach. Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 guidelines were followed.

Results

We screened 11,610 records and identified 14 eligible studies. Benefits from arts programmes were evidenced through economic modelling (£122 million – £800 million society-wide impacts), cost-utility analysis (95% probability of cost-effectiveness using \$50,000 willingness-to-pay threshold), benefit-cost ratios (returning 5.89 – 32 per monetary unit invested), social return on investment ratios (returning 1.98 – 7 per monetary unit invested), comparisons between groups (467 – 6,705 monetary units in healthcare savings), and qualitative data. Reporting quality in 11 studies was strong, with findings aligned to less well-reported studies.

Conclusions

Our findings support investment in the arts to improve health and wellbeing of children and young people. Limitations highlighted evidence from high-income countries only. Arts programme evaluations should consider using standardised measures for short- and long-term economic evaluations of wellbeing and well-becoming across the life-course.

Introduction

The health of children and young people is currently a serious concern, with reports of two or more health complaints rising sharply since 2018, most frequently related to psychological distress (OECD and European Commission 2024). In Europe, one in five young people aged 10 to 14 are in need of mental health support (UNICEF 2024). Beyond the individual's experience of poor health, this crisis threatens productivity and thriving of both future generations and institutions. Globally, mental health conditions in children and adolescents aged 0 to 19 were estimated to cost economies USD \$387.2 billion per year

through lost human capital (United Nations Children’s Fund 2021). Mental disorders are the main cause of years lived with disability (YLDs) and disability-adjusted life-years (DALYs) amongst young people aged 10 to 24 (Armocida et al. 2022), which increases healthcare costs and social welfare expenditure (Amand-Eeckhout 2023). Treatments are often unavailable or limited to either medication or talking therapies – interventions that can have increased risk of adverse effects (Y. Zhang et al. 2025), engagement barriers (Redburn and Hayes 2024), and high incidences of drop-out (de Soet et al. 2024). Available support is particularly limited in addressing the diverse needs of young people (de Soet et al. 2024).

Arts engagement is increasingly recognised in policy documents as a valuable approach to preventing and reducing risks to health and wellbeing (European Commission: Directorate-General for Research and Innovation (European Commission) 2023; Fancourt et al. 2020; Fancourt and Finn 2019). The arts can support mental health, social connection, and overall wellbeing, along with a wide range of other health benefits. For example, a recent umbrella review and meta-analyses found arts engagement has medium effects on psychological, physical, social and cognitive outcomes for diverse client populations, including those with mental health conditions (SMD 0.53, 95% CI 0.39–0.68), those with cancer care needs (SMD 0.52, 95% CI 0.38–0.66) or cardiovascular diseases (SMD 0.52, 95% CI 0.35–0.71), and small to medium effects for people with neurological conditions (neurodevelopmental or neurodegenerative (SMD 0.40, 95% CI 0.30–0.50)(de Witte et al. 2025). These benefits relate to engagement in multiple modalities, including visual arts, craft and design, music, dance and movement, theatre and performance, literary arts, and media-based arts, derived either individually or combined with non-arts activities (Sonke et al. 2023). The arts can involve everyday informal engagement as well as structured programmes delivered by arts teachers, community artists, arts and health facilitators, or arts therapists (Karkou et al. 2022). They can be seen as active, such as painting, dancing, or composing music, or receptive, such as attending performances or exhibitions (Rena et al. 2023).

For children and young people (CYP) in particular, systematic reviews and meta-analyses have reported benefits from the arts such as reductions in anxiety and depression, and improvements in wellbeing and quality of life (B. Zhang et al. 2024; B. Zhang et al. 2025; Cheung et al. 2026), reductions in blood pressure and heart rate (Cheung et al. 2026), and a likely improvement in quality of sleep (Moula et al. 2020). While these findings are promising, a key question remains on whether such reported outcomes also provide economic benefits to individuals and society.

Economic considerations are important for policymakers, commissioners, and practitioners aiming to implement arts-based interventions in health, education, or community settings. Understanding cost-effectiveness and wider economic impacts from arts engagement can help guide investment decisions and policy development, but further clarity is needed about what is already known. This is the first comprehensive review of the literature on the economic impact of the arts on the health and wellbeing among CYP across all artistic modalities, settings, and population subgroups.

Methods

Review objectives

Our objectives were to systematically review the current evidence on economic impacts of the arts on the health and wellbeing of CYP aged 5 to 24 years, assess the quality of the included studies and grey literature, and explore variations in economic evidence to answer the question:

What are the economic impacts of the arts when used to improve the health and wellbeing of CYP?

We aimed to report all economic outcomes, grouped by types of artistic modalities (visual arts, craft, and design, music, dance and movement, theatre and performance, literary arts and media-based arts) found in the literature.

Our protocol was registered in the international prospective register of systematic reviews (PROSPERO) prior to conducting searches, which detailed eligibility criteria, search strategies, screening and study selection, data extraction, data synthesis, and quality assessment. We used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guideline (Page et al. 2021) when drafting this review. Completed PRISMA checklists are in Supplementary File 1.

Eligibility Criteria

Studies were eligible if they reported on CYP between the ages of 5 to 24, examined arts programmes or interventions classified within a defined arts modality that were not combined with non-arts activities, and reported any relevant economic outcomes. Mixed-age studies were included if at least 80% of participants fell within the target age range, or if subgroup data were available. A table detailing the eligibility criteria using the PICOS framework (Population, Intervention/Exposure, Comparison, Outcome, and Study design) is in Supplementary File 2.

Search Strategy

The search strategies combined terms related to arts modalities, children and young people, and economic evaluations. Full search strategies are in Supplementary File 3.

Peer-reviewed articles published after January 2005 were identified through searches of CINAHL, Embase.com, MEDLINE, PsycInfo, and Web of Science Core Collection. Grey literature was identified using Google and Google Scholar, with the first five pages of results from eight grey literature searches copied to an Excel spreadsheet and screened for relevance. Website access dates were 18th to 25th June 2025. Backward citation searches were conducted on systematic review articles and all records which progressed to full text screening. Records that were eligible after full text screening were forward citation searched through Web of Science. Finally, Semantic Scholar was searched using an AI-assisted systematic reviews tool, *Elicit* (Elicit: AI for scientific research 2026).

