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INTENSIVE FAMILY PRESERVATION SERVICES TO PREVENT OUT-OF-HOME PLACEMENT OF CHILDREN

A systematic review and meta-analysis





What Works for Children's Social Care

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Conflict of interests

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ABBREVIATIONS AND DEFINITIONS

ACE

Adverse Childhood Experiences

CASCADE

Children's Social Care Research and Development Centre

CHEERS

Consolidated Health Economic Evaluation Reporting Standards

CI

Confidence Interval

CINAHL

Cumulative Index to Nursing and Allied Health Literature

CPCI-S

Conference Proceedings Citation Index-Science

CPCI-SSH

Conference Proceedings Citation Index – Social Science & Humanities

DCC

DePelchin Children's Centre

DHHS

Department of Health and Human Services

DHS

Department of Human Services

EMBASE

A biomedical and pharmacological information database

ERIC

Education Resources Information Centre

ESCI

Emerging Sources Citation Index

GRADE

Grading of Recommendations, Assessment, Development and Evaluations

ICERs

Incremental cost-effectiveness ratios

IFPS

Intensive Family Preservation Services

MEDLINE

National Library of Medicine's bibliographic database

NHS EED

NHS Economic Evaluation Database

NHS

National Health Service

NICE

National Institute for Health and Care Excellence

PRISMA

Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PROSPERO

International Prospective Register of Systematic Reviews

QoL

Quality of Life

RCT

Randomised controlled trial

RePEc

Research papers in Economics

ROBINS-I

Risk of Bias in Non-randomised Studies-of Interventions

RR

Relative Risk

SCI-EXPANDED

Science Citation Index Expanded

SSCI

Social Sciences Citation Index

UK

United Kingdom

USA

United States of America

EXECUTIVE SUMMARY

Background

Intensive Family Preservation Services (IFPS) are intensive, in-home crisis intervention services, designed to help families with children at imminent risk of out-of-home placement. These services share the following key characteristics:

1. The service is provided for families with children at imminent risk of an out-of-home placement.
2. A caseworker contacts the family within 24 hours of a referral being received.
3. Support is provided in the family's home environment for a period of 4-6 weeks.
4. Caseworkers are available to families 24 hours a day, 7 days a week.
5. Caseworkers have a small caseload of 2-3 families at a time to ensure that they can provide an intensive and flexible service.

Terminology for IFPS varies; however, the majority of programmes are based on the Homebuilders model that was developed in the USA in the 1970s.

Objectives

We undertook a systematic review and meta-analysis of all evaluation reports published internationally to provide evidence on the overall effectiveness and cost-effectiveness of IFPS for preventing out-of-home placements for children.

Methods

We searched 12 international electronic databases for published papers and 16 websites for grey literature papers. Supplementary search methods included reference list checking, citation tracking, searching electronic table of content pages and website searching. In addition, we contacted

international experts in the field and the authors of included studies. Studies were independently screened by two reviewers against predefined inclusion/exclusion criteria and critically appraised using standard established instruments. Our primary outcome of interest was prevention of out-of-home placement. Data on IFPS effect were descriptively summarised and pooled for statistical analysis using random-effects meta-analyses. All papers eligible for inclusion in the review were screened a second time for economic data to assess the cost-effectiveness of IFPS. A narrative summary of the economic analysis methods was presented including the cost-effectiveness decisions made by the authors of the studies.

Results

We identified 1,948 potentially relevant papers of which 37 papers, relating to 33 studies, met our inclusion criteria. Eight papers were unobtainable and data from secondary sources were included for these studies where possible. Twelve studies were published in journals and 21 studies were reported in grey literature papers. Eighteen studies were randomised controlled trials (RCTs) and 14 were controlled studies without randomisation. The design of one unobtainable paper was unknown. A large majority (29) of the studies were undertaken in the USA. Three studies were from the UK and one was from Canada. In 17 studies, the unit of analysis for outcome measures was at child level

and in 13 studies it was at family level. One study reported data at both child and family level. It was not possible to determine the unit of analysis in two studies as sufficient information was not available. Critical appraisal of studies suggested a moderate to substantial risk of bias in this overall body of knowledge. Our assessment indicated that some studies had some important problems that may have biased their findings.

The results of the meta-analyses demonstrated that overall, identified children who received IFPS experienced significant reductions in relative risk of out-of-home placements compared with children in control groups. The significant reduction in relative risk of out-of-home placements was evident at 3, 6, 12 and 24 months' follow-up but not at the time point of 2 years or more. A child's risk of experiencing an out-of-home placement was reduced by 43% at 3 months, 49% at 6 months, 40% at 12 months and 49% at 24 months after the intervention compared to children in the control/ comparison group.

Subgroup analysis based on studies with high fidelity to the Homebuilders model confirmed significant reductions in the relative risk of out-of-home placements at 12 months' follow-up. A Grading of Recommendations, Assessment, Development and Evaluations (GRADE) assessment of the studies reporting out-of-home placements at child level found moderate certainty of evidence at 12 months and low certainty of evidence at the other time points (3 months, 6 months, 24 months and more than 2 years).

In comparison, there was a more modest body of evidence on the effectiveness of IFPS at family level (where the measure was any child within the family entering care). Pooled results for multiple time points showed a modest and significant reduction in out-of-home care at family level. However, in subgroup analyses for each separate follow-up point (1, 3, 6, 12 and 18 months), the effect was not statistically significant. At family level, the only subgroup analyses which indicated a statistically significant reduction in relative risk of out-of-home placements were those for high fidelity studies and for RCTs with an unclear risk of bias at the 1-month time point.

The cost-effectiveness data identified were limited. Seven studies included cost data but none were full economic evaluations on which robust cost-effectiveness decisions could be made. Four studies concluded that IFPS were cost-saving interventions while the remaining three studies did not draw any firm conclusions based on the results of their economic analysis.

Conclusion

This is the first robust systematic review and meta-analysis of the effectiveness of IFPS on out-of-home placement prevention. The findings build on previous narrative reviews and moderator analyses. The available evidence, at child level, suggests that IFPS were effective in preventing children from entering care at 3, 6, 12 and 24 months after the intervention. Placement outcomes reported at family level demonstrated a significant reduction in out-of-home placements overall but not at the individual time points. The economic analyses reported in the included studies suggest that IFPS could be a cost-saving intervention. However, a full economic evaluation that identifies, measures and values both the costs and outcomes of IFPS and an appropriate comparator is needed to determine the cost-effectiveness of IFPS.

The majority of studies included in this review are from the USA, therefore caution should be taken in applying these findings to the UK. Future studies are needed to evaluate the effectiveness of IFPS in the UK context. These studies should aim to consider the prevention of out-of-home placements, child welfare outcomes and the cost-effectiveness of IFPS.

It is evident that IFPS vary in effectiveness, suggesting that how IFPS are implemented is important. It is likely that key elements of the model such as working with children who are at imminent risk of entering care and offering support with 24 hours of a referral are important in ensuring that the service is effective.

IFPS are a promising way of preventing care entry and keeping families together. Currently, the Homebuilders model of IFPS does not seem to be widely implemented in the UK. This review presents a strong case for setting up and evaluating the service in Local Authorities.

1 INTRODUCTION

Intensive Family Preservation Services (IFPS) were set up with the aim of reducing the number of children entering care unnecessarily (Tully, 2008). In the 1970s, in the USA, there was a drive to develop in-home programmes that recognised the importance and benefits of keeping families together, and provided families with the opportunity to develop their skills (Whittaker et al., 1990).

The original IFPS model “Homebuilders” was established in Washington State, USA, in 1974 (Forsythe, 1992). Homebuilders is a short-term, intensive programme for families “in crisis”. Families are considered to be in crisis if they have a child at imminent risk of out-of-home placement. The service is designed to safely maintain children in their home by reducing the risk of harm and improving family functioning. Alternatively, the service can be used to reunify families in cases where it would not be possible without intensive intervention (National Family Preservation Network, 2009).

The model is partly based on crisis intervention theory (Caplan, 1964, Lindemann, 1944). The service seeks to stabilise the current crisis and provide the family with new skills during the time-limited programme (Kinney et al., 1991). Crisis theory suggests that families in crisis are more likely to be motivated to change and open to learning new behaviours (Caplan, 1964).

The number of IFPS in America rose significantly and peaked in 1993 with 35 states implementing the service (National Family Preservation Network, 2009). The increase was partly influenced by the Adoption Assistance and Child Welfare Act that was introduced in 1980 as it required child protection services to demonstrate how they were making “reasonable effort” to keep families together (Gelles, 2000). Furthermore, funding for IFPS was substantially increased in response to The Family Preservation Bill of 1994 (Forrester et al., 2008b).

IFPS have generated a wide range of interest and a service has been implemented in countries that include Australia (Campbell, 1998), the Netherlands (de Kemp et al., 2003), Belgium (Puyenbroeck et al., 2009) and the UK (Forrester et al., 2008a). The services are known by a variety of names (e.g. Families First, Home-based Family Preservation and Option 2) but they have the same goal of supporting ‘high risk’ families to stay together.

In the UK, IFPS have been used to support families with children at risk of entering care, as documented in evaluation reports.¹ An IFPS, called Option 2, was established in Wales to support families with substance misuse problems to stay together (Forrester et al., 2008a, Forrester et al., 2014). This was then used as the model for setting up Integrated Family Support Services, a nationwide model in Wales (see Welsh Assembly Government (2010)). In England, Biehal (2005) reported specialist support teams have provided IFPS for young people aged 11-16 in six local authorities. The teams worked with the young people and their families to promote behaviour change, develop parenting skills and improve relationships. A recent survey of English local authorities (Addis et al., 2018) found that 62% of respondents believed that their ‘edge of care’ services were effective in reducing the need for out-of-home care and descriptions of these services showed characteristics similar to IFPS.

1. Biehal, 2005, Brandon and Connolly, 2006, Forrester et al., 2008a, Forrester et al., 2014.

1.1 Characteristics of IFPS

IFPS share the same key characteristics (National Family Preservation Network, 2009):

1. The service is provided for families with children at imminent risk of an out-of-home placement.
2. A caseworker contacts the family within 24 hours of a referral being received.
3. Support is provided in the family's home environment for a period of 4-6 weeks.
4. Caseworkers are available to families 24 hours a day, 7 days a week.
5. Caseworkers have a small caseload of 2-3 families at a time to ensure that they can provide an intensive and flexible service.

The service is tailored to the family and consists of a range of interventions that are predominantly based on cognitive and behavioural principles. Interventions can include skill development (e.g. anger management and parenting skills), therapy (e.g. cognitive behavioural therapy and motivational interviewing) and material help (e.g. support with housing and transport).

The caseworker develops a plan at the end of the intervention to help the family maintain the progress that they have made. In addition, the caseworker is able to refer the family to relevant community services so they can receive continued support after the IFPS has ended.

1.2 Previous reviews

Initial evaluations of programmes based on the Homebuilders model found very promising results. For example, one study in 1977 reported that 97% of children who received the service had avoided an out-of-home placement at follow-up (Kinney et al., 1977). However, the limitations of these studies have been widely recognised (Gelles, 2000, Pecora et al., 1992, Whittaker et al., 1990). Many did not include a control group, details of the intervention or clear eligibility criteria. More robust studies followed in the late 1980s (Forrester et al., 2008b).

Fraser et al. (1997) reviewed studies of IFPS that were published between 1985 and 1996, that had employed a control or comparison group. Ten studies (3,361 participants) that reported placement prevention as an outcome measure were included

in the review. There were mixed findings for the effectiveness of IFPS with some evidence that programmes for older children or children with conduct disorder were effective in preventing out-of-home placements.

Schweitzer et al. (2015a) updated the search by Fraser et al. (1997) with papers from 1997 to 2014. The authors focused solely on studies that were conducted in five US states. Four studies were included in the analysis and there was a range of effect sizes for placement prevention. Overall, the findings were promising and substantial effects were found for high risk subgroups (e.g. children who had experienced care placements previously). Schweitzer et al. (2015a) also found that it was possible to assess the fidelity of programmes to the Homebuilders model using the descriptions available in the studies.



Heneghan et al. (1996) and Lindsay et al. (2002) have conducted methodological reviews of IFPS studies. Heneghan et al. (1996) included 10 studies from a literature search covering 1977 to 1993. Two reviewers, using a 15-item questionnaire, independently assessed the methodological quality of the studies. Only two studies were rated as acceptable, four were considered adequate and four were unacceptable methodologically according to the authors' criteria. The authors had concerns over the ability of IFPS to target families with children at high risk of entering care. A large proportion of children in control groups did not enter care, therefore suggesting that out-of-home placements were not imminent. The authors suggested that future studies should use a standardised tool to assess whether a child is at imminent risk of placement to avoid selection bias and ensure families meet the required criteria.

Lindsay et al. (2002) categorised 36 papers that were published between 1970 and 2000 into four groups according to the strength of their research designs. Four studies were allocated to the highest category as participants were randomised to the intervention and control groups, and there were no major methodological concerns. The author concluded that studies with more rigorous research designs offered the least support for the effectiveness of IFPS in preventing care entry.

Three moderator analyses have been conducted to date. Dagenais et al. (2004) included 38 papers that related to 27 IFPS as they met the relevant criteria: they were published between 1980 and 1995, included a control group, measured family functioning and reported sufficient quantitative data. Sixteen studies reported placement rates and overall IFPS had a small effect on placement prevention. Children receiving the services were slightly more likely to avoid an out-of-home placement compared to the control groups. A second analysis was completed for studies (n=3) that were considered to have the most rigorous designs and a smaller effect was found. Programmes that were tailored specifically for children with behavioural problems (n=3) were found to have a greater effect on placement

prevention. The authors reported that a key limitation of the IFPS literature is that too few studies report on how IFPS are implemented therefore, making it difficult to draw conclusions on the effectiveness of interventions that may or may not have been implemented as intended.

In 2006, Miller (2006) specifically focused on IFPS in Washington and the adherence of the services to the Homebuilders model. Fourteen studies were included in the analysis and scored against a list of 16 fundamental components of the Homebuilders programme. Four studies included 13 or more of the components and were considered to demonstrate fidelity to the model. These studies were effective in preventing out-of-home placements and reducing subsequent maltreatment reports. The remaining 10 studies had a maximum of five Homebuilders components and did not have a significant effect on either outcome. Economic analysis suggested that for every \$1 spent on a service that adhered to the Homebuilders model \$2.59 was saved.

Al et al. (2012) conducted a moderator analysis to explore the effectiveness of IFPS. Twenty studies (31,369 participants) were included in the analysis and the authors found that IFPS had no overall effect on preventing out-of-home placements. The service had a positive effect for a sub-set of the sample; for example, families with multiple problems, boys and older parents. The effect of IFPS on placement prevention was also found to be moderated by programme characteristics (caseload), study characteristics (study type and quality) and publication characteristics (publication type, date and journal impact factor). Nearly all of studies (n=19) included in the review were from the USA and it is unclear whether the findings can be applied to the UK.

In conclusion, previous reviews have reported mixed results for the prevention of out-of-home placements. The reviews to date have highlighted the importance of the programme characteristics (i.e. tailored programmes, adherence to the Homebuilders model and caseload) and Dagenais et al. (2004) and Al et al. (2012) suggested that there was some evidence that IFPS were effective in preventing placements for specific subgroups.

2 OBJECTIVES OF THIS REVIEW

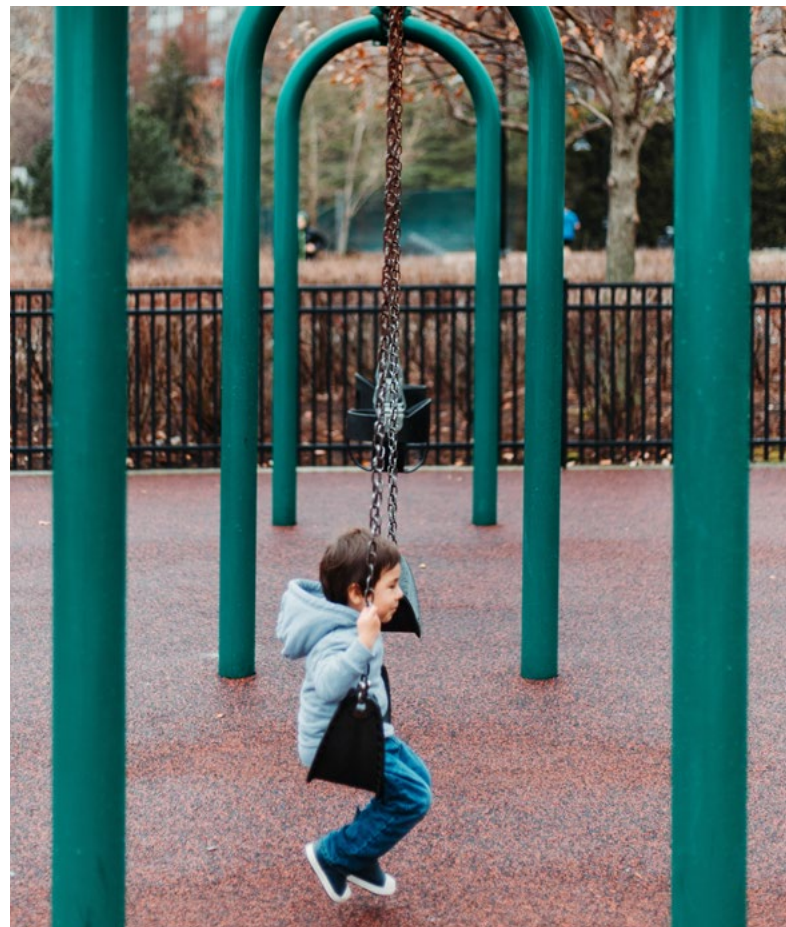
There is a wealth of interest in IFPS and evidence that the intervention is used internationally. It is therefore important to review the effectiveness and cost-effectiveness of these services. The findings can then inform whether the intervention is an appropriate and helpful way of supporting families and reducing the number of children who enter care in situations when this could potentially be prevented.

The current systematic review and meta-analysis builds on the reviews completed to date by including up-to-date studies. It also improves the methodology of existing reviews by adhering to standard Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) international guidelines (Moher et al., 2009) and reporting on the quality of each included study. This review uses gold standard critical appraisal tools and frameworks, including the Cochrane risk of bias tool (Higgins and Green, 2011), ROBINS-I (Sterne et al., 2016) and GRADE (Grading of Recommendations, Assessment, Development and Evaluations (GRADE Working Group, 2004)) to evaluate the quality, potential bias and certainty of evidence in included studies.

There is currently limited research investigating the cost-effectiveness of IFPS. The economic analysis conducted by Miller (2006) included only IFPS implemented in Washington and therefore, the findings might not be applicable to services in other countries. The paper by Miller (2006) also does not offer sufficient information on the methodology used (e.g. search strategy and inclusion criteria). Our systematic review clearly outlines the procedure and comprehensively examines the economic costs, cost-benefit and cost-effectiveness of a larger range of IFPS.

The objective of this review was to assess the evidence on the effectiveness and cost-effectiveness of IFPS. The following research questions were addressed:

1. Are IFPS effective at reducing out-of-home placements in families of children 0-18 years of age?
2. Are IFPS cost-effective in reducing out-of-home placement?