Screening and study selection

Search results were uploaded to *Rayyan* (Rayyan: AI-Powered Systematic Review Management Platform 2026) for screening. The selection process was informed by best practice guidelines (Polanin et al. 2019), with disagreements resolved through discussion. All titles and abstracts were independently screened by pairs of reviewers using an abstract screening tool developed after all three reviewers had screened the same 20 records. Regular meetings were held to minimise coder drift and to ensure ongoing consensus. After all titles and abstracts had been screened, two reviewers independently assessed the full texts of potentially eligible studies against the eligibility criteria. The final selection was checked by three reviewers.

Data extraction and synthesis

Initial data extraction was undertaken in *Elicit* using 'prompts' (Hilkenmeier et al. 2025) to identify relevant information from the included studies. These data were exported from *Elicit* as data extraction tables. Two reviewers checked all extracted data against the original study articles. Any missing or inaccurate information was manually corrected. Disagreements on relevance were resolved through discussion, and an Excel spreadsheet was developed to compile the data. The main outcomes sought were study characteristics, costs and benefits of arts engagement for CYP, the type of economic evaluation and methodological choices present in the studies, and outcomes derived from social return on investment (SROI) studies. No additional information was sought from study authors.

Due to substantial heterogeneity across study designs, arts programmes, outcomes and valuation methods, meta-analysis was not feasible. Instead, findings were systematically summarised through a narrative synthesis, a textual approach chosen to explore relationships in the data within and between the studies. The narrative synthesis was supplemented by two tables to present key data on study characteristics and economic outcomes.

Quality assessment

Due to the heterogeneity in study designs and data, risk of bias and certainty of evidence were not formally assessed. Instead, checklists were used to assess the quality of reporting based on the included study designs: Joanna Briggs Institute (JBI) checklist for Randomised Controlled Trials (Timothy Hugh Barker et al. 2023), JBI checklist for Quasi-Experimental studies (Timothy H. Barker et al. 2024), the Social Return on Investment (SROI) quality framework for SROI studies (Hutchinson et al. 2018), the AACODS checklist for grey literature (Tyndall 2010; Tyndall 2008), and the Consolidated Health Economic Evaluation Reporting Standards (CHEERS) 2022 checklist for economic evaluations (Husereau et al. 2022).

Two reviewers assessed reporting quality, with disagreements resolved through discussion.

Results

Search results

Searches produced 10,549 peer-reviewed records from multiple databases. After deduplication, 7,395 were screened at a title and abstract level and 23 at a full text level. In addition, 800 records from grey literature searches, 160 records from Semantic Scholar, and all citations from 101 records were screened at a title and abstract level and 32 at a full text level.

In total, 14 studies were identified as meeting the inclusion criteria. Three were identified from the literature database search, five from the grey literature search, and six from backward citation searches. Reasons for study exclusion are in Supplementary File 4.

A completed PRISMA flow diagram is in Figure 1.

[Figure 1 around here]

Note: In this paper, the term ‘study’ refers to both peer-reviewed and grey literature. ‘Primary evidence’ refers to a primary data source used in a study. ‘Model’ refers to a simplified framework representing complex real-world economic processes. In this review, one study used three primary evidence sets to develop three distinct models (MODEL 3, MODEL 4a/4b & MODEL 5 in Frontier Economics (2024)).

Study characteristics

For all included studies, the country of publication, study design, population and programme or intervention details are presented in Table 1 (by publication year).

[Table 1 around here]

Country of publication

Eight studies were conducted in the UK, of which four were undertaken in England (Kara and Sheikh 2022; Johnson et al. 2011; Wickham 2008; Wilkin et al. 2005), two in Scotland (Scottish Government Social Research 2011; Glasgow Centre for Population Health 2015), one in Wales (Winrow and Edwards 2018), and one used three primary evidence sets from the USA and UK to develop three distinctive models for UK populations (Frontier Economics 2024).

The remaining six studies were conducted in each of the following countries (by date of publication): the USA (Sullivan et al. 2025), Ireland (S3 Solutions 2021), Spain (Montero-Ruiz et al. 2020), Australia (McGrath and Stevens 2019), Israel (Kocherov et al. 2016), and Sweden (Philipsson et al. 2013).

An infographic map of studies is in Figure 2.

[Figure 2 around here]

Study design

Study designs varied. A report to the UK Government used primary evidence in three economic models to estimate the per-person and society-wide impacts of various arts modalities and engagement (Frontier Economics 2024). SROI methods were used in four studies to evidence health, wellbeing, and wider societal benefits from arts programmes for a range of stakeholders (S3 Solutions 2021; McGrath and Stevens 2019; Winrow and Edwards 2018; Wickham 2008). Cost-benefit analyses were undertaken in two studies to evidence health, wellbeing, and wider societal benefits in relation to programme investment (Johnson et al. 2011; Glasgow Centre for Population Health 2015). Three studies evaluated specific arts programmes using differing methods and perspectives: lifetime benefit and benefit-cost ratios from individual and societal perspectives (Kara and Sheikh 2022); programme costs per-person from a societal perspective (Scottish Government Social Research 2011); and quotes from stakeholders to illustrate possible impacts for individual participants (Wilkin et al. 2005). Two randomised controlled trials (RCTs) measured differences between groups to demonstrate health system cost-savings from reduced healthcare service use (Montero-Ruiz et al. 2020; Kocherov et al. 2016). A cost-utility analysis used robust health economic evaluation methods to calculate the cost-effectiveness of a dance intervention from a societal perspective (Philipsson et al. 2013). Finally, an implementation study taking an education sector perspective calculated the per-pupil cost of school-based group art therapy and noted that the intervention was actively being incorporated in a school district (Sullivan et al. 2025).

Study population

The total number of CYP reported in the primary evidence was approximately 32,900. If we use the results from the three models in Frontier Economics (2024), which applied findings from primary evidence to distinct populations in the UK, the approximate number of CYP reported is 6,815,000.

Sample sizes varied significantly between the included studies, from 20 CYP in an SROI to UK-wide population modelling of 1.9 million CYP.