3 METHODS

3.1 Eligibility criteria

3.1.1 Types of studies

The review was designed to capture and summarise the evidence on both the effectiveness and cost-effectiveness of IFPS. The following study designs were eligible for inclusion: experimental studies (i.e. randomised controlled trials - RCTs) and quasi-experimental studies that included any control/comparison group but without random allocation of participants, which we refer to as 'controlled trials'.

Whilst it was not an explicit requirement for the studies to consider the costs of IFPS in order to be eligible for inclusion in the review, it was expected that a portion of the retrieved studies would have conducted an economic analysis alongside the main effectiveness study. All types of partial and full economic evaluations were included in the review of the cost-effectiveness of IFPS.

The following study designs were excluded: literature reviews, editorials, modelling studies, case-control, cohort, cross-sectional and uncontrolled before-and-after studies, as it is difficult to attribute cause-effect relationships from such studies.

3.1.2 Types of participants

The population of interest was children and young people aged up to 18 years old who were at risk of out-of-home care. Children and young people enter out-of-home care for a range of reasons including extreme risk of:

- Abuse and neglect (e.g. sexual abuse, emotional abuse, physical abuse, supervisory neglect);
- Where parents cannot provide good enough care for the children due to acute family problems (e.g. parental substance misuse);
- Family in acute stress (e.g. financial crisis);
- Child's disability;

- Carer's illness or disability;
- Socially unacceptable behaviour (pre entry into juvenile court system); most likely to be determined by children's social care services.

The level of risk is most likely to be determined by children's social care services.

Out-of-home care is defined as a child or young person being looked after by a local authority (or international equivalent), including those who are placed under a court order or a formal voluntary agreement with parents. Our definition of care does not extend to include care arrangements that are informal or those that do not specify continued statutory involvement (e.g. adoption).

3.1.3 Types of interventions

Even though IFPS are referred to using a variety of terms, most are built on the Homebuilders model that was developed in Washington State, USA in 1974 and we were interested in all the interventions that have adopted the model's key programme characteristics as outlined in the introduction (National Family Preservation Network, 2009).

3.2 Outcome measures

We considered the following outcome measures:

Primary outcome

- Prevention of out-of-home placement.

Economic data

- Costs offset due to IFPS.
- Cost difference between IFPS and comparator.
- Economic evaluations measuring benefit in monetary terms.
- Economic evaluations incorporating incremental cost-effectiveness ratios (ICERs) that measure benefit in units specific to IFPS, e.g. number that avoided care, or use social care related quality of life (QOL) as the outcome measure.

3.3 Search methods for identification of studies

3.3.1 Electronic searches

We searched the published academic and grey literature from 1974 until 2018 for studies investigating the effectiveness of IFPS, with or without a simultaneous economic analysis. See Appendix 1 for a list of the databases searched.

Eligible studies were entered into an Endnote database and de-duplicated. The search strategy is provided in Appendix 2.

3.3.2 Supplementary search methodology

Supplementary search methods were used to ensure the completeness of the search strategy. These included reference list checking, citation tracking, searching electronic table of contents pages and website searching. The reference lists of included studies indexed in Scopus were checked for additional relevant references. Citation tracking was also performed for those studies identified for inclusion and indexed in Scopus.

Several key academic journals were identified, and electronic tables of contents pages were searched. Results were retrieved for the previous 12 months for three journals: *Children and Youth Services Review*, *Journal of Emotional and Behavioural Disorders* and *Journal of Family Strengths*. Three academic journals were hand-searched for the period 2008 – 2018: *Child and Family Social Work*, *Child and Adolescent Social Work* and *Journal of Social Work*. The search terms “family preservation”, “homebuilders” and “families first” were used for the electronic table of contents search.

To identify additional relevant grey literature, website searching was conducted for the period 2008 – 2018 for the following: Action for Children, Barnardo’s, Care Leavers’ Association, Children’s Commissioners’ offices for four UK nations, Children’s Society, Child Welfare Information Gateway, Department for Education, Early

Intervention Foundation, Joseph Rowntree Foundation, National Institute for Health and Care Excellence (NICE), Open Grey, Rees Centre, Samaritans, Thomas Coram Foundation. Key terms searched for were “family preservation” “homebuilders” and “families first”.

To ensure that all economic analyses of IFPS were captured, searches were carried out for studies that exclusively conducted economic analyses of IFPS.

A panel of international experts were contacted (see Appendix 3), outlining the purpose of the review and requesting their support to identify any unpublished and ongoing studies.

3.4 Data extraction and analysis

3.4.1 Selection of studies

Two authors (UN and ZB) searched the databases and screened titles and abstracts independently for potentially eligible studies. Disagreements between researchers were resolved by consensus or arbitration involving a third author (AK) where necessary. Full texts of studies were retrieved for selected papers, and two authors (UN and ZB) evaluated whether these met inclusion/exclusion criteria. Disagreement were resolved by discussion among authors, with referral to a third author (AK) if necessary. Reasons for the excluded papers were recorded (see Appendix 4).

3.4.2 Data extraction and management

Three independent reviewers (UN, ZB and AE) extracted data from included papers. A customised data extraction sheet included the following information: author and year, title of the study, aims, country of origin, study design, intervention population size, intervention population characteristics, control population size, control population characteristics, intervention (name, main components, length and IFPS fidelity measure), outcome measure used, analysis results, estimates of costs and cost-effectiveness and study limitations.

The characteristics of included papers are summarised and presented in descriptive summary tables (see Appendices 4 and 5).

For the economic analyses identified, a second data extraction form was completed to capture the details and results of the economic analysis methods applied. In addition to the results of the economic analysis and the thresholds used by decision-makers, data on costs and outcomes were extracted from each study to determine cost-effectiveness.

3.4.3 Assessment of risk of bias in included studies

The quality of included studies was assessed using the Cochrane eight domain-based evaluation for RCTs and quasi-randomised trials (see Table 8.5a in the Cochrane Handbook (Higgins and Green, 2011)). Each domain and overall score were rated as: low risk of bias, unclear risk of bias or high risk of bias. For other controlled, non-randomised studies of interventions the Cochrane Collaboration's ROBINS-I risk of bias tool was used (Sterne et al., 2016). We graded each parameter of trial quality: low risk of bias, moderate risk of bias, serious risk of bias or critical risk of bias.

In addition, the transparent international framework, GRADE was employed to judge the confidence in evidence and the certainty of evidence (GRADE Working Group, 2004, Hultcrantz et al., 2017). All publications that comprised a full economic evaluation underwent a further round of quality assessment against the Consolidated Health Economic Evaluation Reporting Standards (CHEERS) guidance (Husereau et al., 2013). Partial economic evaluations were assessed against the elements of the checklist that were relevant to the form of economic analysis.

One author (AE) assessed the quality of the economic evaluations. Two authors (UN and ZB) carried out all other critical appraisals of the included papers, with any disagreement being resolved by consensus, or arbitration involving a third author (AK) where necessary.

3.4.4 Assessment of model fidelity

Data were extracted for each IFPS to understand how closely it aligned to the original Homebuilders model. All programmes were assessed based on four key components of the model:

1. The intervention was delivered to families with children at imminent risk of placement.
2. Families were provided with an immediate response (within 24 hours) of the referral.
3. Caseworkers were available 24 hours a day, 7 days a week for families for the duration of the IFPS.
4. Each caseworker worked with no more than three families at a time.

These four items were selected from a list of 16 components used in the review by Miller (2006) (for the full list see Tully (2008)) as these factors focus specifically on programme delivery and were considered to be the most important by the review authors. Two authors (UN and ZB) judged each component as present, absent or unclear based on the descriptive data available in the included studies. A total score of three or more 'present' items was used to demonstrate adequate model fidelity.

3.5 Unit of analysis

Child level (when the outcome measured was based upon an identified child within the family entering care) and family level (where the measure was any child within the family entering care).

3.6 Data analysis

3.6.1 Meta-analysis

We undertook our meta-analyses of outcomes on an intention-to-treat basis. This approach includes all participants who were allocated to the studies' intervention and control/comparison groups, regardless of their involvement in the study and

whether they dropped out. Meta-analyses were undertaken using a random-effects model, given the expected degree of heterogeneity in the population and design between studies. Statistical analyses were performed using Comprehensive Meta-Analysis software (Version 3).

We expressed the results as relative risk (RR) with 95% confidence intervals (CI) for dichotomous outcomes. We performed tests for statistical heterogeneity. Heterogeneity was tested for using the I² statistic and significant heterogeneity assumed if I² is greater than 40% (i.e. more than 40% of the variability in outcome between trials could not be explained by sampling variation).

Evidence of publication bias was assessed graphically using funnel plots and statistically using Begg and Egger tests (Begg and Mazumdar, 1994, Egger et al., 1997).

3.6.2 Subgroup analyses

Where possible, subgroup analyses were completed at child and family level based on the following components:

- Fidelity of the intervention to the Homebuilders model (categorised as high or low fidelity)
- Risk of bias in RCTs (assessed using the Cochrane risk of bias tool (Higgins and Green, 2011)) and controlled trials (assessed using the ROBIN-I tool (Sterne et al., 2016))
- Country (UK only), to explore the relevance to the UK setting

Where possible, sensitivity analyses were conducted to check for the consistency of results when outliers are removed. Studies were grouped by follow-up time point (e.g. 6 months after the intervention or equivalent period) and where there were slight variations (e.g. 8.5 months rather than 6 months) sensitivity analyses was completed with and without that particular study.

3.6.3 Economic analysis

The review has been designed to capture all types of economic analyses of IFPS, including both partial and full economic evaluations. The economic analyses were stratified into groups depending on the approach taken. The partial evaluation group included both cost analyses and cost-cost offset analyses whereas the full economic evaluation group encompassed cost-effectiveness analyses, cost-utility analyses, cost-benefit analyses, cost-consequence analyses and cost-minimisation analyses (Drummond et al., 1997, Sefton, 2003), see Appendix 7 for a glossary of terms. The total number of partial economic evaluations were recorded and results from these summarised in tabular format. The same analyses were completed for the studies with full economic evaluations. Results from each table were analysed and compared to determine the number of studies in each group that would support the adoption of IFPS techniques. If possible, a decision will be made on the cost-effectiveness of IFPS using the results from both types of economic evaluations.

3.7 Reporting on the protocol

This systematic review and meta-analysis review protocol were prepared using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocol (PRISMA-P) guidelines (Moher et al., 2009). We registered the protocol on International Prospective Register of Systematic Reviews (PROSPERO) (CRD42018118073).

4 RESULTS

4.1 Description of studies

4.1.1 Results of search

The searches identified 1,948 potentially relevant papers from 12 international electronic databases; after de-duplication 1,796 records were screened and 75 potentially appropriate papers were reviewed in full text. Two additional papers were identified through contacting international experts. In total, 29 papers satisfied the inclusion criteria and were thus included in the systematic review and meta-analysis (see Fig. 1).

An additional eight papers met our criteria but were unobtainable² in spite of thorough worldwide searches and contacting review authors, co-authors and experts (see list in Appendix 3). We were able to use the abstracts of these papers, and summary descriptions of the studies that were included in books and previous reviews.³ Summary descriptions and out-of-home placement results were available for all of the unobtainable studies, with the exception of the Center for the Study of Social Policy (1988).

The 37 papers (29 fully obtainable and 8 unobtainable papers) included in this review related

to 33 studies. Two papers (Forrester et al., 2014, Jones, 1985) were longer-term follow-ups of a previous study included in the review (Forrester et al., 2008a, Jones, 1976). One paper (Blythe and Jayaratne, 2002) was included as it provided additional information about a study included by Walters (2006) that was required for analysis. In addition, both sets of results from one study were included (Feldman, 1991a, Feldman, 1991b).

There were 12 studies published in peer-reviewed journals⁴ and 21 studies were reported in grey literature papers.⁵

Eighteen studies were randomised controlled trials⁶ and 14 were controlled studies.⁷ The study design of the unobtainable paper by Center for the Study of Social Policy (1988) was unclear.

The studies were undertaken in Canada (n=1); UK (n=3); USA (n=29). One study was translated from French (Dagenais 2003).

4.1.2 Sample population

The sample populations in the included studies vary considerably in terms of the reason for referral to IFPS and the level of risk of out-of-home placements. The risk scenarios ranged from families

2. Center for the Study of Social Policy, 1988, Hennepin County Community Services Department, 1980, Lyle and Nelson, 1983, Mitchell et al., 1989, Nebraska Department of Public Welfare, 1981, Wheeler et al., 1992, Willems and Rubeis, 1981, Yuan et al., 1990.
3. Heneghan et al., 1996, Lindsay et al., 2002, Pecora et al., 1995, Schuerman et al., 1994.
4. Biehal, 2005, Brandon and Connolly, 2006, Ciliberti, 1998, Daegnais et al., 2003, Forrester et al., 2008a, Kirk and Griffith, 2004, Raschick, 1997, Rubin, 1997, Szykula and Fleischman, 1985, Walton, 1997, Walton, 2001, Wood et al., 1988.
5. Berquist et al., 1993, Blythe and Jayaratne, 2002, Center for the Study of Social Policy, 1988, Dennis-Small and Washburn, 1986, Feldman, 1991b, Halper and Jones, 1981, Hennepin County Community Services Department, 1980, Jones, 1976, Lyle and Nelson, 1983, Mitchell et al., 1989, Nebraska Department of Public Welfare, 1981, Pecora et al., 1991, Schuerman et al., 1994, Schwartz et al., 1991, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c, Wheeler et al., 1992, Willems and Rubeis, 1981, Yuan et al., 1990.
6. Blythe and Jayaratne, 2002, Feldman, 1991b, Halper and Jones, 1981, Hennepin County Community Services Department, 1980, Jones, 1976, Lyle and Nelson, 1983, Mitchell et al., 1989, Nebraska Department of Public Welfare, 1981, Schuerman et al., 1994, Szykula and Fleischman, 1985, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c, Walton, 1997, Walton, 2001, Willems and Rubeis, 1981, Yuan et al., 1990.
7. Berquist et al., 1993, Biehal, 2005, Brandon and Connolly, 2006, Ciliberti, 1998, Daegnais et al., 2003, Dennis-Small and Washburn, 1986, Forrester et al., 2008a, Kirk and Griffith, 2004, Pecora et al., 1991, Raschick, 1997, Rubin, 1997, Schwartz et al., 1991, Wheeler et al., 1992, Wood et al., 1988.

with substance misuse problems who agreed to seek help (Rubin, 1997) to families with children at risk of entering care within one week (Pecora et al., 1991). Families were referred to IFPS due to a range of concerns including physical abuse, physical neglect, emotional neglect, sexual abuse and risk of abuse or neglect. In all but two of the projects studied (see below under 'definition of risk of out-of-home placement'), these concerns were serious enough for one or more child to be at imminent risk of coming into out-of-home care. Two programmes were specifically for families where parental substance misuse was a concern (Forrester et al., 2008a, Rubin, 1997). More detail on referral criteria is presented in the summary tables in Appendices 4 and 5.

Age

The age of children included in the studies varied. Eleven studies (out of the 25 studies with fully obtainable papers included in this review) specified the child's age in the inclusion criteria. Four studies only noted that families were included if their child was aged 18 or younger.⁸ A further seven studies worked with families who had younger children.⁹

The average age of children (as reported in 12 studies) ranged from 3 years (Ciliberti, 1998) to 13 years (Feldman, 1991a).

Ethnicity

The families in the included studies were predominately white. Nineteen studies reported the ethnicity of families. In 12, over half of the sample were white.¹⁰

One programme was targeted specifically towards families who were African-American or mixed race (Ciliberti, 1998). A high proportion (around 80%) of the families in the DHHS studies in Tennessee and Philadelphia were African-American (US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c).

Definition of risk of out-of-home placement

A child's risk of entering care in the included studies was wide-ranging and often poorly defined. The traditional Homebuilders model was targeted towards families with at least one child at "imminent risk" of entering care. The majority (n=28) of studies in this review included the risk of children experiencing an out-of-home placement in their eligibility criteria. Eighteen studies described the level of risk as "imminent", "immediate" or "high". The eligibility criteria of three studies were unobtainable.¹¹

Two studies did not assess a child's risk of experiencing an out-of-home placement. Raschick (1997) instead worked with families who were voluntarily seeking help and not currently involved in the child protection system. The IFPS evaluated by Rubin (1997) included families on the basis that substance misuse was their primary problem and they were willing to engage in the intervention.

Three studies attached a timeframe to the definition of children at risk of public care. The interventions were available to children who were at risk of entering care within one week (Pecora et al., 1991), four weeks (Biehal, 2005) or two years (Willems and Rubeis, 1981) if no service or support was provided. Two studies included children and young people who had already been approved for a placement and were referred to IFPS (Blythe and Jayaratne, 2002, Schwartz et al., 1991).

The type of placement that a child was at risk of experiencing was specified in two studies. Blythe and Jayaratne (2002) were concerned with the risk of placement in foster care, a group home or institutional care. Jones (1976) looked at a child's risk of entering foster care only.

A child's risk of out-of-home placement was predominately based on a screener's or caseworker's judgement. Several studies developed procedures to help structure the assessment of a child's level of risk. For example, staff in the DHHS Kentucky study used a screening tool to inform

8. Feldman, 1991a, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002c.

9. Ciliberti, 1998, Daegnais et al., 2003, Jones, 1976, Schuerman et al., 1994, Schwartz et al., 1991, Szykula and Fleischman, 1985, US Department of Health and Human Services, 2002d.

10. Biehal, 2005, Dennis-Small and Washburn, 1986, Forrester et al., 2014, Halper and Jones, 1981, Kirk and Griffith, 2004, Pecora et al., 1991, Rubin, 1997, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, Walton, 1997, Walton, 2001, Wood et al., 1988.

11. Center for the Study of Social Policy, 1988, Lyle and Nelson, 1983, Mitchell et al., 1989.

their judgement of risk (US Department of Health and Human Services, 2002a). The tool consisted of items such as previous substantiated complaints, previous foster care placements and more than one child maltreated in the family. A “risk of placement” protocol was designed and implemented in the study by Feldman (1991b).

Kirk and Griffith (2004) analysed children’s services data and reviewed risk of placement retrospectively. Only children with a high-risk rating on a standardised risk assessment tool (indicating that they should be removed from their home unless an approved alternative plan is put in place) were included in the analysis.

4.1.3 Intervention

Intervention design

The 25 studies with obtainable papers included in this review evaluated 26 IFPS. The interventions offered similar services to families but varied in terms of length, intensity and availability of the caseworker. The interventions commonly provided the following services (see Appendices 4 and 5 for a description of the main components of the interventions):

- Parenting training;
- Skill development (e.g. communication and anger management skills);
- Counselling; and
- Material help (e.g. support with housing and transport).

The interventions ranged from 2 weeks (Walton, 1997) to 19 months (Jones, 1985). The majority (n=15) of the interventions were offered for between 4-6 weeks as recommended by the Homebuilders model.¹²

The number of families that caseworkers supported at a time was reported for 18 of the interventions and ranged from one (Forrester et al., 2008a) to 12 families (Halper and Jones, 1981). Caseworkers were available to families on a 24/7 basis in 17 of the interventions including those reported by Pecora et al. (1991).¹³

The included studies reported that 15 of the interventions were based on the Homebuilders model¹⁴ (see Appendix 11). Three IFPS were identified as slightly different from the others as they scored 0 out of 3 when assessed for adherence to the Homebuilders model. Two of the interventions did not assess a child’s risk of out-of-home placement as part of their inclusion criteria (Raschick, 1997, Rubin, 1997). The intervention by Raschick (1997) was described as “prevention-orientated” as it was aimed at families who were voluntarily seeking help. The intervention shares the key components of IFPS (as it is an intensive, home-based, short-term service) but it focuses on educating parents. The service utilised a curriculum that covers topics such as communication and budgeting.

The DHHS intervention in Philadelphia was targeted towards children who were considered at intermediate risk of entering care (US Department of Health and Human Services, 2002c). The intervention was less intensive than the other interventions evaluated by the DHHS¹⁵ and lasted slightly longer (12 weeks compared to 4-8 weeks). The four interventions evaluated by DHHS offered the same services (both counselling and material help).

Intervention implementation

Ten studies collected data to explore whether IFPS were delivered as intended.¹⁶ Four studies drew positive conclusions.¹⁷ Berquist et al. (1993) and

12. Berquist et al., 1993, Blythe and Jayaratne, 2002, Brandon and Connolly, 2006, Ciliberti, 1998, Dagenais et al., 2004, Dennis-Small and Washburn, 1986, Feldman, 1991a, Forrester et al., 2008a, Kirk and Griffith, 2004, Schwartz et al., 1991, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002d, Walton, 2001, Wood et al., 1988.

13. Berquist et al., 1993, Blythe and Jayaratne, 2002, Ciliberti, 1998, Daegnais et al., 2003, Dennis-Small and Washburn, 1986, Feldman, 1991a, Forrester et al., 2008a, Halper and Jones, 1981, Kirk and Griffith, 2004, Pecora et al., 1991, Schuerman et al., 1994, Schwartz et al., 1991, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, Wood et al., 1988.

14. Raschick, 1997, Rubin, 1997, US Department of Health and Human Services, 2002c.

15. US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d.

16. Berquist et al., 1993, Blythe and Jayaratne, 2002, Brandon and Connolly, 2006, Daegnais et al., 2003, Feldman, 1991a, Kirk and Griffith, 2004, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c.

17. Berquist et al., 1993, Blythe and Jayaratne, 2002, Brandon and Connolly, 2006, Feldman, 1991a.

Blythe and Jayaratne (2002) found that the majority of families were contacted by a caseworker within 24 hours of referral. In three studies, there was evidence that caseworkers were available to families outside of traditional working hours.¹⁸ The average duration of the intervention was as expected in the studies by Brandon and Connolly (2006), Berquist et al. (1993) and Feldman (1991a). Berquist et al. (1993) and Feldman (1991a) concluded that the caseworkers' input had been intensive. Feldman (1991a) reported that on average there were 54.85 hours of contact time per case.

Five studies found that there was a delay in contacting families after a referral and support was rarely provided out of hours.¹⁹ For example, less than half (44%) of the families in Kentucky were visited at their home within 72 hours of the referral (US Department of Health and Human Services, 2002a). There was also minimal material help provided at the beginning of the interventions evaluated by the DHHS.²⁰ Furthermore, Schuerman et al. (1994) found that 60% of families were supported beyond the planned 90-day service. However, the authors found that the service was intensive and caseworkers reported providing 91 hours of support on average per case in the first 90 days.

Kirk and Griffith (2004) analysed data retrospectively and removed cases that did not adhere to the IFPS model. Cases were excluded when families did not receive a visit within 2 days of a referral and when the case was open for longer than 6 weeks.

4.1.4 Comparison groups

Children in the control/comparison groups received "usual care". In general, the included studies provided little information about the services that participants in the control group received. Six studies did not provide any information.²¹ Other

studies collected data on the services that the families accessed (through reading case files, talking to caseworkers and/or interviewing family members).

Four USA studies listed examples of the usual care that would have been available to families.²² These typically included counselling, parent training courses, mental health support and youth services. Feldman (1991a) also reported that families could receive a family court intervention or monitoring by child protection services. Ciliberti (1998) recognised that the support provided to the families in the control group was likely to vary considerably due to "the type of service, the kind of client issue, and the progress of the client in working through designated goals".

Nine studies from the USA collected data on the services that families in the control group received.²³ Over 80% of control group families engaged in counselling in the studies by Halper and Jones (1981) and Jones (1976). Families also commonly received financial assistance and attended medical services. The most common services accessed by the control group in the study by Schuerman et al. (1994) were related to substance misuse (40% of cases), parenting skills (40% of cases) and physical health (26% of cases). In the DHHS studies, over half of families received advice on child discipline and between 19% and 42% of families were told about other agencies that could offer them support.²⁴ Information was not provided on the type of agencies that were recommended to families and whether families went onto use the services.

Rubin (1997) and Walton (2001) did not specify the types of services that were provided to the control group. Instead, they compared the frequency of support that families received compared with the intervention group. Rubin (1997) found that the intervention group received significantly more home

18. Berquist et al., 1993, Blythe and Jayaratne, 2002, Brandon and Connolly, 2006.

19. Daegnais et al., 2003, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c.

20. US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c.

21. Berquist et al., 1993, Dennis-Small and Washburn, 1986, Raschick, 1997, Szykula and Fleischman, 1985, Walton, 1997, Wood et al., 1988.

22. Ciliberti, 1998, Feldman, 1991a, Kirk and Griffith, 2004, Pecora et al., 1991.

23. Halper and Jones, 1981, Jones, 1976, Rubin, 1997, Schuerman et al., 1994, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c, Walton, 2001.

24. US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c.

visits than the control group. Walton (2001) reported that the intervention group received 14.3% more services than the control group. However, this difference was not significant.

In two USA studies, children had been approved for out-of-home care and received services consistent with these placements (Blythe and Jayaratne, 2002, Schwartz et al., 1991). In Schwartz et al. (1991) children were placed in a foster home, hospital, group home or residential treatment centre. Children in the study by Blythe and Jayaratne (2002) were placed in foster care or with relatives.

The three UK studies did not collect data on the services that families in the control group received.²⁵ Forrester et al. (2008a) asked social workers to complete a questionnaire on the types of services that they might refer families to. The services included family support services, community alcohol and drug treatment, parenting courses and health visitors. The authors noted that some of the services offered intensive support that was similar to IFPS.

Daegnais et al. (2003) did not provide details on the regular services that would have been available to families in Canada.

4.2 Unit of analysis

4.2.1 Child and family level units of analysis

Seventeen studies reported out-of-home placement at an individual child level.²⁶ Child-level studies reported the total number of children who entered care across families, with the exception of two studies that reported placement outcomes for one target child per family (Berquist et al., 1993, Ciliberti, 1998).

Thirteen studies used family level as a unit of analysis.²⁷ Family level studies reported care entry as an outcome when one or more child within the family experienced an out-of-home placement. The study by Yuan et al. (1990) reported placement rates at both family and child level.

Data from secondary sources (from previous reviews and books) was available for five of the unobtainable studies at family level²⁸ and at both family and child level for one study (Yuan et al., 1990). It was unclear whether the placement rates reported for Wheeler et al. (1992) were at family or child level (Heneghan et al., 1996).

4.2.2 Measurement of out-of-home placement

The studies included in this review differ in terms of the placement types that are included in their outcome measure of care entry. Some studies included one or two placement types while others had much broader definitions. Moreover, several studies applied a timeframe to the placements that they record as an outcome (e.g. a placement longer than two weeks).

Thirteen studies out of the 25 studies with fully obtainable papers defined the type of out-of-home placements that they had included.²⁹ One study focused on a child's entry into foster care (Jones, 1976) and four studies included both foster care and placements with relatives.³⁰ Ciliberti (1998) specified that they only included placements that were court-ordered.

The studies by the DHHS³¹ and Schwartz et al. (1991) included a wider range of placement types. The DHHS studies included foster care, institutions, residential treatment programmes, group homes and adoptive placements.³¹ Schwartz et al. (1991) provided a breakdown of the placement episodes

25. Biehal, 2005, Brandon and Connolly, 2006, Forrester et al., 2008a.

26. Berquist et al., 1993, Biehal, 2005, Blythe and Jayaratne, 2002, Ciliberti, 1998, Daegnais et al., 2003, Dennis-Small and Washburn, 1986, Forrester et al., 2008a, Halper and Jones, 1981, Jones, 1976, Kirk and Griffith, 2004, Pecora et al., 1991, Raschick, 1997, Rubin, 1997, Schwartz et al., 1991, Szykula and Fleischman, 1985, Walton, 1997, Wood et al., 1988.

27. Brandon and Connolly, 2006, Feldman, 1991b, Hennepin County Community Services Department, 1980, Lyle and Nelson, 1983, Mitchell et al., 1989, Nebraska Department of Public Welfare, 1981, Schuerman et al., 1994, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c, Walton, 2001, Willems and Rubeis, 1981.

28. Nebraska Department of Public Welfare, 1981, Hennepin County Community Services Department, 1980, Lyle and Nelson, 1983, Mitchell et al., 1989, Willems and Rubeis, 1981.

29. Blythe and Jayaratne, 2002, Ciliberti, 1998, Daegnais et al., 2003, Feldman, 1991a, Halper and Jones, 1981, Pecora et al., 1991, Rubin, 1997, Schwartz et al., 1991, Szykula and Fleischman, 1985, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c.

30. Ciliberti, 1998, Halper and Jones, 1981, Rubin, 1997, Walters, 2006.

31. US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c.

experienced by children in the sample, which included shelters, residential treatment centres, group foster homes, group homes and family placements.

Feldman (1991a) and Schwartz et al. (1991) included all placement types of any length. Two other studies specified the length of placement in their definition (Daegnais et al., 2003, Pecora et al., 1991). Daegnais et al. (2003) included placements in a "resource recognised by the Youth Center for a period of at least 24 hours". While Pecora et al. (1991) only included placements in a non-relative setting where a child was placed for 2 weeks or more. Pecora et al. (1991) also counted children who had runaway for 2 weeks or more in their outcome measure.

The remaining 12 studies did not specify the types of placements that were included.³²

Data on out-of-home placements was typically collected from case records (n=17 studies).³³ In the study by Jones (1976) caseworkers completed data collection forms for the outcomes of children in the control and intervention groups. Five studies collected data from multiple sources including interviews, children's services records and financial records.³⁴

4.3 Quality assessment

Quality assessment of the RCTs with fully obtainable papers suggested that three studies³⁵ had an unclear risk of bias and nine studies³⁶ were at high risk of bias (see Appendix 8). No RCTs were assessed as having a low risk of bias.

The risk of bias judgements in ROBINS-I revealed that six controlled studies had an overall moderate risk of bias³⁷ and six studies had a serious overall risk of bias.³⁸ One controlled study (Rubin, 1997) had a

critical overall risk of bias (see Appendix 9). No controlled studies were graded as low risk of bias.

As none of the economic analyses identified were full economic evaluations, four of the 24 items in the CHEERS checklist did not apply when assessing the quality of reporting from an economic perspective. These items were the elicitation of preferences for outcomes, the use of decision analytical modelling and the requirement to report incremental costs and outcomes. The seven studies were assessed against 20 of the 24 items in the checklist. On average the studies scored positively on six items and the total scores ranged from one for Raschick (1997) and 11 for Berquist et al. (1993) and Dennis-Small and Washburn (1986).

All studies scored negatively on defining the perspective from which the intervention is evaluated, this can be for example a social care, local government or societal perspective. It is vital that the costs and consequences included and evaluated in the analysis match the perspective of the study. The studies also scored negatively regarding the application of a discount rate, especially where a longer time horizon was adopted to capture costs. Without a clearly defined perspective or the application of discount rates when appropriate, it is likely that the costs estimated in the studies do not accurately represent true costs. Scores were also negative for many of the other checklist items associated with the choice of outcomes and the measurement of effectiveness, in addition to study parameters to inform total costs and total outcomes not being presented. The range of total positive scores for each study indicates that the quality of reporting on the economic analyses carried out as part of the evaluation of IFPS was generally quite poor.

32. Berquist et al., 1993, Biehal, 2005, Brandon and Connolly, 2006, Dennis-Small and Washburn, 1986, Forrester et al., 2008a, Kirk and Griffith, 2004, Raschick, 1997, Schuerman et al., 1994, Szykula and Fleischman, 1985, Walton, 2001, Walton and Denby, 1997, Wood et al., 1988.

33. Berquist et al., 1993, Blythe and Jayaratne, 2002, Brandon and Connolly, 2006, Ciliberti, 1998, Daegnais et al., 2003, Dennis-Small and Washburn, 1986, Forrester et al., 2008a, Kirk and Griffith, 2004, Raschick, 1997, Rubin, 1997, Schuerman et al., 1994, Schwartz et al., 1991, Szykula and Fleischman, 1985, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c.

34. Halper and Jones, 1981, Pecora et al., 1991, Walton, 2001, Walton and Denby, 1997, Wood et al., 1988). While two studies gathered placement outcome data through interviews only (Biehal, 2005, Feldman, 1991a.

35. Feldman, 1991b, Schuerman et al., 1994, Walton, 2001.

36. Blythe and Jayaratne, 2002, Halper and Jones, 1981, Jones, 1976, Szykula and Fleischman, 1985, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c, Walton, 1997.

37. Ciliberti, 1998, Daegnais et al., 2003, Dennis-Small and Washburn, 1986, Forrester et al., 2008a, Kirk and Griffith, 2004, Schwartz et al., 1991.

38. Berquist et al., 1993, Biehal, 2005, Brandon and Connolly, 2006, Pecora et al., 1991, Raschick, 1997, Wood et al., 1988.

4.4 Certainty of evidence assessment

We used the five GRADE considerations (study limitations, consistency of effect, imprecision, indirectness, and publication bias) to assess the certainty of evidence in the included studies with fully obtainable papers. We justified our decisions to downgrade or upgrade the quality of studies and created a summary of findings table based on GRADE assessment (see Appendix 10).

The GRADE assessment of the certainty of the evidence at child level demonstrated that the outcome measure relative risk of out-of-home placement at 3 months following the IFPS intervention (or equivalent for the control group) had low certainty. A judgement of low certainty indicates that the true effect may differ substantially from the estimate. Two studies reported outcomes at 3 months (Berquist et al., 1993, Daegnais et al., 2003). The evidence was downgraded due to the risk of bias of included studies, the level of heterogeneity and publication bias.

The studies that reported placement outcomes at 6 months, 24 months and more than 2 years were also assessed as low certainty due to the same concerns. Child level outcomes were reported by five studies at 6 months³⁹ and three studies at 24 months,⁴⁰ Forrester et al. (2008a) and Forrester et al. (2014) reported placement rates at more than 2 years.

The certainty of the evidence for the same outcome at child level, but at 12 months, was judged as moderate certainty. This suggests that the estimate of effect is likely to be close to the true effect. The

evidence has many strengths, including the directness, precision of findings (e.g. narrow confidence intervals) and the huge sample size (n=28,478 participants). However, concerns remained regarding the risk of bias and heterogeneity of the studies. This judgement was based on 10 studies.⁴¹

We did not employ the GRADE assessment tool for family-level studies as they had greater heterogeneity issues and less accuracy than the child level studies. GRADE is used to rate the body of evidence at the outcome level rather than the study level. The family level outcomes can be influenced by vast diversity/variations of the population, e.g. biologic, variation in context and culture, family composition, variation in adherence, in values and preferences etc. In turn, this complicates the heterogeneity of these factors that we have not been able to examine. For these reasons, we have decided to assess the quality of certainty of a body of evidence at child level.

4.5 Fidelity to the Homebuilders model

The 25 studies (with fully obtainable papers) included in the review were assessed for fidelity to the Homebuilders model. The study by Pecora et al. (1991) reported on two types of IFPS and so both were assessed. Fourteen studies were judged as having high fidelity as the interventions had three or more components of the Homebuilders model.⁴² Twelve studies were judged as having low fidelity as they had less than three of the key components⁴³ (See Appendix 11).

39. Berquist et al., 1993, Biehal, 2005, Blythe and Jayaratne, 2002, Daegnais et al., 2003, Yuan et al., 1990.

40. Dennis-Small and Washburn, 1986, Halper and Jones, 1981, Raschick, 1997). Jones (1985).

41. Berquist et al., 1993, Blythe and Jayaratne, 2002, Ciliberti, 1998, Daegnais et al., 2003, Dennis-Small and Washburn, 1986, Jones, 1976, Kirk and Griffith, 2004, Pecora et al., 1991, Schwartz et al., 1991, Wood et al., 1988.

42. Berquist et al., 1993, Blythe and Jayaratne, 2002, Ciliberti, 1998, Dennis-Small and Washburn, 1986, Feldman, 1991b, Forrester et al., 2008b, Kirk and Griffith, 2004, Pecora et al., 1991, Schuerman et al.,

1994, Schwartz et al., 1991, US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, Wood et al., 1988.

43. Biehal, 2005, Brandon and Connolly, 2006, Daegnais et al., 2003, Halper and Jones, 1981, Jones, 1976, Pecora et al., 1991, Raschick, 1997, Rubin, 1997, Szykula and Fleischman, 1985, US Department of Health and Human Services, 2002c, Walton, 1997, Walton, 2001.

4.6 Effectiveness of IFPS

4.6.1 Primary outcome: out-of-home placement at child level

Out-of-home placement rates at child level were assessed in a total of 18 studies (6 RCTs and 12 controlled studies) but only 16 studies provided the necessary data.⁴⁴

The studies investigated out-of-home placement rates for 30,283 children (2,938 children in the intervention groups and 27,345 children in the control groups).⁴⁵ Child-level data provided by two studies were insufficient (Rubin, 1997, Walton, 1997) and one study did not report the outcome time point (Szykula and Fleischman, 1985).

The meta-analysis of child-level placements at any time point suggested substantial benefit from IFPS with respect to out-of-home placement with an overall relative risk of 0.51 (95% CI, 0.42 to 0.62; see Fig. 2). Meta-analyses were completed at all available time points, grouped as 3 months, 6 months, 12 months, 24 months and more than two years. The direction of effect sizes was consistent at 3 months (RR 0.57, 95% CI, 0.35 to 0.93; low certainty, see Fig. 3) and 6 months, when both outcomes reported by Blythe and Jayaratne (2002) were used; foster care only (RR 0.49, 95% CI, 0.26 to 0.91; low certainty, see Fig. 4a) and foster care or placements with relatives (RR 0.51, 95% CI, 0.27 to 0.96; low certainty, see Fig. 4b). The same approach was taken at the 12 months' time point and the direction of effect sizes remained similar (RR 0.60, 95% CI, 0.48 to 0.76; moderate certainty, see Fig. 5a; RR 0.58, 95% CI, 0.45 to 0.77; moderate certainty, see Fig. 5b).