Demographic data were not reported in sufficient detail to calculate accurate measures of central tendency. The estimated overall range of ages engaging with the arts across the studies were 0 to 29 years old.

Primary evidence sources evaluated arts programmes available to CYP from general populations (n = 11), or available to CYP with mental or physical health needs (n = 5). The area in which arts programmes were available to general CYP populations were not reported in five of the primary data sources (MODEL 3, MODEL 4a/4b & MODEL 5 in Frontier Economics (2024); McGrath and Stevens 2019; Wickham 2008).

Four arts programmes were available to CYP from more deprived areas (Kara and Sheikh 2022; Winrow and Edwards 2018; Glasgow Centre for Population Health 2015; Scottish Government Social Research 2011). Two arts programmes were available to CYP in youth justice settings (Johnson et al. 2011; Wilkin et al. 2005). Two arts programmes were available to CYP with mental health needs (Sullivan et al. 2025; Philipsson et al. 2013). Two arts programmes were available to CYP with physical health needs (Montero-Ruiz et al. 2020; Kocherov et al. 2016). One arts programme was available to CYP with mental and/or physical health needs (S3 Solutions 2021).

Arts programmes or interventions

From the included primary evidence, the most common arts modality was mixed arts (MODEL 3 & MODEL 5 in Frontier Economics (2024); Kara and Sheikh 2022; S3 Solutions 2021; Johnson et al. 2011; Wilkin et al. 2005), where CYP were offered more than one art-forms within a single programme, or the reported outcomes were aggregated across multiple arts activities without distinguishing individual modalities. There were also studies in music (MODEL 4b in Frontier Economics (2024); Montero-Ruiz et al. 2020; Winrow and Edwards 2018; Glasgow Centre for Population Health 2015; Scottish Government Social Research 2011), visual arts, craft, and design (MODEL 4a in Frontier Economics (2024); Sullivan et al. 2025), dance/movement (Wickham 2008; Philipsson et al. 2013), and theatre/performance (McGrath and Stevens 2019; Kocherov et al. 2016).

Arts programmes or interventions were primarily facilitated by professionals, volunteers, or teachers trained in delivering the programme (n = 13). One intervention was self- or parent-administered (Montero-Ruiz et al. 2020). Two models were self-directed (MODEL 4a/4b & MODEL 5 in Frontier Economics (2024)). The frequency of intervention engagement ranged from daily to annual participation.

Arts programmes or interventions were hosted in schools (Sullivan et al. 2025; Kara and Sheikh 2022; Winrow and Edwards 2018; Wickham 2008), hospitals (Kocherov et al. 2016), local authority venues associated with youth justice system (Johnson et al. 2011; Wilkin et al. 2005), community centres (Scottish Government Social Research 2011), arts venues (McGrath and Stevens 2019; Philipsson et al. 2013), the family home (Montero-Ruiz et al. 2020), or more than one of these settings (Frontier Economics (2024); S3 Solutions 2021; Glasgow Centre for Population Health 2015).

Key economic findings

All included studies reported benefits from arts programmes outweighed the costs of investment, regardless of modality, population need or setting. The key economic findings were grouped by arts modality and presented in Table 2 to aid interpretation of findings within and between studies.

[Table 2 around here]

As data were extracted and compared, it became apparent there was insufficient detail to assess two of the original review protocol objectives, namely synthesising the economic impacts from reported types

of engagement (either receptive or active), or from specific age groups.

The substantial heterogeneity in the included primary evidence also prevented us from synthesising measurable effects from identified costs, outcomes, or valuation methods. Instead, individual health and wellbeing outcomes and financial valuation methods were categorised to allow classification of these items, included in Table 2.

The two most common outcomes were wellbeing derived from wider societal benefits and subjective wellbeing, reported in ten (Wilkin et al. 2005; Wickham 2008; Johnson et al. 2011; Scottish Government Social Research 2011; Glasgow Centre for Population Health 2015; Winrow and Edwards 2018; McGrath and Stevens 2019; S3 Solutions 2021; Kara and Sheikh 2022; Sullivan et al. 2025) and seven (MODEL 5 in Frontier Economics (2024); Wilkin et al. 2005; Glasgow Centre for Population Health 2015; McGrath and Stevens 2019; S3 Solutions 2021; Kara and Sheikh 2022; Sullivan et al. 2025) studies respectively. Self-esteem/confidence and resilience were reported in seven (MODEL 4a/4b in Frontier Economics (2024); Wilkin et al. 2005; Wickham 2008; Scottish Government Social Research 2011; Glasgow Centre for Population Health 2015; Winrow and Edwards 2018; McGrath and Stevens 2019) and four (Scottish Government Social Research 2011; Glasgow Centre for Population Health 2015; McGrath and Stevens 2019; S3 Solutions 2021) studies respectively. Outcomes relating to externalising behaviours or internalising problems were reported in six studies each (Scottish Government Social Research 2011; Philipsson et al. 2013; Glasgow Centre for Population Health 2015; McGrath and Stevens 2019; Kara and Sheikh 2022; Sullivan et al. 2025) and (MODEL 3 in Frontier Economics (2024); Scottish Government Social Research 2011; Glasgow Centre for Population Health 2015; Winrow and Edwards 2018; Kara and Sheikh 2022; Sullivan et al. 2025). Less common were healthcare resource use and trial specific health outcomes, found in three (Philipsson et al. 2013; Kocherov et al. 2016; Montero-Ruiz et al. 2020) and two (Kocherov et al. 2016; Montero-Ruiz et al. 2020) studies respectively. Quality of life and life expectancy were found in one study each (Philipsson et al. 2013) and (Glasgow Centre for Population Health 2015).