A sensitivity analysis for the 12 month time point revealed that removing Jones (1976), (where the time point was defined as 8.5 months) did not change the effect direction (RR 0.56, 95% CI, 0.41 to 0.77, see Appendix 12 Fig. 1). Removing another outlier, Schwartz et al. (1991), where the time point was defined as 12-16 months also confirmed similar consistency (RR 0.55, 95% CI, 0.37 to 0.80; see Appendix 12 Fig. 2).

Furthermore, similar trends were seen at the 24-month time point (RR 0.51, 95% CI, 0.30 to 0.87; low certainty, see Fig. 6). Relative risk of out-of-home placement at more than 2 years, based on only three studies where there was a considerable heterogeneity in terms of time points (between 3.5 years and 6.5 years), showed non-significant reductions for placements (RR 0.63, 95% CI, 0.36 to 1.12; low certainty, see Fig. 7). A sensitivity analysis without Forrester et al. (2008b), where the time point was defined as 3.5 years, found similar findings (RR 0.39, 95% CI, 0.10 to 1.59, see Appendix 12 Fig. 3).

Subgroup analysis at child level

Subgroup analyses were undertaken, where possible, for child level studies.

Programme fidelity

Two subgroup analyses were conducted based on interventions with high fidelity to the Homebuilders model at 6 months, using the two outcomes (a. foster care only and b. foster care or placement with relatives) reported by Blythe and Jayaratne (2002) (RR 0.23, 95% CI, 0.04 to 1.45, see Fig. 8a and RR 0.29, 95% CI, 0.07 to 1.14, see Fig. 8b, respectively). These two meta-analyses show evidence of no significant benefit which could be explained by the small numbers of included studies and high level of heterogeneity ($I^2=95%$). However, the fidelity analysis at the 12-month time point indicated significant reductions in out-of-home placements (RR 0.57, 95% CI, 0.42 to 0.77, see Fig. 9a and RR 0.54, 95% CI, 0.38 to 0.75, see Fig. 9b respectively). Again, fidelity analysis beyond the 2-year time point showed no benefit (RR 0.44, 95% CI, 0.08 to 2.37, see Fig. 10). There was insufficient data to complete subgroup analyses for low fidelity studies.

Study risk of bias

Controlled studies that were assessed as moderate quality (using ROBINS-I) demonstrated significant benefit of IFPS at 12 months' (RR 0.72, 95% CI, 0.53 to 0.99, see Fig. 11). However, this subgroup analysis revealed no significant benefit beyond the 2-year time point (RR 0.44, 95% CI, 0.08 to 2.37, see Fig. 12). Again, small sample size and high heterogeneity

44. Berquist et al., 1993, Biehal, 2005, Blythe and Jayaratne, 2002, Ciliberti, 1998, Daegnais et al., 2003, Dennis-Small and Washburn, 1986, Forrester et al., 2008a, Halper and Jones, 1981, Jones, 1976, Kirk and Griffith, 2004, Pecora et al., 1991, Raschick, 1997, Schwartz et al., 1991, Szykula and Fleischman, 1985, Wood et al., 1988, Yuan et al., 1990.

45. Ten studies allocated families to intervention and control groups (n= 2,057 families). Six studies assigned children and young people to either group (n= 27,449 children).

could explain this result. Subgroup analyses were not possible for the other ratings (low, serious and critical risk of bias) due to the small number of studies in each category.

There were not a sufficient number of studies to complete subgroup analyses based on the quality of RCTs.

UK only studies

There was insufficient number of UK studies to complete a subgroup analysis.

Assessment for publication bias

Funnel plots (see Appendix 13) indicate the possibility of publication bias, as small studies may only have been published if they yielded positive results. This was also suggested by an Egger test ($P=0.0002$) (Sterne et al., 2011).

4.6.2 Primary outcome: out-of-home placement at family level

Out-of-home placement rates at family level were assessed in 14 studies.⁴⁶ The outcome time points were not reported for the studies by Nebraska Department of Public Welfare (1981) and Willems and Rubeis (1981).

We were able to pool data showing the relative risk of out-of-home placement from these 14 studies (13 RCTs and one controlled study). The studies investigated a total of 4,362 families (2,540 families in the intervention groups and 1,822 families in control groups) for between 3 months and 18 months following IFPS intervention vs controls.

Overall, this combined meta-analysis at multiple time points demonstrated significant reductions in out-of-home placements (RR 0.85, 95% CI, 0.76 to 0.95, see Fig. 13). Meta-analyses of relative risk of out-of-home placement at different time points at family level revealed the following trend: at 1 month relative risk = 0.78 (95% CI, 0.57 to 1.06, see Fig. 14); at 3 months relative risk = 0.71 (95% CI, 0.46 to 1.10, see Fig. 15); at 6-7 months relative risk = 0.97 (95% CI, 0.77 to 1.22, see Fig. 16).

Pooling data statistically at other time points, including at 12 months, 18 months and at unknown

time points also showed no benefit (RR 1.03, 95% CI, 0.86 to 1.23, see Fig. 17; RR 1.13, 95% CI, 0.95 to 1.33, see Fig. 18; and RR 0.74, 95% CI, 0.18 to 2.94, see Fig. 19). Placement outcomes were not available at family level for over 2 years after the intervention (or equivalent time period).

Subgroup analysis at family level

Subgroup analyses were undertaken to compare:

Programme fidelity

Interventions with high fidelity to the Homebuilders model at 1 month suggested significant reductions in out-of-home placements (RR 0.71, 95% CI, 0.51 to 0.98, see Fig. 20). However, at 3 months, 6 months, 12 months, 18 months there was no significant benefit (RR 0.71, 95% CI, 0.47 to 1.08, see Fig. 21; RR 0.88, 95% CI, 0.64 to 1.20, see Fig. 22; RR 1.03, 95% CI, 0.82 to 1.30, see Fig. 23 and RR 1.18, 95% CI, 0.88 to 1.58, see Fig 24 respectively). Subgroup analysis was not possible for low fidelity studies due to the small number of interventions that demonstrated poor adherence to the Homebuilders model.

Study risk of bias

RCTs judged as having an unclear risk of bias (as assessed by Cochrane risk of bias tool) revealed significant out-of-home placements reductions only at a 1-month time point (RR 0.58, 95% CI, 0.36 to 0.95, see Fig. 25). This subgroup analysis gave the following data for other time points: at 3 months (RR 0.71, 95% CI, 0.47 to 1.08, see Fig. 26); at 6 months (RR 0.73, 95% CI, 0.42 to 1.26, see Fig. 27); and at 12 months' time point following IFPS intervention (RR 0.93, 95% CI, 0.64 to 1.35, see Fig. 28). Subgroup analysis was not possible for high risk of bias studies and no RCTs were assessed as low risk of bias.

There were too few studies to complete subgroup analyses based on the quality of controlled trials.

UK only studies

Due to the small number of studies, further subgroup analyses based on UK only interventions were not possible.

46. Brandon and Connolly, 2006, Feldman, 1991b, Hennepin County Community Services Department, 1980, Lyle and Nelson, 1983, Mitchell et al., 1989, Nebraska Department of Public Welfare, 1981, Schuerman et al., 1994, US Department of Health and Human

Services, 2002a, US Department of Health and Human Services, 2002b, US Department of Health and Human Services, 2002d, US Department of Health and Human Services, 2002c, Walton, 2001, Willems and Rubeis, 1981, Yuan et al., 1990.

Figure 1. PRISMA flow diagram

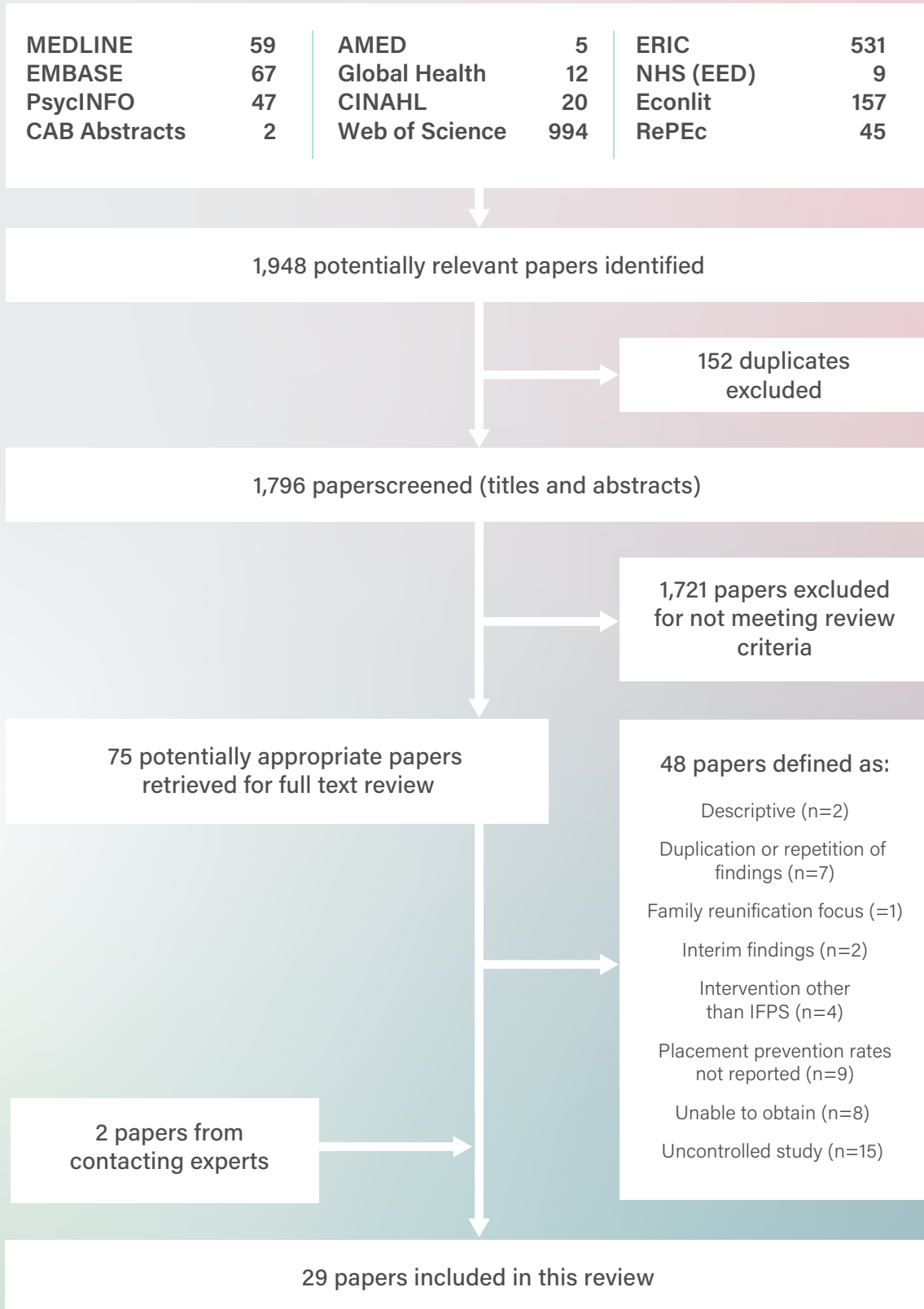
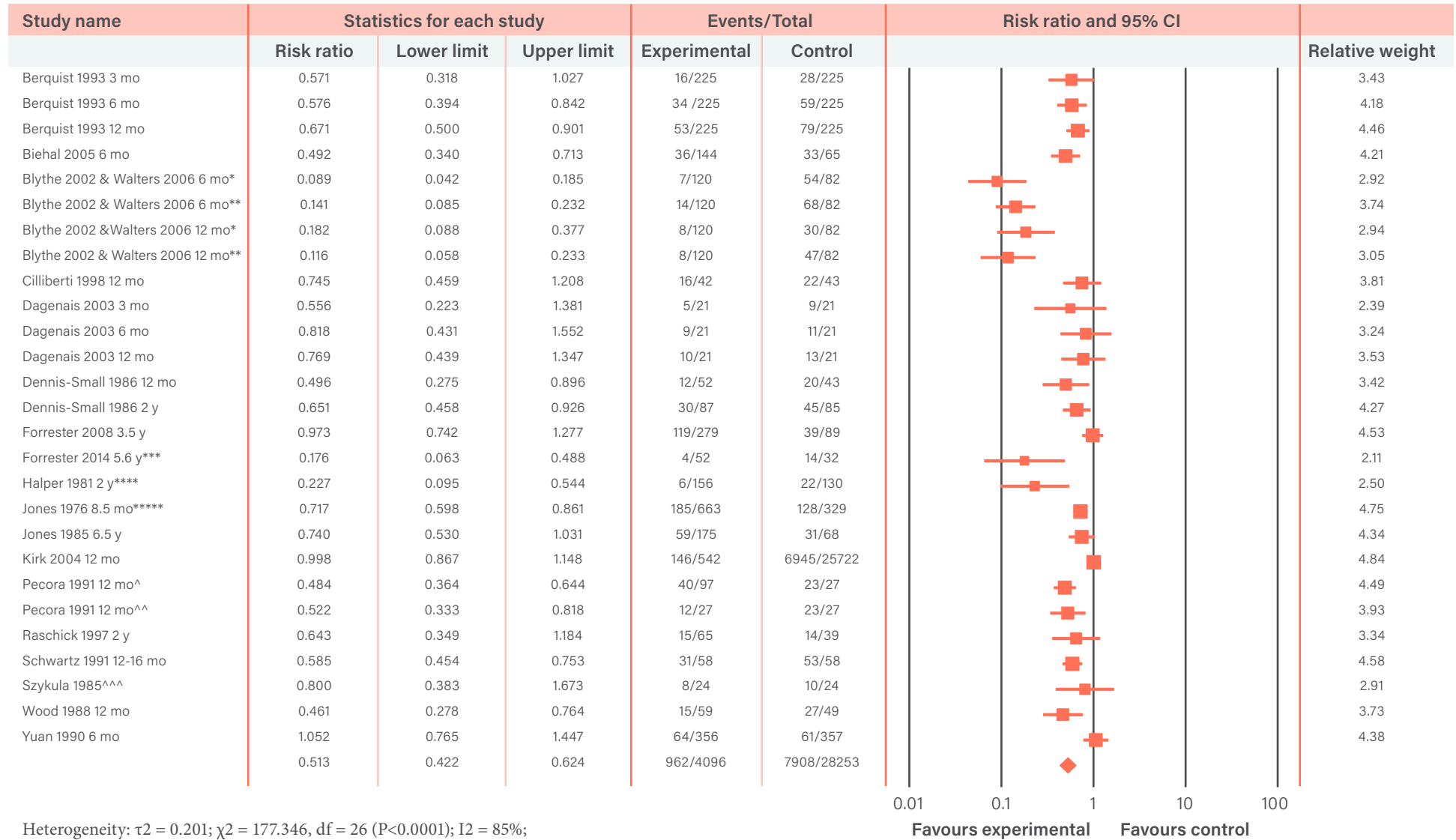


Figure 2: Relative risk of out-of-home placement at any time point following IFPS intervention vs controls (random-effects model) (child level)



Heterogeneity: $\tau^2 = 0.201$; $\chi^2 = 177.346$, $df = 26$ ($P < 0.0001$); $I^2 = 85\%$;
 Test for overall effect: $Z = -6.684$ ($P < 0.0001$)

*Figures for children placed in foster care only.

** Figures for children living in foster care or with relatives.

*** Figures for children who entered care some point.

**** Follow-up was until case closure or the end of evaluation period. The average length of service was 14 months for the treatment group and 8 months for the control group.

*****The maximum length of service was 12 months. The average length was 8.5 months (9.5 months in the New York service and 7.5 months in Monroe).

^ Utah service only.

^^ Utah only with a matched treatment and comparison cases.

^^^ Time point not reported

Figure 3: Relative risk of out-of-home placement at 3 months following IFPS intervention vs controls (random-effects model) (child level)

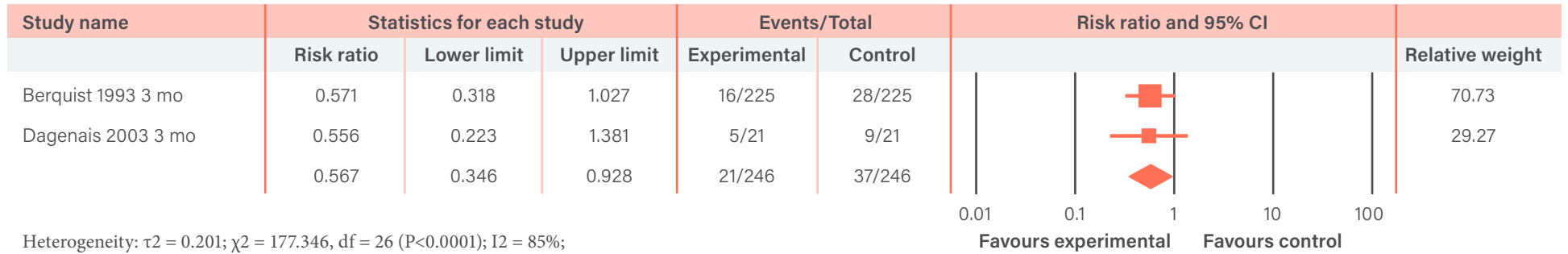
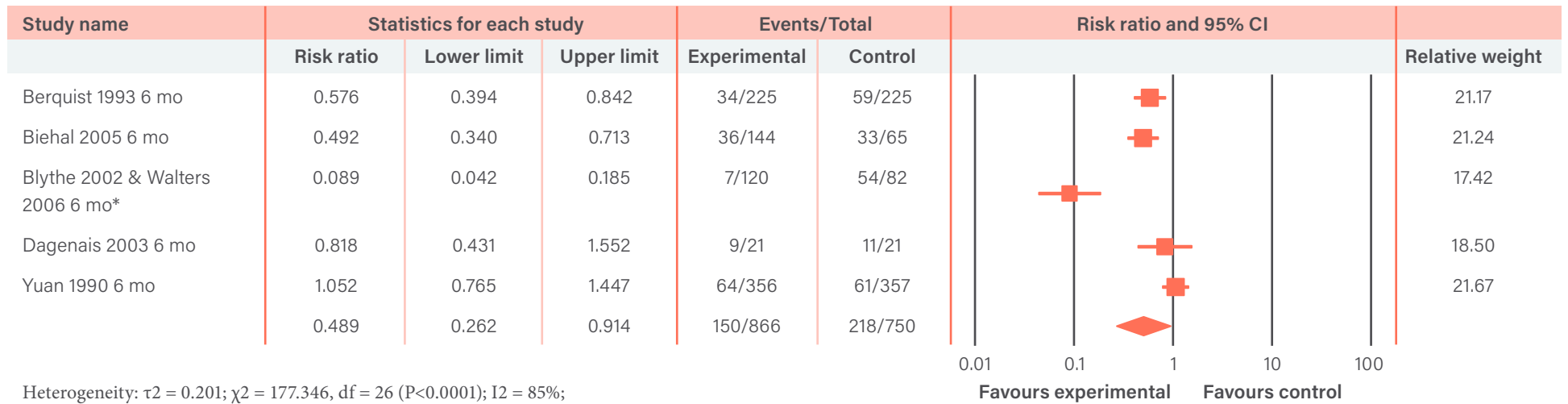


Figure 4a: Relative risk of out-of-home placement at 6 months following IFPS intervention vs controls (random-effects model) (child level) (Blythe reporting foster care only)



* Figures for children placed in foster care only.

Figure 4b: Relative risk of out-of-home placement at 6 months following IFPS intervention vs controls (random-effects model) (child level) (Blythe reporting foster care or placements with relatives)

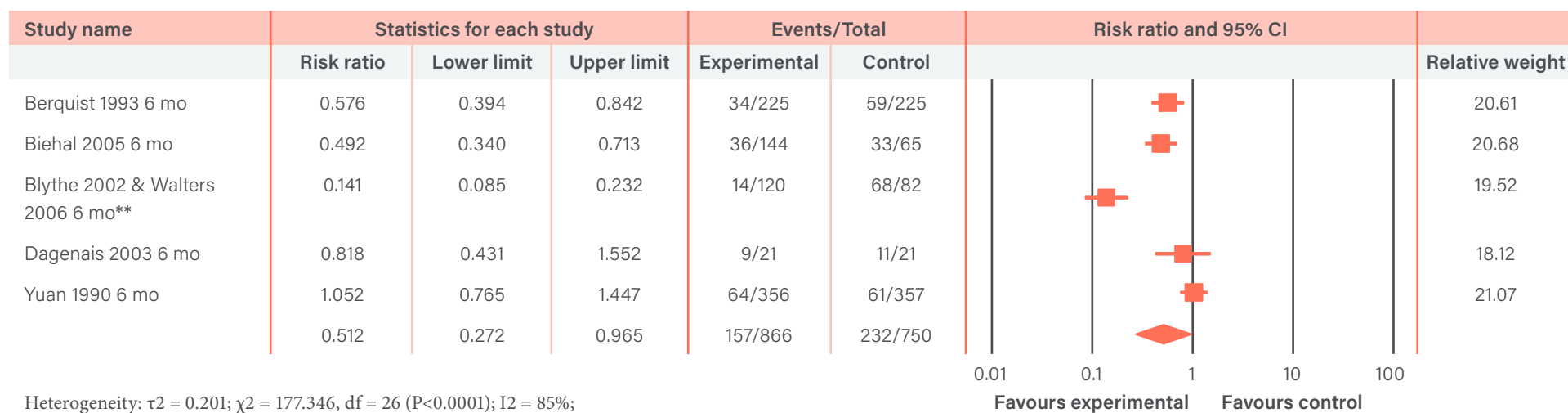
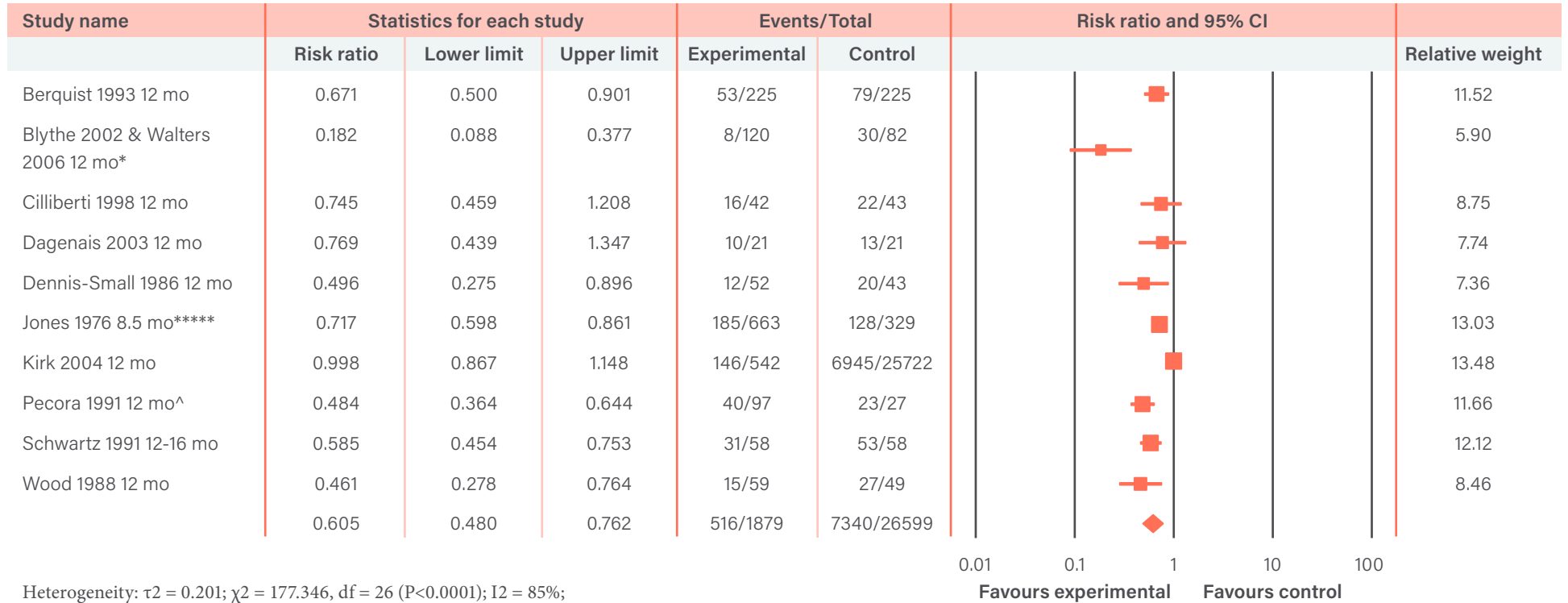


Figure 5a: Relative risk of out-of-home placement at 12 months following IFPS intervention vs controls (random-effectsmodel) (child level) (Blythe reporting foster care only)



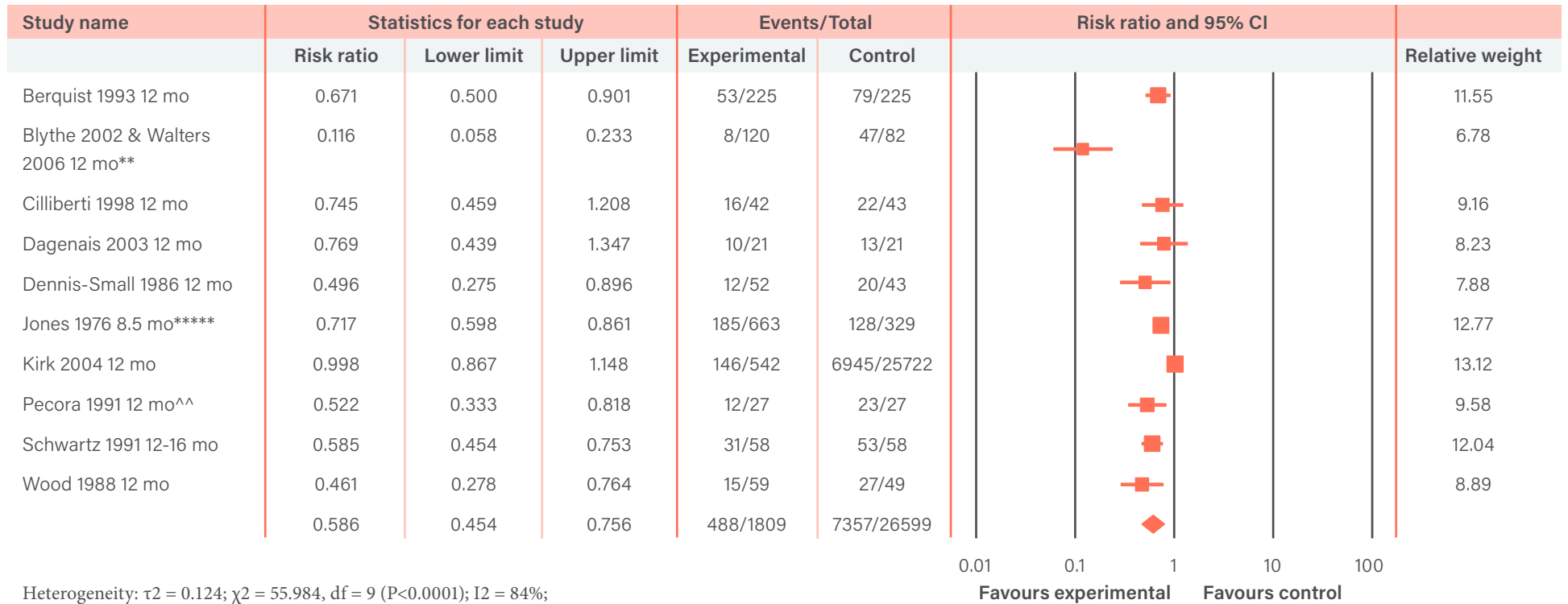
Heterogeneity: $\tau^2 = 0.201$; $\chi^2 = 177.346$, $df = 26$ ($P < 0.0001$); $I^2 = 85\%$;
 Test for overall effect: $Z = -6.684$ ($P < 0.0001$)

* Figures for children placed in foster care only.

***** The maximum length of service was 12 months. The average length was 8.5 months (9.5 months in the New York service and 7.5 months in Monroe).

^ Utah service only.

Figure 5b: Relative risk of out-of-home placement at 12 months following IFPS intervention vs controls (random effects model) (child level) (Blythe reporting foster care or placements with relatives)



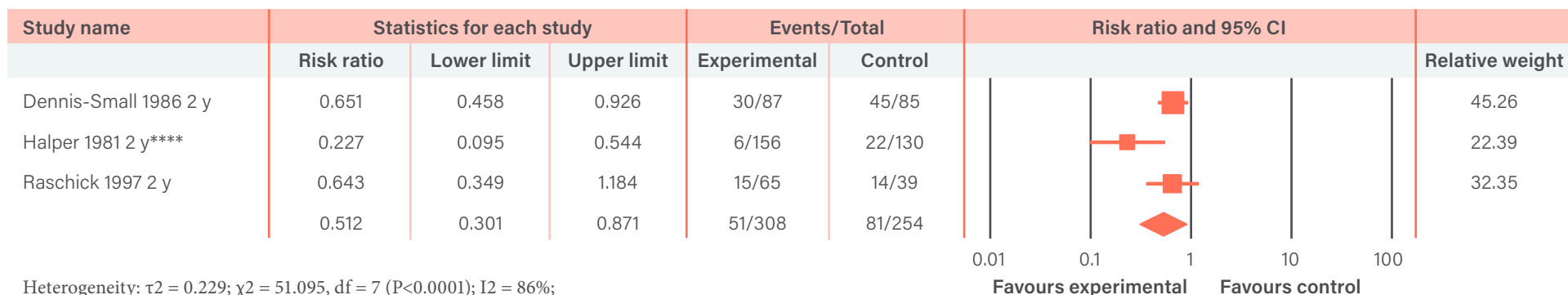
Heterogeneity: $\tau^2 = 0.124$; $\chi^2 = 55.984$, $df = 9$ ($P < 0.0001$); $I^2 = 84\%$;
 Test for overall effect: $Z = -4.108$ ($P < 0.0001$)

** Figures for children living in foster care or with relatives.

***** The maximum length of service was 12 months. The average length was 8.5 months (9.5 months in the New York service and 7.5 months in Monroe).

^^ Utah only with a matched treatment and comparison cases.

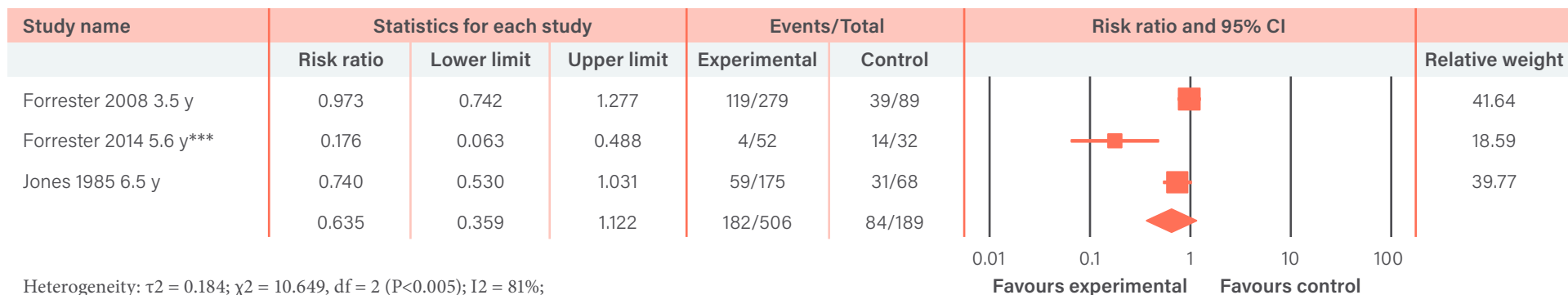
Figure 6: Relative risk of out-of-home placement at 24 months following IFPS intervention vs controls (random-effects model) (child level)



Heterogeneity: $\tau^2 = 0.229$; $\chi^2 = 51.095$, $df = 7$ ($P < 0.0001$); $I^2 = 86\%$;
 Test for overall effect: $Z = -3.157$ ($P < 0.002$)

**** Follow-up was until case closure or the end of evaluation period. The average length of service was 14 months for the treatment group and 8 months for the control group.

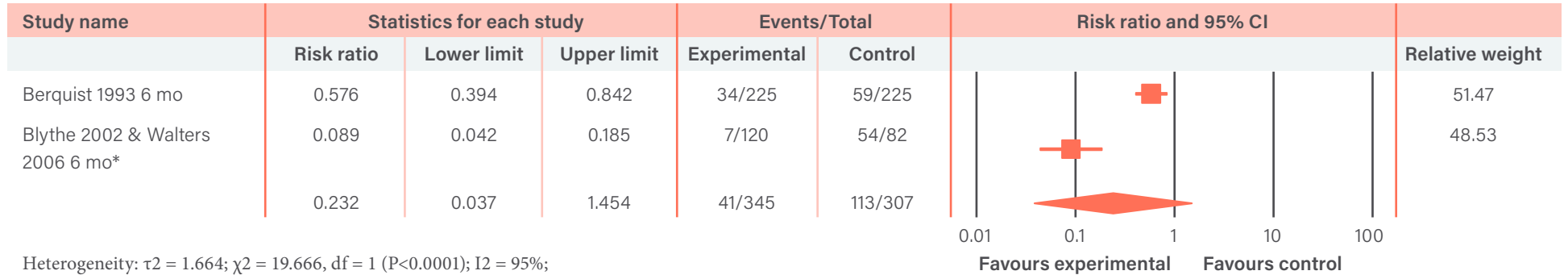
Figure 7: Relative risk of out-of-home placement at more than 2 years following IFPS intervention vs controls (random-effects model) (child level)



Heterogeneity: $\tau^2 = 0.184$; $\chi^2 = 10.649$, $df = 2$ ($P < 0.005$); $I^2 = 81\%$;
 Test for overall effect: $Z = -1.563$ ($P < 0.118$)

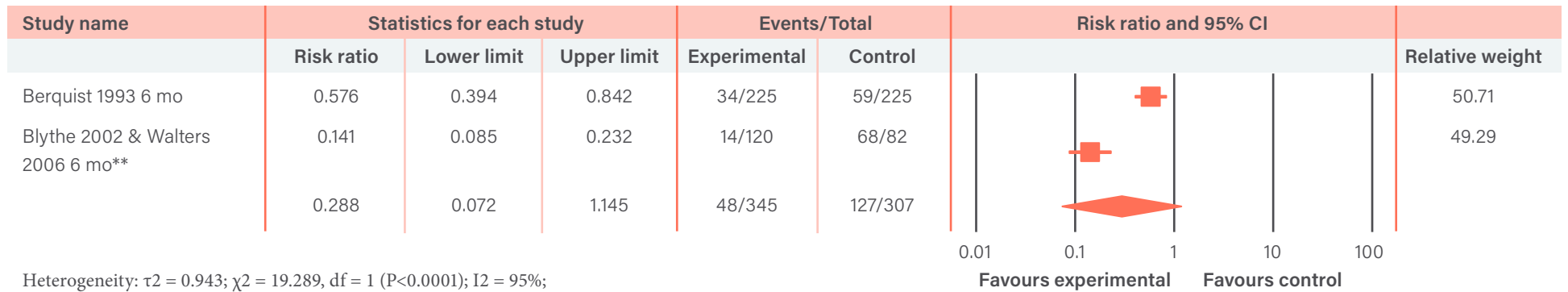
*** Figures for children who entered care at some point.

Figure 8a: Relative risk of out-of-home placement at 6 months following IFPS intervention vs controls (random-effects model) (child level) (high fidelity studies) (Blythe reporting foster care only)



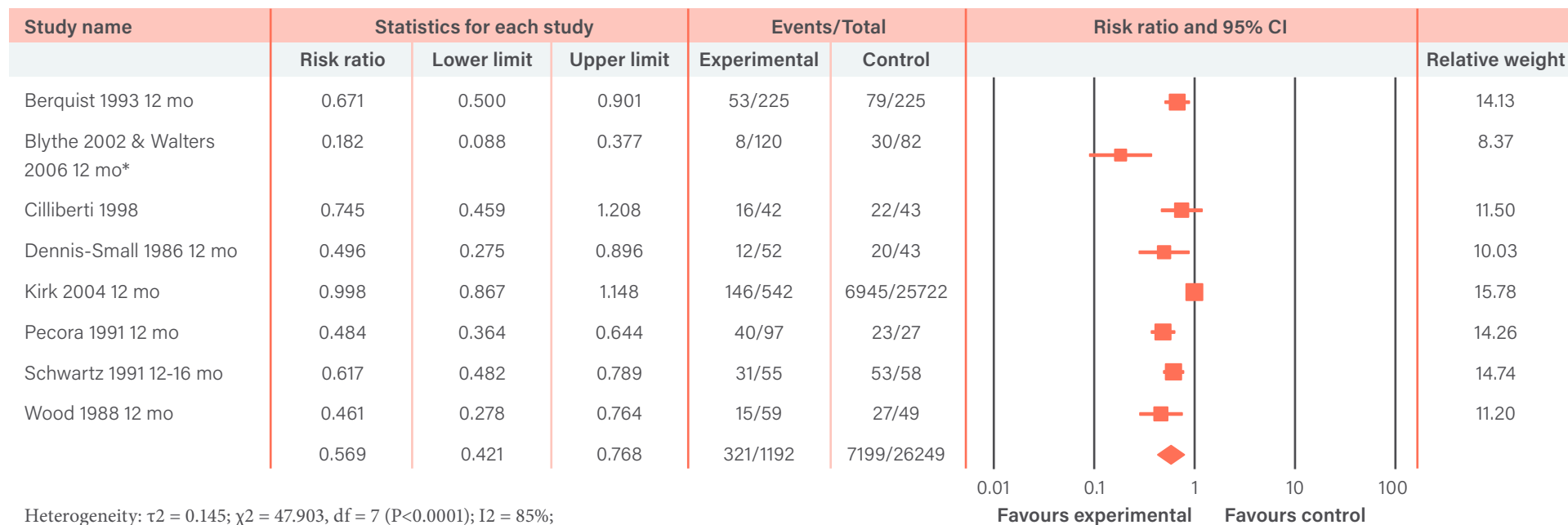
* Figures for children placed in foster care only.