The most common financial valuation method was costing the overall programme or intervention, reported in eight studies (Wilkin et al. 2005; Johnson et al. 2011; Scottish Government Social Research 2011; Philipsson et al. 2013; McGrath and Stevens 2019; S3 Solutions 2021; Kara and Sheikh 2022; Sullivan et al. 2025). Estimates for relevant outcomes and financial proxies for outcomes were used in five studies each (Wilkin et al. 2005; Wickham 2008; Glasgow Centre for Population Health 2015; Winrow and Edwards 2018; Kara and Sheikh 2022) and (Wickham 2008; Glasgow Centre for Population Health 2015; Winrow and Edwards 2018; McGrath and Stevens 2019; S3 Solutions 2021). Estimates for societal costs and SROI discounting were reported in four studies each (Johnson et al. 2011; Scottish Government Social Research 2011; Glasgow Centre for Population Health 2015; Kara and Sheikh 2022) and (Wickham 2008; Winrow and Edwards 2018; McGrath and Stevens 2019; S3 Solutions 2021). Quality-Adjusted Life Year (QALY) benefits, costing individual inputs, and discounting over time were reported in three studies each (MODEL 3 in Frontier Economics (2024); Philipsson et al. 2013; Glasgow Centre for Population Health 2015) and (Wickham 2008; Glasgow Centre for Population Health 2015; Winrow and Edwards 2018) and (Philipsson et al. 2013; Winrow and Edwards 2018; Kara and Sheikh

2022). Wellbeing-Adjusted Life Year (WELLBY) benefits, estimates for wage premiums and tax revenue, and healthcare resource use cost savings were reported in two studies each (MODEL 4a/4b and MODEL 5 in Frontier Economics (2024)) and (Johnson et al. 2011; Kara and Sheikh 2022) and (Kocherov et al. 2016; Montero-Ruiz et al. 2020). Cost-effectiveness thresholds, healthcare resource use costs, productivity benefits, and social service use costs were reported in one study each (Philipsson et al. 2013) and (Philipsson et al. 2013) and (MODEL 5 in Frontier Economics (2024)) and (Glasgow Centre for Population Health 2015).

Arts modalities

Mixed Arts Interventions

Of the included primary evidence, six studies reported outcomes of programmes where CYP were offered more than one art-form, or a mix of arts activities without distinguishing individual modalities.

Three studies (Kara and Sheikh 2022; S3 Solutions 2021; Johnson et al. 2011) reported societal benefits ranging from 1.98 to 32 for each 1 monetary unit invested. All three studies conducted sensitivity analyses to mitigate against over- or under-claiming. The lowest return came from a SROI study of the Helium Arts Creative Health Hub, a programme of media, theatre and visual arts delivered through weekly workshops, seasonal camps, and remote sessions for children and young people with long-term health conditions (S3 Solutions 2021), which calculated a SROI ratio of €1:€1.98 by attributing financial proxies to material outcomes. The highest return was from a programme evaluation report of the Artis programme, a performing arts education programme delivering weekly sessions over 36 weeks to primary school pupils (Kara and Sheikh 2022), that used pre- post- Strengths & Difficulties Questionnaire (SDQ) (Goodman 1997) survey data to estimate improvements in future outcomes. This study estimated every £1 invested in the Artis programme led to a collective gain of up to £32 for the child, government, and society. A key difference between these two studies was the time horizon considered for benefits, as the SROI estimated CYP would realise all benefits from engaging with the Helium Arts Creative Health Hub within the first year, whereas the Artis evaluation followed peer-reviewed modelling of SDQ scores in childhood to improved future outcomes later in life to estimate financial benefits over an individuals' lifetime (Paull and Xu 2017). Johnson et al. (2011) also considered a lifetime horizon to estimate every £1 invested in the Uitas Summer Arts College, an intensive mixed-arts programme for young people subject to youth justice orders, led to £5.89 to society over young people's working lives, mostly through improved literacy or numeracy skills (Johnson et al. 2011).

MODEL 3 and MODEL 5 in Frontier Economics (2024) calculated annual society-wide benefits to the UK between £232 million and £800 million from CYP engaging with the arts in education or community settings. MODEL 3 first had to convert change in SDQ subscale scores to Child Health Utility 9D (CHU-9D) (Stevens 2011) scores before attributing value using QALYs. MODEL 5 converted scores from the Mental Health Continuum Short Form (MHC-SF) scale (Keyes et al. 2008) to the Short Warwick Edinburgh Mental Well-being Scale (SWEMWBS) (Tennant et al. 2007; Stewart-Brown et al. 2009), in

order to measure and monetise improvements in subjective wellbeing (WELLBY benefits). The evidence from these two models contrasted with a study of CYP in youth justice settings covering 7 different arts projects (Wilkin et al. 2005), which did not monetise any benefits from its arts projects, but chose to illustrate possible impacts for individual participants through qualitative data alone. As an example:

“If you think about kids only being in PRUs until 12 pm and then going out in the community and causing thousands of pounds of damage, well for that money, you could have had them in here every day, every afternoon, kept them engaged in something useful and they wouldn’t go out and do it again. So yeah, it’s incredibly cost-effective.” (Wilkin et al. 2005)

Music

Five studies involved music programmes or interventions, and each differed in their evaluation methods, settings, time horizons, and benefits.

MODEL 4b in Frontier Economics (2024) estimated that a one-point increase in self-esteem from listening to or playing music among 10 to 14-year-olds generated annual WELLBY benefits of £68 per child and £162 million across wider society, and reported sensitivity analyses of alternative SWEMWBS valuations (converted from an adapted Rosenberg self-esteem scale (Rosenberg 1979)) and engagement levels.

A three-arm RCT on children with cystic fibrosis (Montero-Ruiz et al. 2020) found that, from an assumed healthcare system perspective, using a tailored music CD during airway clearance therapy (ACT) avoided respiratory infection costs of €6,704.87 over a three-month period, while costs increased in both the control and placebo groups (an increase in hospital spending of €33,524.35 and €13,409.74 respectively).

SROI methods were used to evaluate the Sistema Cymru – Codi’r To programme (Winrow and Edwards 2018). The study estimated a base-case SROI ratio of £6.69:£1 over three years. Most value accrued to pupils and families through improved confidence and musical engagement, and sensitivity analyses confirmed positive returns ranging from £4.59 to £8.85 per £1 invested.

Finally, two studies reported on local implementations of the Sistema Scotland – Big Noise programme (Glasgow Centre for Population Health 2015; Scottish Government Social Research 2011). The 2015 study undertook a cost-benefit analysis in Govanhill to demonstrate social benefits exceeded costs across four distinct time horizons and eight sensitivity analyses, with a baseline Net Present Value (NPV) of £28.91 million. NPVs ranged from £9.18 million to £89.37 million, indicating the programme was worthwhile in all analyses. For participants who completed the programme at age 18, an estimated

spillover effect of improved life expectancy and subsequent QALY gains was assumed to “close the gap” between Govanhill and Scotland life expectancy rates. The 2011 report estimated the overall cost of delivery in Raploch was £1.98 per child per hour. Both studies excluded the costs of set-up and developing the programme.