Figure 8b: Relative risk of out-of-home placement at 6 months following IFPS intervention vs controls (random-effects model) (child level) (high fidelity studies) (Blythe reporting foster care or placements with relatives)



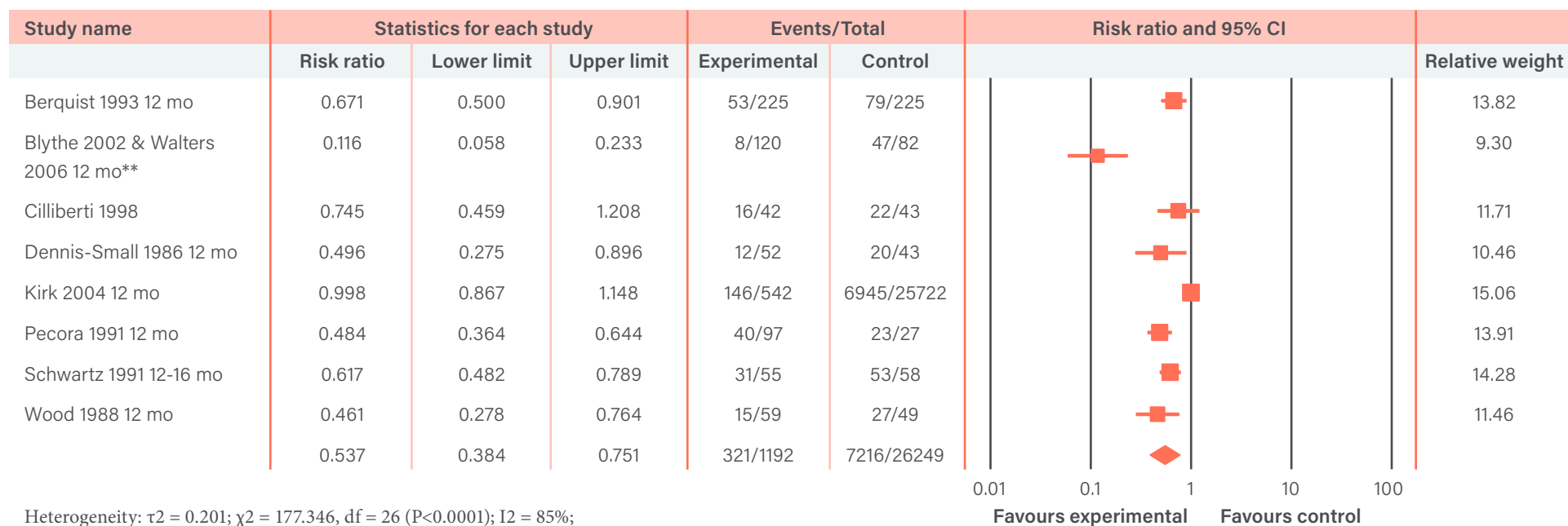
** Figures for children living in foster care or with relatives.

Figure 9a: Relative risk of out-of-home placement at 12 months following IFPS intervention vs controls (random-effects model) (child level) (high fidelity studies) (By the reporting foster care only)



0.01 0.1 1 10 100
 Favours experimental Favours control

Figure 9b: Relative risk of out-of-home placement at 12 months following IFPS intervention vs controls (random-effects model) (child level) (high fidelity studies) (Blythe reporting foster care or placements with relatives)



**Figures for children living in foster care or with relatives.

Figure 10: Relative risk of out-of-home placement at more than 2 years following IFPS intervention vs controls (random-effects model) (child level) (high fidelity studies)

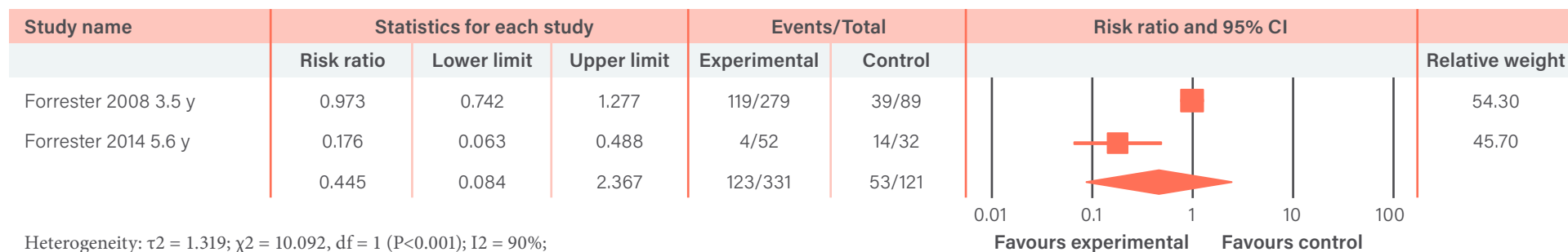


Figure 11: Relative risk of out-of-home placement at 12 months following IFPS intervention vs controls (random-effects model) (child level) (moderate quality studies; ROBINS-I)

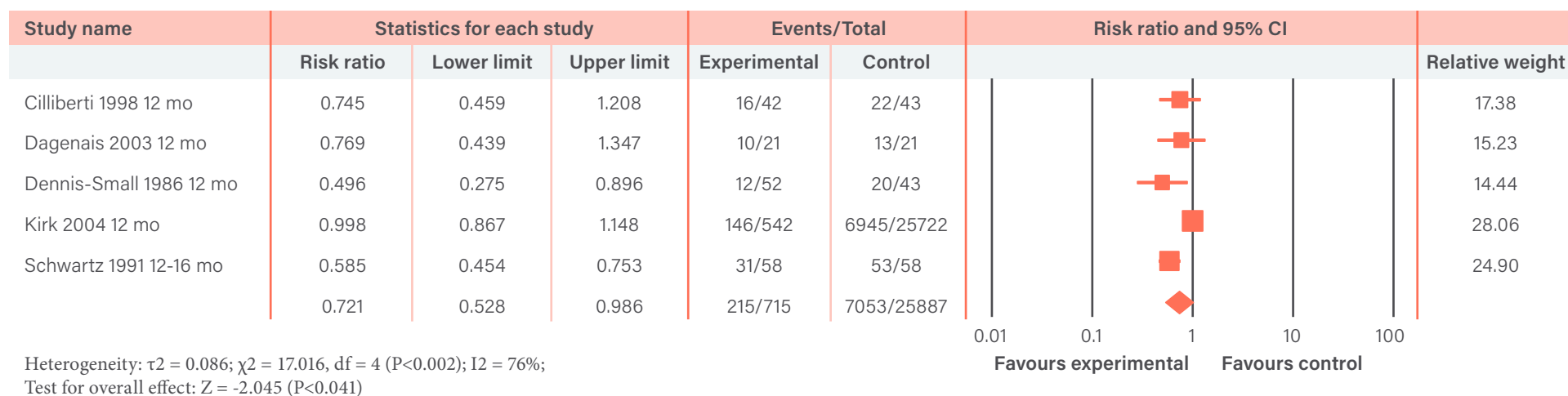
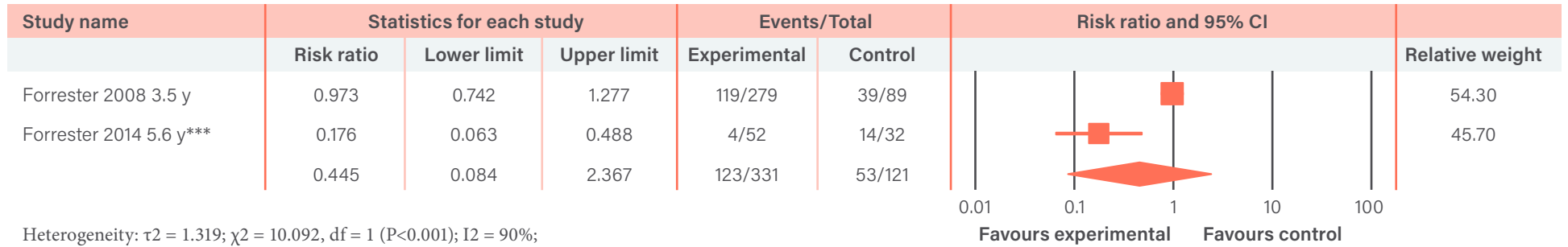


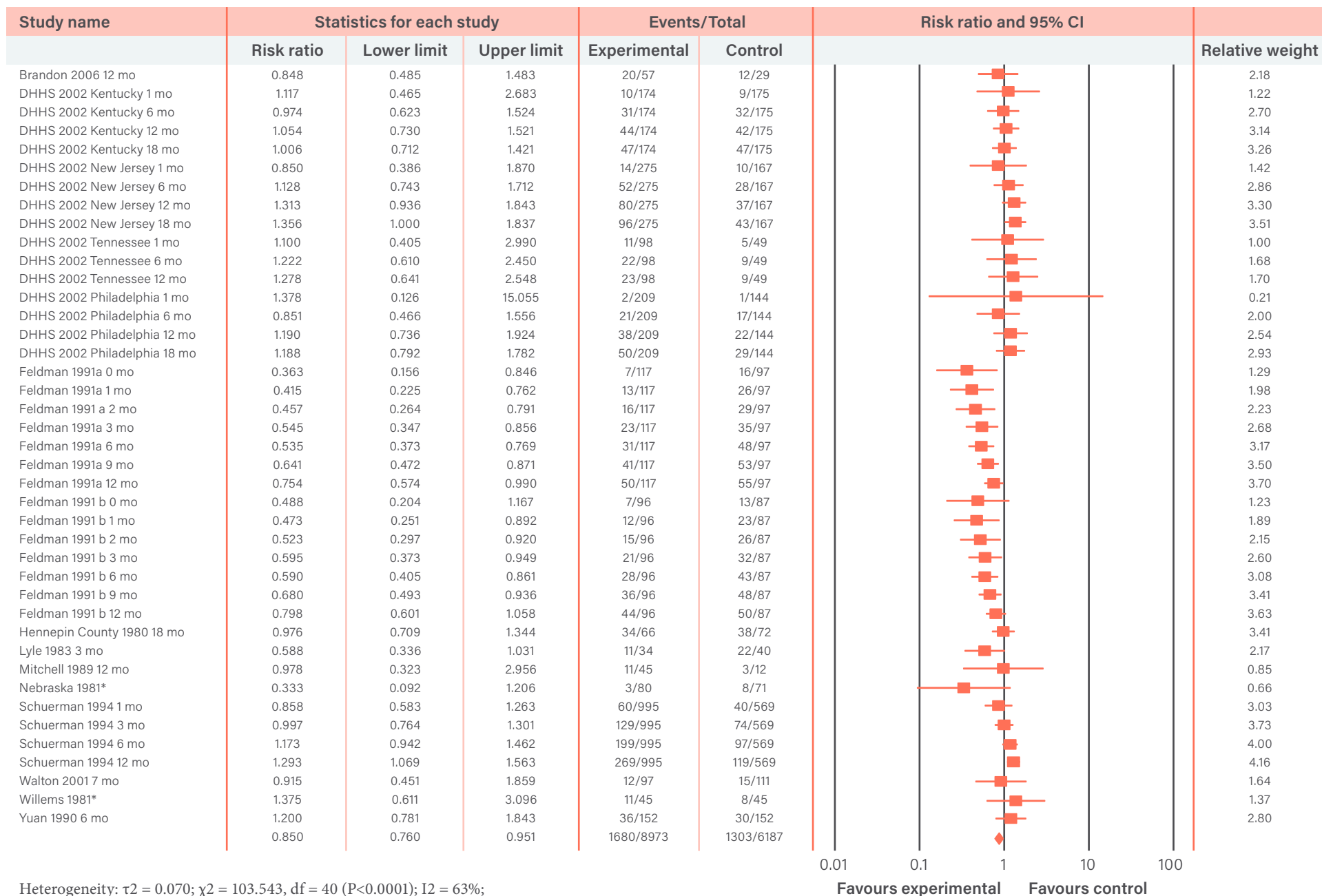
Figure 12: Relative risk of out-of-home placement at more than 2 years following IFPS intervention vs controls (random-effects model) (child level) (moderate studies; ROBINS-I)



Heterogeneity: $\tau^2 = 1.319$; $\chi^2 = 10.092$, $df = 1$ ($P < 0.001$); $I^2 = 90\%$;
 Test for overall effect: $Z = -0.949$ ($P < 0.343$)

*** Figures for children who entered care some point.

Figure 13: Relative risk of out-of-home placement at any time point following IFPS intervention vs controls (random-effects model) (family level)



* Time points not reported

Figure 14: Relative risk of out-of-home placement at 1 month following IFPS intervention vs controls (random-effects model) (family level)

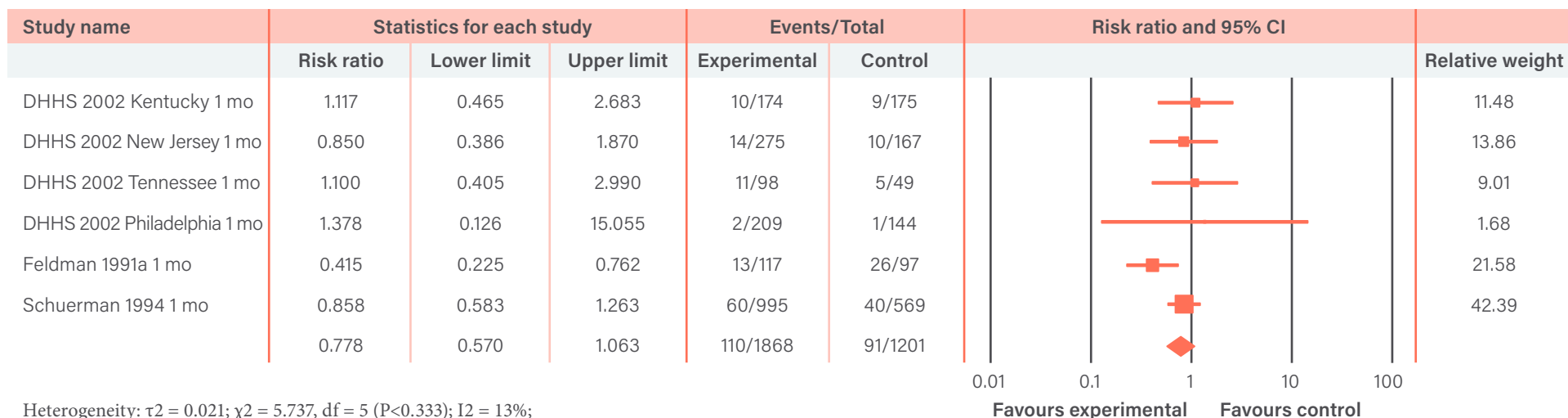


Figure 15: Relative risk of out-of-home placement at 3 month following IFPS intervention vs controls (random-effects model) (family level)

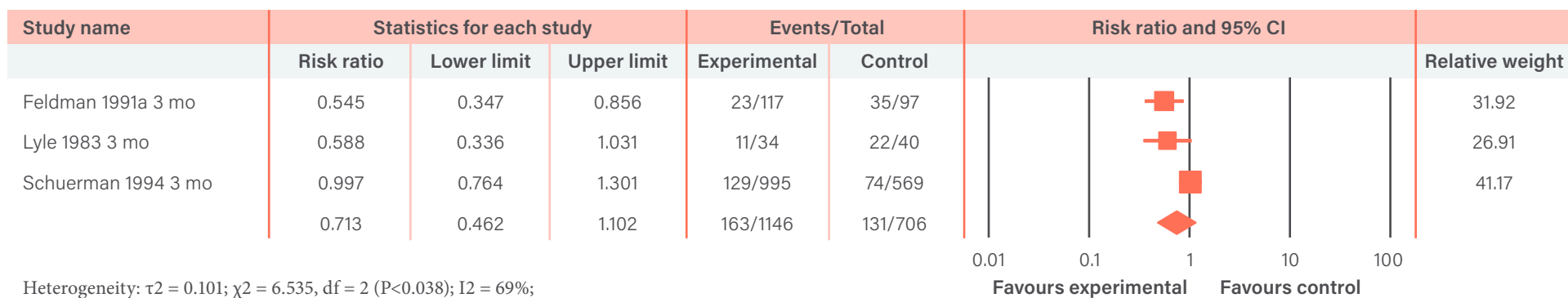


Figure 16: Relative risk of out-of-home placement at 6-7 months following IFPS intervention vs controls (random-effects model) (family level)

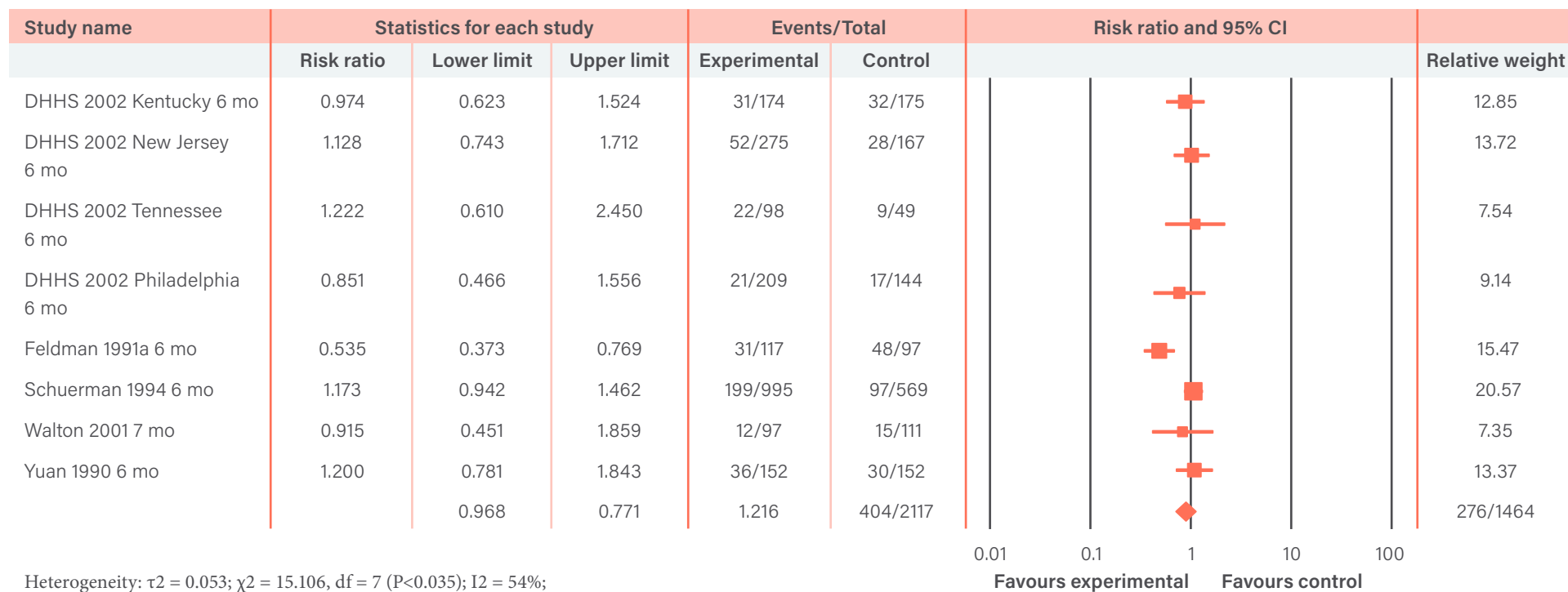


Figure 17: Relative risk of out-of-home placement at 12 months following IFPS intervention vs controls (random-effects model) (family level)