Visual Arts, Craft, and Design

Two studies provided economic estimates for school-based visual arts interventions.

MODEL 4a in Frontier Economics (2024) estimated that a one-point increase in self-esteem from engagement in visual arts among 10 to 14-year-olds generated annual WELLBY benefits of £134 per young person and £122 million in wider society benefits, and reported sensitivity analyses of alternative SWEMWBS valuations (converted from an adapted Rosenberg self-esteem scale) and engagement levels.

A 2025 implementation study (Sullivan et al. 2025) estimated a seven-week group art therapy intervention significantly reduced internalising symptoms in pupils at a cost of \$170 per pupil. The study also statistically analysed mean changes in pre- and post-scores for the SDQ measure but did not explore how these changes might have an economic impact.

Dance/Movement

Two studies evaluated dance classes hosted in school venues and facilitated by dance teachers or artists. Both took a societal perspective but used different evaluation methods.

In the only full economic evaluation this review identified (Philipsson et al. 2013), a dance intervention was found to increase quality of life by 0.08 points more than in a control group at 20 months, measured with the Health Utility Index Mark 3 (HUI3) outcome (Furlong et al. 2001), where a difference of 0.05 is considered meaningful (Horsman et al. 2003). A cost-utility analysis calculated the incremental cost-effectiveness ratio (ICER) of USD \$3,830 per QALY, well below international willingness-to-pay thresholds for QALY gains (Shiroiwa et al. 2010). The probability of cost-effectiveness when stakeholders are willing to pay \$50,000 per QALY was 95%. Sensitivity analyses indicated cost-effectiveness across a range of variables.

A SROI study of hip hop and street dance workshops produced a SROI ratio of £3.94:£1 over one year, with impacts linked to improved attendance and effort grades (Wickham 2008). Sensitivity analyses confirmed positive ratios from £2.37 to £3.38 per £1 spent.

Theatre/Performance

Two studies, both peer-reviewed journal articles, evaluated programmes or interventions involving theatre/performance. However, neither study estimated benefits beyond the immediate evaluation period.

An RCT for male CYP undergoing the surgical procedure meatotomy reported the presence of medical clowns in the intervention group saved the health care provider USD \$467 compared to the comparison group (Kocherov et al. 2016). The savings were derived from significantly shorter induction time for anaesthesia, less time in the operating room, and less time to recover and be discharged.

A SROI study on the general population in Australia produced a SROI ratio of AUD \$7:\$1 invested in a circus arts programme (McGrath and Stevens 2019). The study used a pre-post analysis of the KIDSCREEN-27 questionnaire (Ravens-Sieberer et al. 2007), a health-related quality of life measure, in a congruent mixed-methods analysis to justify the choice of outcomes for the subsequent SROI methodology.

Quality assessment

Checklists designed to improve reporting standards for specific types of literature were completed to aid discussion and provide recommendations for future research (Timothy Hugh Barker et al. 2023; Timothy H. Barker et al. 2024; Husereau et al. 2022; Hutchinson et al. 2018; Tyndall 2010; Tyndall 2008). Completed checklists for the 14 included studies are in Supplementary File 5, and the number of positively reported items for each study are presented in Table 2.

Counting the reported items was used to 'score' the studies. Items that were not applicable to the study were ignored. It is important to note that the checklists are not comparable between each other due to substantial differences in study design requirements.

The quality of reporting across most studies was strong, with 11 studies reporting 80% or more of the items on their respective checklists (Sullivan et al. 2025; Frontier Economics 2024; Kara and Sheikh 2022; S3 Solutions 2021; McGrath and Stevens 2019; Winrow and Edwards 2018; Glasgow Centre for Population Health 2015; Philipsson et al. 2013; Johnson et al. 2011; Scottish Government Social Research 2011; Wilkin et al. 2005). One study reported 69% of the items on its checklist (Montero-Ruiz et al. 2020). Only two studies reported fewer than 50% of the items on their respective checklists (Kocherov et al. 2016; Wickham 2008).

Six studies were assessed against a maximum score of 25 items using the AACODS checklist for grey literature (Tyndall 2010; Tyndall 2008). Three studies scored 24 (Glasgow Centre for Population Health 2015; Scottish Government Social Research 2011; Wilkin et al. 2005) and three studies scored 23 (Frontier Economics 2024; Kara and Sheikh 2022; Johnson et al. 2011).

The next highest scoring study was the cost-utility analysis (Philipsson et al. 2013), which scored 22 out of 27 items using the CHEERS 2022 checklist (Husereau et al. 2022) for economic evaluations (one item was not applicable).

Using the SROI checklist (Hutchinson et al. 2018) to assess the four SROI studies, S3 Solutions (2021) reported the most items and scored 18 out of 21 items (S3 Solutions 2021), whereas Wickham (2008)

only scored 8 out of 19 items (two items were not applicable) (Wickham 2008).

The two included RCTs were assessed against a maximum score of 13 items using a simplified JBI checklist for RCTs (Timothy Hugh Barker et al. 2023). Montero-Ruiz et al. (2020) scored 9 (Montero-Ruiz et al. 2020), and Kocherov et al. (2016) scored 5 (Kocherov et al. 2016).

Discussion

Across a range of arts modalities and programmes, all 14 included studies reported positive health and wellbeing outcomes for CYP, which resulted in economic benefits to individuals, health and education sectors, and wider society. All 14 studies were from high-income countries in the Global North. The quantity and quality of evidence for economic impacts varied between studies, ranging from subjective quotes on the savings from avoided antisocial behaviour (“interviewees consistently described the arts projects as cost-effective” (Wilkin et al. 2005)); costing the programme or intervention per-participant (£72 (Kara and Sheikh 2022) to £2,759 (Johnson et al. 2011)) or per-avoided health outcome (USD \$467 from health service time savings (Kocherov et al. 2016) to €6,704.87 from avoided hospitalisation (Montero-Ruiz et al. 2020)); estimating future gains to individuals derived from multiple outcomes (“the monetary average lifetime benefit per child of the Artis programme is estimated to be up to £2,300” (Kara and Sheikh 2022)); to estimating the total value to society per annum at a population level (£122 million to £800 million in society-wide benefits from CYP engaging with the arts of various modalities (Frontier Economics 2024)).

The most comprehensive attempt to quantify the economic impact of arts engagement on the health and wellbeing of CYP is derived from UK population models (Frontier Economics 2024). This study presented detailed methodologies, critical appraisal of primary evidence, and transparent steps to allow replication in other contexts. All models have been successfully re-used to estimate the economic impacts of the arts on health and healthcare services in Wales (Davies et al. 2026). This contemporary report also estimated the return on investment specific to Arts Council of Wales-funded projects, and highlighted that the models relevant to CYP in Frontier Economics (2024) did not consider impacts on healthcare resource use (Davies et al. 2026). This would therefore indicate that estimates for health care savings from health and wellbeing benefits are very likely conservative.

Three included studies used data from adequately powered RCTs (Montero-Ruiz et al. 2020; Kocherov et al. 2016; Philipsson et al. 2013). The two primary RCTs only reported one metric – savings from reductions in healthcare resource use – meaning economic results were narrowly defined and only relevant to the healthcare providers in those countries. In contrast, the cost-utility analysis produced statistically significant results on cost-effectiveness of a dance intervention hosted in a school, took a societal perspective, and tested the assumptions in sensitivity analyses (Philipsson et al. 2013). This allowed for wider interpretation, potential application, and demonstrated the importance of planning health economic evaluations during trial design.

Four SROI studies were successful in calculating social value derived from distinct arts programmes (S3 Solutions 2021; McGrath and Stevens 2019; Winrow and Edwards 2018; Wickham 2008), with estimated base case SROI ratios of 1.98 to 7 for every 1 monetary unit invested. Comparing SROI results is a technical challenge due to variations in methodological choices and their application (Pathak and Dattani 2014), however all studies were transparently reported and included impact maps and/or theory of change models, which allow greater understanding of how positive impacts to health and wellbeing from complex interventions can be monetised. It is important to consider SROI methods likely undervalued the arts programmes due to pragmatic choices when selecting outcomes to monetise and evaluating benefits over short time horizons. This is a meaningful challenge given the breadth of secondary outcomes influenced by arts engagement (Sonke et al. 2023).

Four reports were able to cost specific programme inputs and outcomes to demonstrate value for money (Kara and Sheikh 2022; Glasgow Centre for Population Health 2015; Johnson et al. 2011; Scottish Government Social Research 2011). As would be expected from reports designed for decision makers, the economic data were well presented and justified, and varying contexts were explained. Estimated per-CYP costs to deliver the programmes or interventions ranged from £72 to £2,759, and estimated returns ranged between £5.89 to £32 for every £1 invested.

The implementation study (Sullivan et al. 2025) and the project evaluation report (Wilkin et al. 2005) were the least robust in their analyses of economic impacts. While data were collected that would have allowed for costing outcomes against programme inputs, neither study applied analytical methods to value the arts interventions under study. However, the evidence reported in these studies – and indeed all included studies – is still important when you consider more CYP could benefit from similar arts programmes or interventions, and programme costs can be justified in terms of value for money.

When considering the quality of reporting, the two RCTs were less-well reported than the other study designs (Montero-Ruiz et al. 2020; Kocherov et al. 2016), which possibly indicates these articles could have been improved if a reporting standard were followed, such as the Consolidated Standards of Reporting Trials (CONSORT) Framework (Merkow et al. 2021). For SROI studies, the UK Cabinet Office guide to SROI was first published in 2009 (Nicholls et al. 2012) – a year after the Wickham (2008) study, which scored lowest on the SROI checklist. In contrast, the cost-utility analysis (Philipsson et al. 2013) was well reported despite the fact this article pre-dated the initial development of the CHEERS checklist. This highlights the value of peer-review and following established journal formatting. Finally, assessing the grey literature using the AACODS checklist indicated that evaluations of arts programmes were very well reported. Assessing grey literature is increasingly recognised by academic institutions as an important step in systematic reviews (Paez 2017; Library Services Medicine Librarian team 2026).

Strengths and limitations of this review

Our review used the AI-enhanced web application *Elicit* to generate the initial data extraction tables, taking an experimental approach to systematic review methods. We found that *Elicit* was better at

extracting data from academic literature, where papers follow a structure and include an abstract. For longer grey literature reports – especially PDFs that contained multiple case studies – the prompts were less effective at identifying relevant content, leading to evidence being misreported. Data contained in tables were likewise occasionally misreported. However, this was mitigated against through careful review of all data extraction tables by two reviewers and manually adding missing or misreported information from the original studies, which ensured our final data tables were complete and accurate.

A potential limitation of this review is the absence of synthesising the key findings through meta-analysis. Variations in cost-years and currencies between studies could have been converted to a standard monetary unit (for example, pound sterling £) and inflated to a standard cost-year, allowing comparisons to be made across standardised metrics, such as cost per-CYP per-hour. However, we felt this would detract from the specific contexts of arts programmes or financial values attributed to outcomes, which could possibly lead to misrepresentation of results. Instead, we compiled two tables for this review to categorise and group detailed study characteristics and key economic findings from the primary evidence.

During the title and abstract screening stage, wider societal benefits and cost-effectiveness were very often mentioned in generalised terms in the background or conclusion sections of an abstract. However, unless there was more information in the methods or results sections to indicate these outcomes were used to evaluate economic impacts within the study, the record was excluded for pragmatic reasons at the title and abstract stage. Additional eligible studies could have been identified at the full text screening stage, or it might have been possible to apply economic modelling techniques identified in this review to value wider societal benefits, which could have generated new evidence from specific datasets.

This review emphasised the potential utility of economic models that use data from the SDQ questionnaire, quality of life measures, wellbeing measures, or applying a benefits transfer approach to monetise health and wellbeing outcomes. These methods could be a significant addition to studies that have reported outcomes in relation to CYP engaging with the arts, due to the current lack of peer-reviewed literature on the economic impacts from improved health and wellbeing.