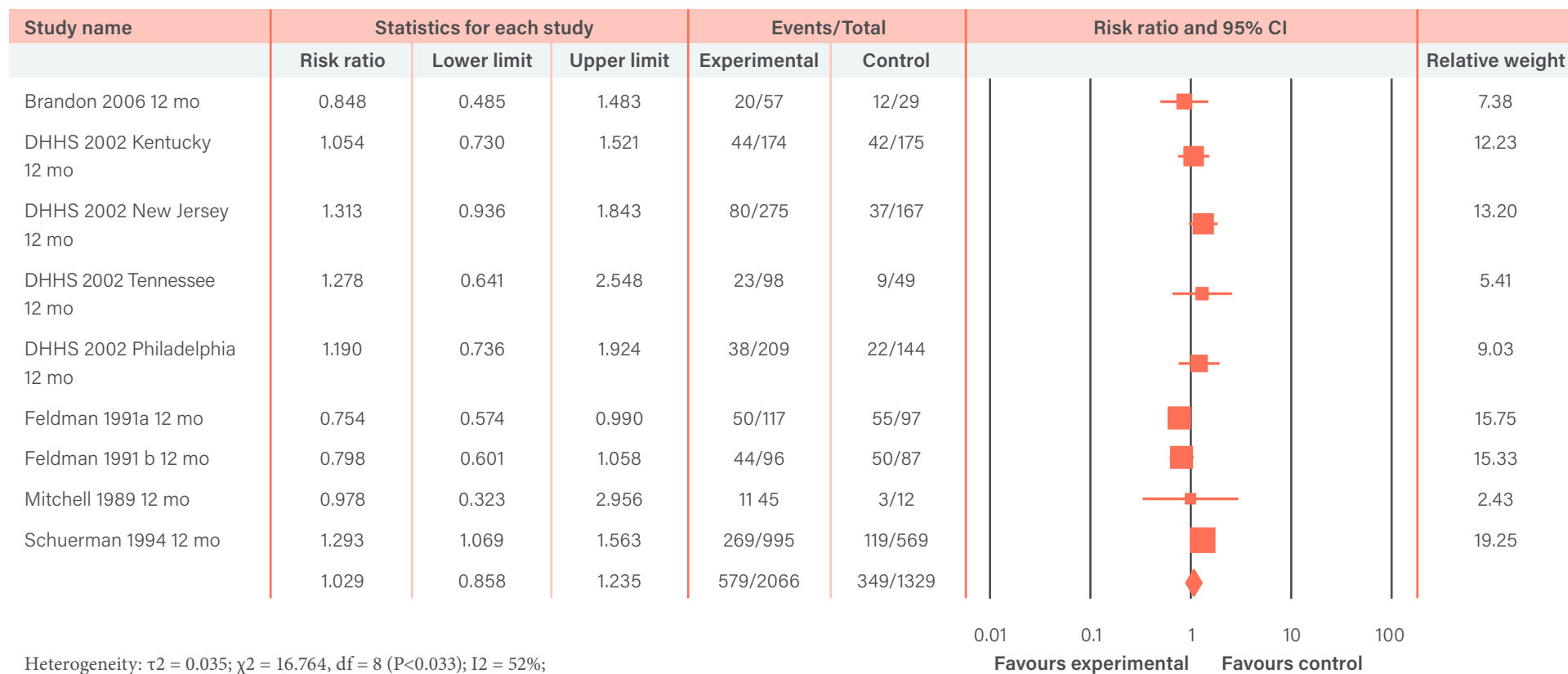


Figure 18: Relative risk of out-of-home placement at 18 months following IFPS intervention vs controls (random-effects model) (family level)

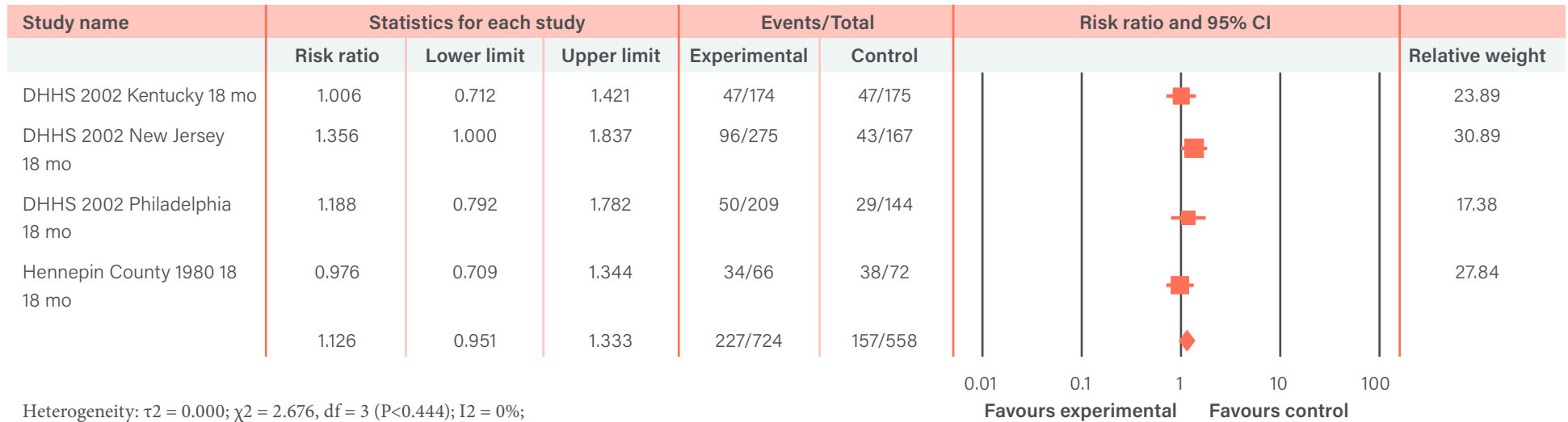
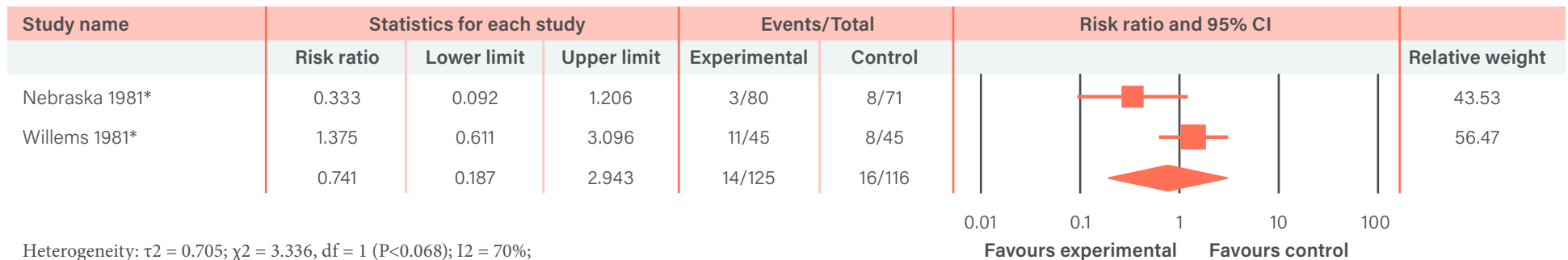


Figure 19: Relative risk of out-of-home placement at (unknown, not reported) time point following IFPS intervention vs controls (random-effects model) (family level)



*Time points not reported

Figure 20: Relative risk of out-of-home placement at 1 month following IFPS intervention vs controls (random-effects model) (family level) (high fidelity studies)

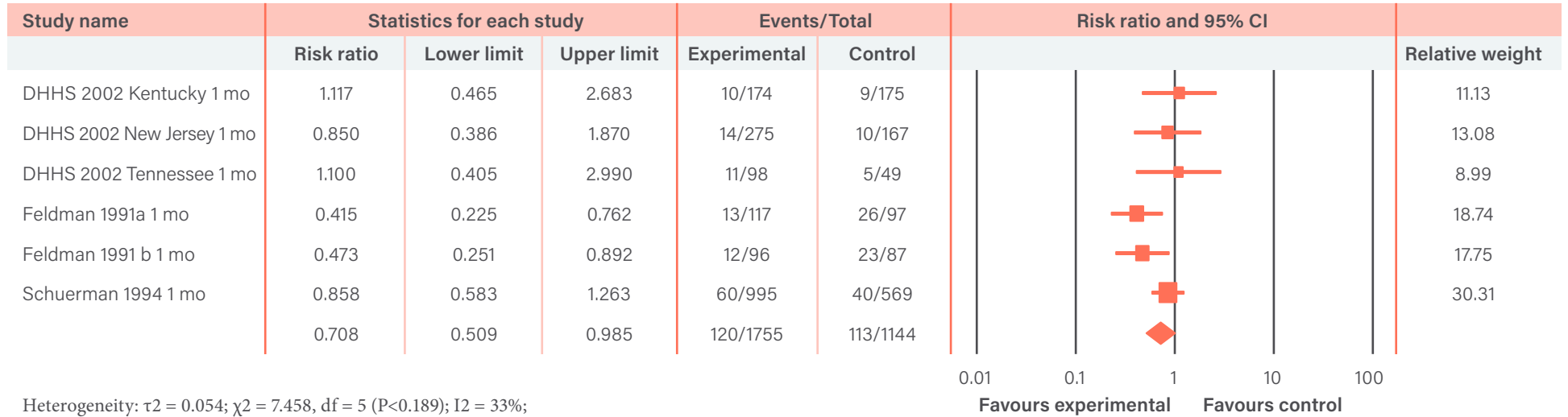


Figure 21: Relative risk of out-of-home placement at 3 months following IFPS intervention vs controls (random-effects model) (family level) (high fidelity studies)

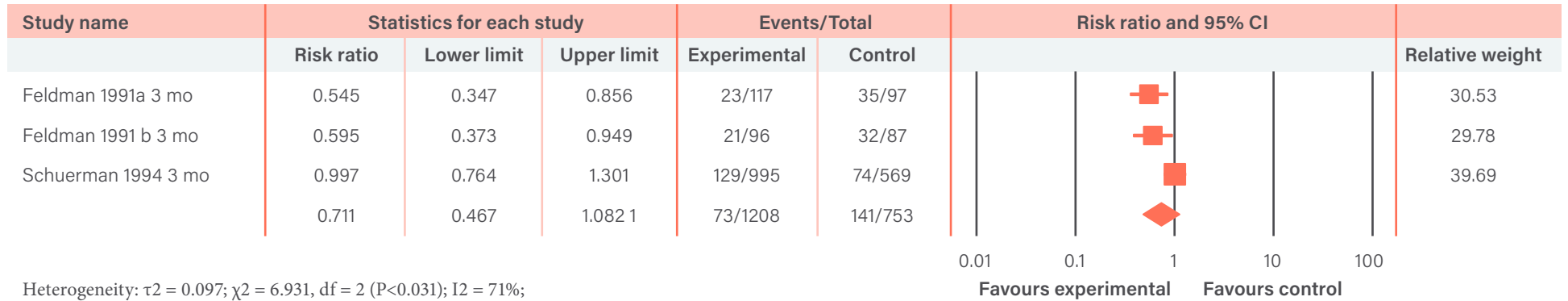


Figure 22: Relative risk of out-of-home placement at 6 months following IFPS intervention vs controls (random-effects model) (family level) (high fidelity studies)

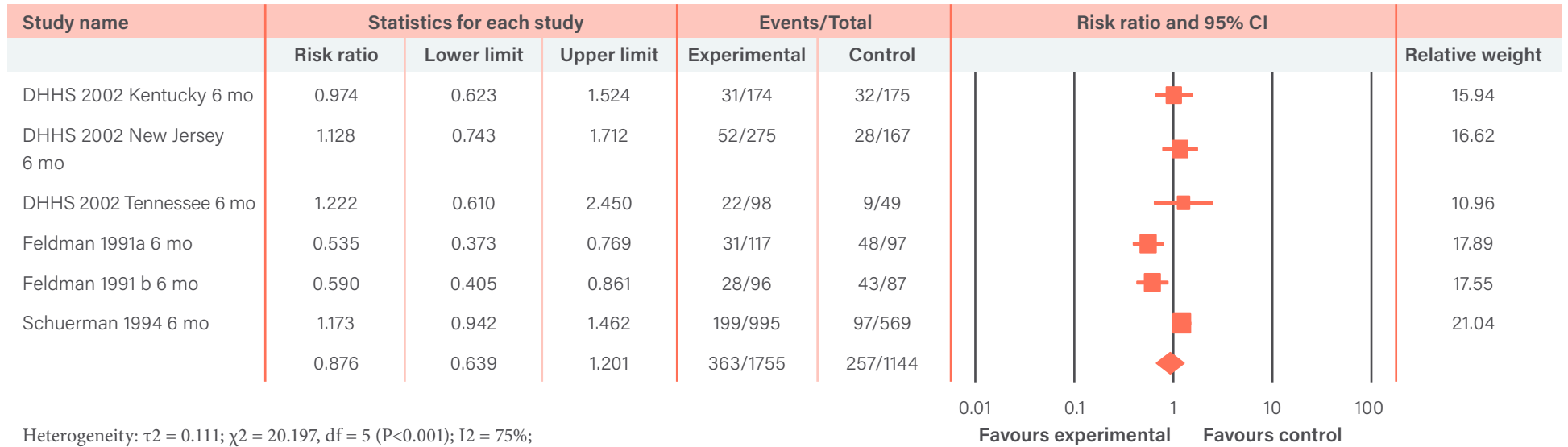


Figure 23: Relative risk of out-of-home placement at 12 months following IFPS intervention vs controls (random-effects model) (family level) (high fidelity studies)

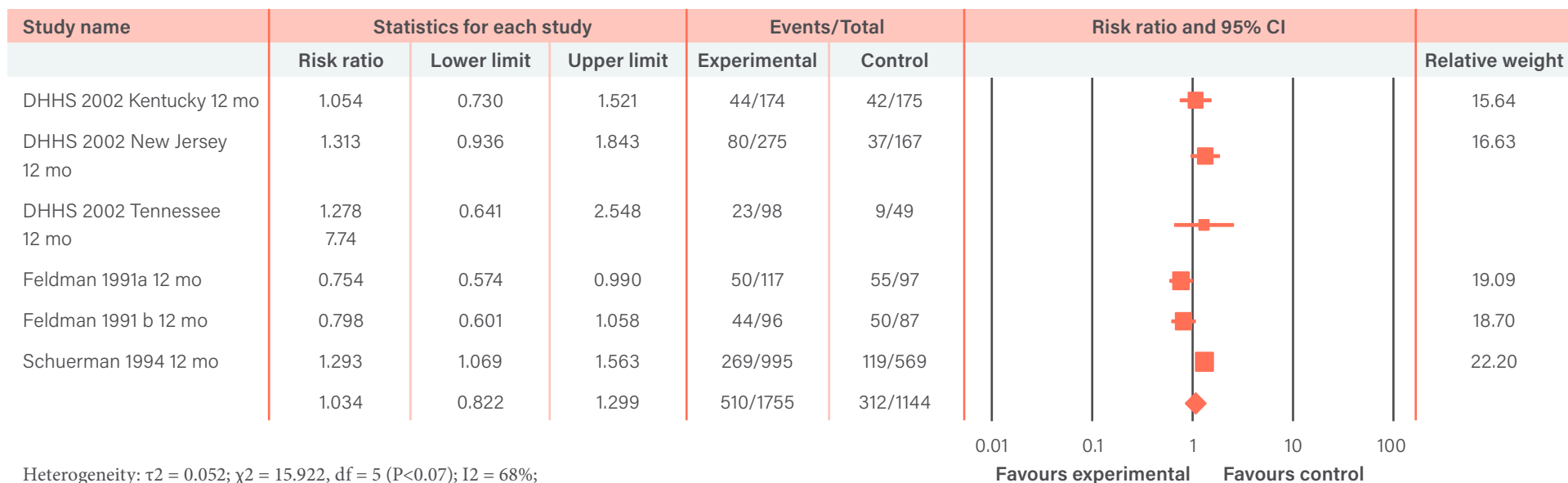


Figure 24: Relative risk of out-of-home placement at 18 months following IFPS intervention vs controls (random effects model) (family level) (high fidelity studies)

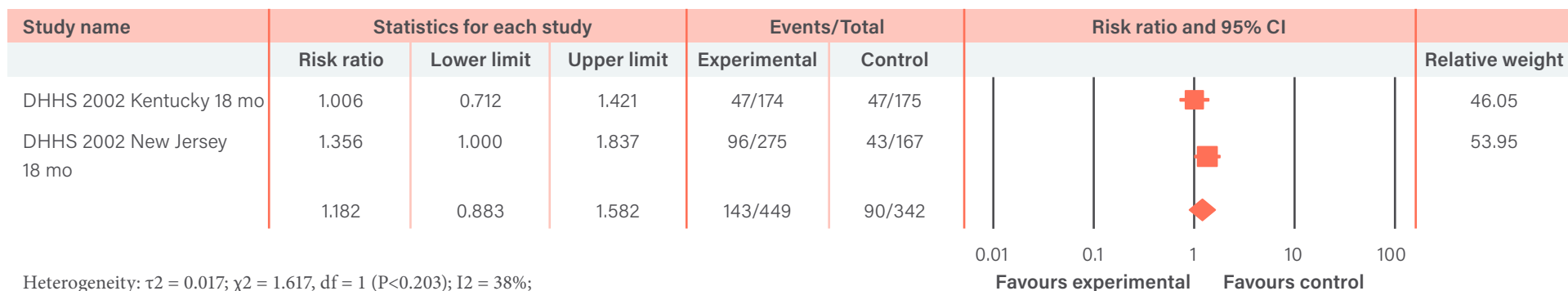


Figure 25: Relative risk of out-of-home placement at 1 month following IFPS intervention vs controls (random-effects model) (family level) (unclear risk of bias RCTs; Cochrane ROB)