Implications for future research

We have identified well-reported studies that included standard economic methods to evaluate arts programmes or interventions, tested the robustness of their findings through sensitivity analyses, used discounting to mitigate against overclaiming, and presented thoughtful counterfactuals. Notably, the findings from more well-reported studies aligned with those from less well-reported studies, highlighting that the economic benefits from youth arts programmes are not merely an artefact of biased study designs. In addition, there are opportunities to strengthen this evidence base moving forwards. First, in RCTs evaluating arts interventions, intention-to-treat (ITT) analyses should be reported to demonstrate the conclusions are unbiased. Second, across all study designs reporting on health or wellbeing benefits

from engaging with the arts, decisions relating to stakeholder selection, sample size, perspective of analysis, and length of benefits should be justified, to contextualise the results and facilitate their interpretation. Finally, while grey literature is not subjected to rigorous peer-review found in academic literature, reports for publication should explicitly state whether they were peer-reviewed and edited by a reputable organisation or other stakeholders, as this demonstrates accuracy in the reported findings.

There are opportunities for expanding existing study methods to produce new evidence of economic impacts. Generic quality of life measures for CYP used frequently in health economic evaluations – for instance the EuroQol 5-Dimension Youth version (EQ-5D-Y (Kreimeier and Greiner 2019; Wille et al. 2010) and the CHU-9D (Stevens 2011) – were not directly reported in any included studies. Including one of these measures during data collection or following peer-reviewed methods to map other quality of life scores onto the generic measure, would allow valuations through quality-adjusted life years. Alternatively, valuing improvements to mental health and wellbeing through measures such as the SWEMWBS (Stewart-Brown et al. 2009), or applying financial proxies to changes in other scores, could lead researchers to consider wider social value beyond traditional value for money accounting. In addition, embedding health economics in future RCTs of arts programmes for young people is recommended so that economic outcomes are available to analyse more routinely. There remains a clear gap in leveraging both natural experiments and routine arts programme evaluations to conduct economic evaluations, such as looking at the health and economic impacts of increasing or reducing local arts budgets (Deidda et al. 2019). Further conceptual discussion is required to focus not only on wellbeing but also well-becoming for young people across their life-course, shaping the approach to analysis of short- and long-term outcomes in routine arts programme evaluations (Edwards and Lawrence 2024).

Amongst other opportunities, it is important to note that arts programmes are by their nature complex interventions with multiple components, often requiring behaviour change by recipients, whether in a group or in a one-to-one context. It is advisable for future studies to adhere to guidance on the evaluation of complex interventions provided by the UK Medical Research Council (Skivington et al. 2021). Considering insights from complexity science-informed frameworks that have mapped the diverse range of outcomes arts programmes can influence could help build more comprehensive economic models (Sonke et al. 2023; Fancourt et al. 2021).

Finally, we are aware the current economic evidence relevant to this review came from high-income countries in the Global North. This highlights a need for economic evaluations of arts programmes in low- and middle-income countries.

Conclusions

Arts programmes delivered in homes, schools, community centres, youth justice settings or hospitals generated measurable benefits across health, wellbeing, educational attainment, behaviour, and long-

term societal outcomes. The 14 included studies all reported that arts programmes or interventions improved the health and wellbeing of children and young people. By identifying and valuing specific benefits from these improvements and comparing these with programme costs, the included studies demonstrated positive economic impacts from engaging with the arts. This appeared to be the case regardless of modality, population need, or analysis method. While this review demonstrated arts programmes can achieve health and wellbeing improvements, and these benefits have subsequent economic impacts to individuals and society at relatively low cost, more evidence is required in this research area to support commissioning and policy decisions. While the quality of study reporting varied, taken together, the included studies provided strong support for investing in arts initiatives to improve the health and wellbeing for children and young people.

Abbreviations

Abbreviation	Description
AACODS	Authority, Accuracy, Coverage, Objectivity, Date, and Significance
ACT	Airway Clearance Therapy
AI	Artificial Intelligence
AUD	Australian dollar \$
CD	Compact Disc
CHEERS	Consolidated Health Economic Evaluation Reporting Standards
CHU-9D	Child Health Utility 9D
CI	Confidence Interval
CINAHL	Cumulative Index to Nursing and Allied Health Literature
CONSORT	Consolidated Standards of Reporting Trials
CYP	Children and young people
DALY	disability-adjusted life-years
EQ-5D-Y	EuroQol 5-Dimension Youth version
EUR	Euro €
GBP	Pound sterling £
HTA	Health Technology Assessment
HUI3	Health Utility Index Mark 3
ICER	Incremental cost-effectiveness ratio
ITT	Intention-to-treat
JBI	Joanna Briggs Institute
LSU	Learning support unit
MEDLINE	Medical literature analysis and retrieval system online
MHC-SF	Mental Health Continuum Short Form
MTSS	Multi-Tiered System of Support
NPV	Net Present Value
PDF	Portable document format
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PROSPERO	International prospective register of systematic reviews

PRU	Pupil referral units
QALY	Quality-adjusted life year
QOL	Quality of life
RCT	Randomised controlled trial
SCWBS	Stirling Children's Wellbeing Scale
SDQ	Strengths & Difficulties Questionnaire
SMD	Standardized mean difference
SROI	Social return on investment
SWEMWBS	Short Warwick Edinburgh Mental Well-being Scale
UK	United Kingdom
UKRI	UK Research and Innovation
USA	United States of America
USD	United States dollar \$
WELLBY	Wellbeing-adjusted life year
YLD	Years lived with disability

Declarations

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Author Contribution

GF, PSC and ZM did the original screening, full text screening and extraction. GF did the original draft with VK and DF editing the manuscript and RE reviewing the final script.

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Data Availability

All data supporting the findings of this study are available within the paper and its Supplementary Information.

JEL Classification codes

- Z11 Economics of the Arts and Literature
- H75 State and Local Government: Health • Education • Welfare • Public Pensions
- I12 Health Behavior
- I14 Health and Inequality
- I18 Government Policy • Regulation • Public Health
- I21 Analysis of Education
- I24 Education and Inequality
- I25 Education and Economic Development
- I31 General Welfare, Well-Being
- P46 Consumer Economics • Health • Education and Training • Welfare, Income, Wealth, and Poverty

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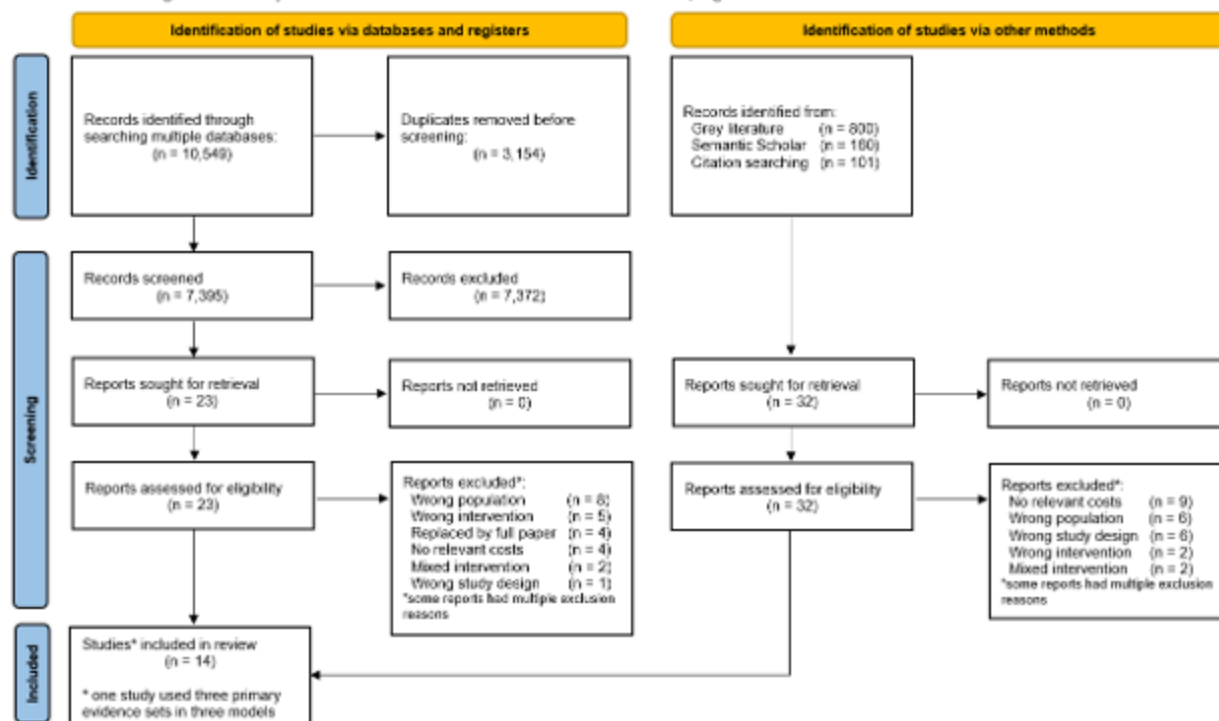
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Figures



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Figure 1

PRISMA 2020 Flow Diagram

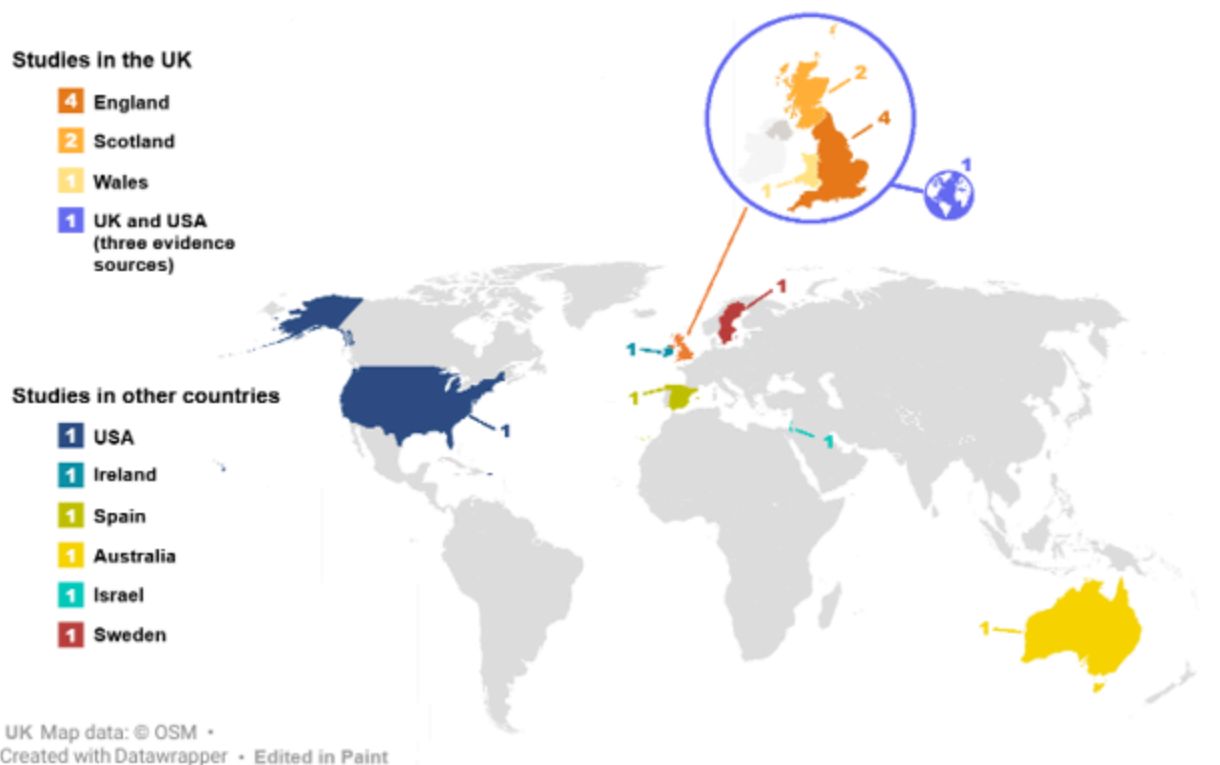


Figure 2

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