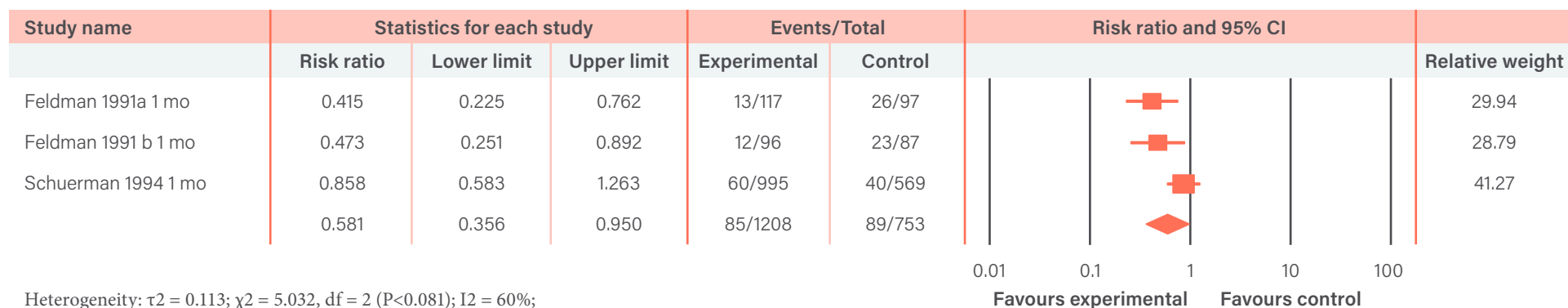


Figure 26: Relative risk of out-of-home placement at 3 months following IFPS intervention vs controls (random-effects model) (family level) (unclear risk of bias RCTs; Cochrane ROB)

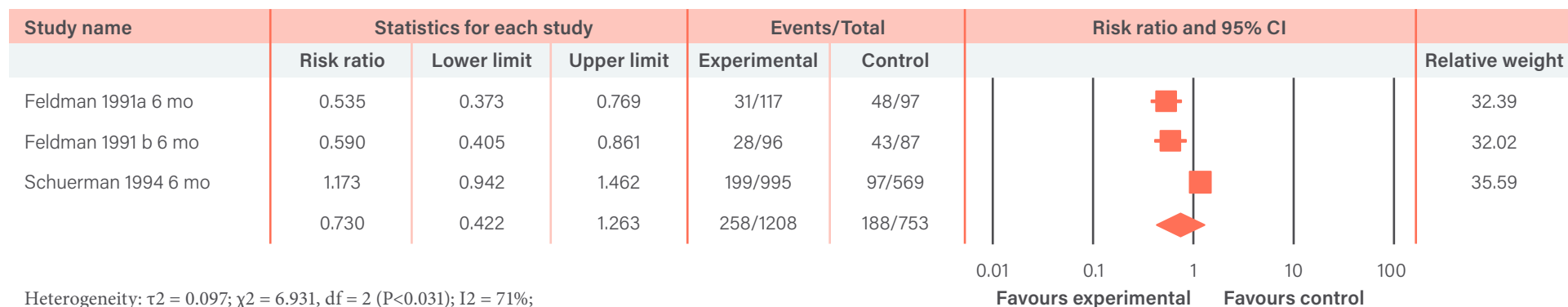


Figure 27: Relative risk of out-of-home placement at 6 months following IFPS intervention vs controls (random-effects model) (family level) (unclear risk of bias RCTs; Cochrane ROB)

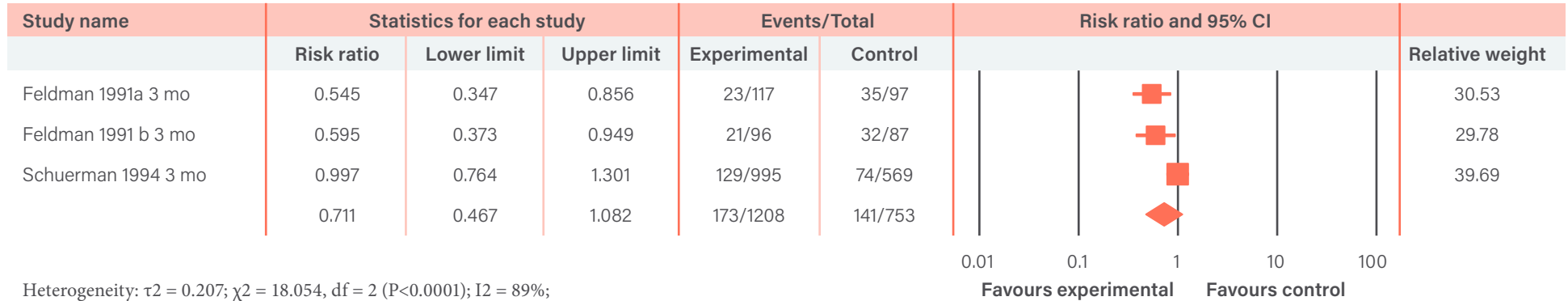
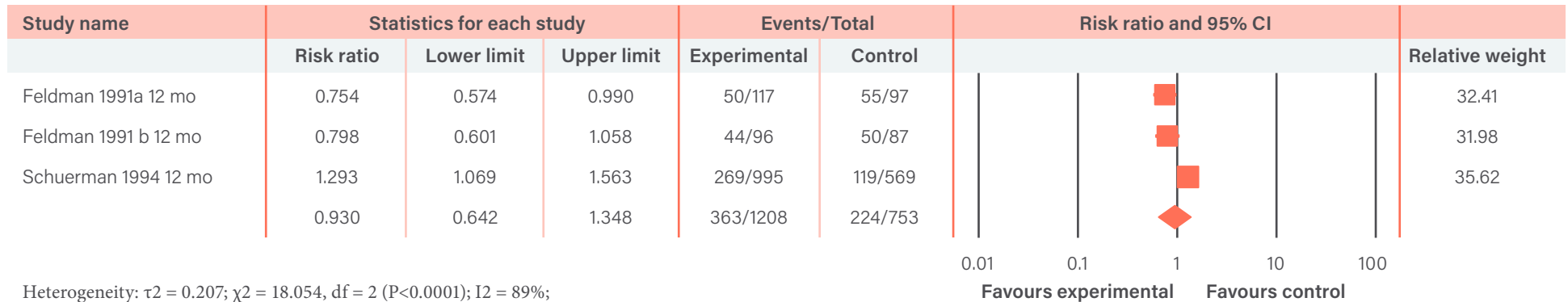


Figure 28: Relative risk of out-of-home placement at 12 months following IFPS intervention vs controls (random-effects model) (family level) (unclear risk of bias RCTs; Cochrane ROB)



4.7 Economic Data

Three of the studies published in academic journals⁴⁷ and four of the grey literature studies⁴⁸ included an economic analysis as part of their evaluation of IFPS. The majority of these, 5 studies, took a cost-cost offset analysis approach where the costs of the intervention are compared to the costs saved as a result of the intervention. One study took a cost-offset analysis approach by measuring the costs offset only without considering the cost of the intervention itself (Raschick, 1997). The final study presented economic data in the form of a cost

analysis, comparing the cost of the intervention to the cost of a suitable comparator (Dennis-Small and Washburn, 1986). None of the studies carried out a full economic evaluation by measuring benefits in monetary terms or measuring and incorporating ICERs in their evaluation.

A summary of the economic analysis approach and the author's overall conclusion on cost-effectiveness for each of the seven studies is given in Table 2.

Table 1: Summary of the economic data

Study	Economic analysis	Results	Authors' conclusion
Published studies			
Forrester et al. (2008a)	Cost-cost offset analysis	£1178.10 cost saving/child	Cost-saving
Raschick (1997)	Cost offset analysis	\$203.27 cost saving/child	None made
Wood et al. (1988)	Cost-cost offset analysis	\$1,456 cost saving/child	None made
Grey literature			
Berquist et al. (1993)	Cost-cost offset analysis	\$55,318,000 cost saving to the state of Michigan	Cost-saving
Dennis-Small and Washburn (1986)	Cost analysis	\$1,313 cost increase/family	None made
Halper and Jones (1981)	Cost-cost offset analysis	\$83,350 cost saving to child welfare services	Cost-saving
Jones (1976)	Cost-cost offset analysis	\$285,984 cost-saving to Social Services Department	

4.7.1 Cost analysis

Dennis-Small and Washburn (1986) carried out a cost analysis of intensive services. They compared the cost of the intensive intervention by the Texas Department of Human Services (DHS) to DHS standard practice. In addition, they included a third arm in their study representing intensive services by a third-party contractor, DePelchin Children's Centre (DCC).

Dennis-Small and Washburn (1986) estimated the overall per family cost for each arm of their study. The total cost encompassed the direct cost of

project services and the cost of extra foster care for children. The direct cost of DHS intensive services was greater than the direct cost of standard practice. However, the average cost of foster care and extra casework was lower under the intensive scenario. Nonetheless when combined, the total cost of the intensive approach remained above that of standard services. The cost of DCC intensive services was similar to the cost of DHS intensive services. The cost analysis suggests that IFPS are more costly than standard practice. However, the study authors hesitate to make any cost-effectiveness conclusions and acknowledge that further research is needed in order to do so.

47. Forrester et al., 2008a; Raschick, 1997; Wood et al., 1998.

48. Berquist et al., 1993; Dennis-Small and Washburn, 1986; Jones, 1976; Halper and Jones, 1981.

4.7.2 Cost-offset analysis

In Raschick (1997) evaluation of Intensive Family Based Services the cost analysis was not a central focus of the study. Raschick (1997) did not report the cost of the intervention or comparator but compared the average cost of child placement across the two arms of the study, reporting a cost saving per child with the intensive services. Even though the analysis by Raschick (1997) presented evidence of a cost saving with the intensive services, a decision on cost-effectiveness could not be made.

4.7.3 Cost-cost offset analyses

The remaining five studies took a cost-cost offset analysis approach to their economic analysis of intensive services. All five studies estimate the cost of the intervention and set this against the cost savings associated with the intervention. In most cases the cost savings were related to changes in placement costs.

Jones (1976) and Halper and Jones (1981) evaluated intensive interventions for at risk families introduced by the New York City State Department. Halper and Jones (1981) focused on the implementation of the intensive services in a specific borough of New York (the Bronx) whilst Jones (1976) evaluated the implementation of intensive services across New York. Both studies refer to the intensive services as the Demonstration Project.

Jones (1976) base the cost of the Demonstration Project on the total expenditure of the Social Services Department during the study period and Halper and Jones (1981) cost the intervention based on government funding received over the period of the project's operation. This was a common approach adopted in many of the studies. Total expenditure or grant or contract value are perhaps good starting points when estimating the cost of an intervention, but a breakdown of the underlying costs is needed to accurately estimate the cost of the intervention. Knowledge of this information is important to allow the separation of costs that are considered part of the intervention and those that are considered part of the research or other costs that would not be incurred in practice. It is possible that many of the studies inflate the cost of their IFPS intervention and in practice when research or other costs are removed, the cost of the intervention will be reduced. Both studies acknowledge this issue.

Jones (1976) take two steps to overcome this, rather than including total expenditure as the cost of the Demonstration Project, a 25% reduction was applied to compensate for low caseload at the start of the study period and costs were further reduced by a third corresponding to costs that would have also been incurred in the control arm. Both steps were based on assumption.

Halper and Jones (1981) clearly state that the government funding received did not cover research costs and that all costs are to do with the projects' operation. However, additional subsidies were received that were not costed so that the project was more costly than the funding value reported. The authors also assumed that a proportion of the funding received would have been spent on similar costs in the comparator arm of the study and estimate that the add-on costs of implementing the Demonstration Project are expected to be 2/3rd of the value of the full funding.

Essentially, both studies adopt a flawed approach to estimating the cost of the intervention and most likely do not accurately represent the true cost of the Demonstration Project, bringing into question the reliability of the economic analysis results.

In addition to the cost of the intervention, Jones (1976) and Halper and Jones (1981) estimated the cost savings as a result of the intervention and included two elements in this. Firstly, a value was given to the difference in the number of days spent in foster care by children in the Demonstration Project during the study period when compared to the comparator children and secondly future cost savings were estimated by comparing the number of children in care in each group at the end of the study period. Both studies concluded that overall the Demonstration Project was cost saving, the total cost saving as a result of out-of-home placement avoided was greater than the cost of the intervention. While these are promising findings for IFPS and support its adoption, these results cannot be considered without taking into consideration the overall quality of the economic evaluation carried out. Jones (1976) and Halper and Jones (1981) are both poor quality economic evaluations. They only scored positively on 6 and 4 items of the criteria outlined in the CHEERS checklist for reporting economic evaluations thus highlighting the difficulty of making cost-effectiveness decisions based on these results alone.

Wood et al. (1988) also estimate the cost of the intervention and the difference in placement costs between the intervention and standard practice. Their evaluation also indicates that the intervention overall is cost-saving. Unlike Jones (1976) and Halper and Jones (1981) the authors hesitate to conclude that one intervention is less costly than the other and acknowledge the inadequacy of their analysis, supported by the fact that the evaluation only scored positively on 7 out of the 20 items in the CHEERS checklist and can be regarded as a poor quality study.

Berquist et al. (1993) referred to their intensive intervention as Families First. They also reported the cost of the intervention and the difference between the cost of placement in the Families First and comparator group. The intervention cost was estimated by dividing the total contract cost by the number of children served, details of individual expenditures are not given so that the types of costs included in the estimate are not known and it can only be assumed that these are mainly direct costs of the intervention.

Placement costs were based on individual level data on the complete record of placements for each child. While the authors described their source of data to inform placement costs, they did not give any detail on the unit costs that were used to estimate the total placement cost for each child. Unlike the economic evaluations discussed so far, Berquist et al. (1993) indicate an overall cost increase with Families First, however the study's authors do not explicitly state this. The savings in placement costs seen in the Families First group do not quite offset the cost of the intervention itself. The economic analysis approach up to this point is similar to that adopted by the other studies.

To make a decision on the cost-effectiveness and the potential savings of Families First, Berquist et al. (1993) went a step further than the other studies. They compared the full cost of Families First, which includes the cost of the intervention and the average cost of placement per child over the study period, against future placement costs avoided based on hypothetical estimates of the number of children at risk of placement. Berquist et al. (1993) conclude that \$55,318,000 is saved by the state of Michigan over the 3-year duration of the programme. The economic data included in Berquist et al. (1993) were difficult to follow and lacked detail on the various cost estimates

presented. While the authors concluded that the Families First intervention is cost-effective, this is not a robust analysis and many features of a reliable economic evaluation based on which cost-effectiveness decisions can be made were absent.

The final study, Forrester et al. (2008a) reported a cost saving to the local authority per child with the introduction of the IFPS intervention, Option 2. The authors estimate the cost of implementing Option 2 and set this against the difference in the cost of care for children between both arms of the study. The cost of Option 2 was generated by dividing the total project grant by the study sample size, however, detail of the grant value and a breakdown of the costs incurred through the study were not given. It can be assumed that, since it was only based on the grant value, the cost reported represents the direct costs of Option 2 only. It does not fully capture the cost of the intervention by identifying and valuing all the indirect costs and changes in resources use costs to give a more complete understanding of the cost of Option 2.

Forrester et al. (2008a) valued the cost of care for children by measuring direct placement costs and not fully capturing the cost of care as is acknowledged by the study authors. With greater detail, the cost of the intervention may be greater or less than that reported by Forrester et al. (2008a) and the difference in cost of care too may differ if all resource use costs associated with care are identified and measured appropriately.

Forrester et al. (2008a) also presented outcomes for children in both the Option 2 and comparator groups. These outcomes include the number of children that entered care and the number of days in care. They do not go further by reporting a cost per outcome for each arm and comparing these against each other in the form of an ICER. There are some gaps in the information that would be needed to enable this.

While the study authors concluded that the intervention was cost-saving and perhaps the evidence indicates this, further economic research is needed to be able to draw a more robust conclusion on cost-effectiveness. This should involve identifying, measuring and valuing all the relevant costs and outcomes of Option 2 and its comparator and presenting summary estimates of the mean changes in costs and outcomes together with appropriate measures of uncertainty. Only then can a cost-effectiveness decision be made.

5 DISCUSSION

5.1 Summary of main findings

The review found almost equal numbers of RCTs and non-randomised controlled studies. Where possible and appropriate, we undertook our quantitative meta-analyses of outcomes on an intention-to-treat basis, using random-effects modelling following the specified analysis plan. This approach produces more conservative assessments of benefits than would have been obtained using fixed-effects meta-analyses. We express the results as relative risk with 95% confidence intervals. Heterogeneity statistics are reported with each forest plot. We were able to pool data from 18 included studies that reported child level placement outcomes and 14 studies that reported family level outcomes. In order to understand the general picture and trends of the IFPS effect on out-of-home placement in children, we have combined estimates and pooled effect sizes at multiple time points from the same trials using a random-effects model. This modelling approach produces point estimates at each fixed time point in the longitudinal studies where a number of outcomes are measured at multiple time points (Musekiwa et al., 2016).

At child level, we found that IFPS significantly decreases the likelihood of out-of-home placement. A child's risk of experiencing an out-of-home placement was reduced by 43% at 3 months, 49% at 6 months, 40% at 12 months and 49% at 24 months after the intervention compared to children in the control/comparison group. There was insufficient evidence to draw a conclusion about impact beyond two years post-intervention.

We assessed the certainty of evidence at child level using GRADE. The evidence at 12 months was rated as moderate certainty as IFPS studies commonly

reported placement outcomes one year after the intervention (or equivalent control period) and as a result, ten studies (with a large total sample size of 28,478 participants) could be included in the analysis. The evidence, however, could not be rated higher than moderate certainty due to the high levels of heterogeneity. Evidence at the other time points (3 months, 6 months, 24 months and over 2 years) was rated as low certainty due to heterogeneity, publication bias and the risk of bias of included studies. Further work exploring the factors that might account for the heterogeneity (e.g. child characteristics or the length of the intervention) would help to inform when IFPS are most effective in reducing care entry and who benefits most from the service.

For studies that measured outcomes at family level, IFPS also significantly decreased the likelihood of out-of-home placement. However, the sub-analyses for impact at different points did not achieve statistical significance.

As is often the case for reviews of international evidence, most studies are from the USA and only three studies took place in the UK. There were too few UK studies to complete a subgroup analysis to estimate the effect of the interventions delivered in the UK. As discussed further below, considerable caution is needed in applying the results to the UK because American interventions do not always prove to be effective in a UK context (see, for example, Robling et al. (2016) and Fonagy et al. (2018)).

The economic analyses identified suggest that IFPS could potentially be a cost-saving intervention. However, further research is needed in the form of good quality full economic evaluations to fully support the adoption of IFPS in practice.

5.2 Strength and limitations of this work

The methodology for conducting this systematic review and meta-analysis included all available sources of information (published and unpublished grey literature), comprehensive search strategies, searching 12 international electronic databases without any language or geographical restrictions. Additional, thorough supplementary searches included, reference list checking, citation tracking, searching electronic table of contents pages, websites searching, translating of papers, contacting an international panel of experts, contacting the authors, co-authors of included studies. The existing literature suggests that combining only published studies may lead to an over-optimistic conclusion, as it is often found that studies that do not have positive findings are less likely to be published (Bland, 2014).

The main limitations of this systematic review and meta-analysis stem from the numerous studies with moderate and low methodological quality and the difficulties we experienced in obtaining publications/grey literature papers that were published during the 1970-80s. We were unable to retrieve eight studies and included data from secondary sources where possible to avoid bias in our findings. However, we were not able to assess the study quality or programme fidelity of these studies without access to the full papers. We also had insufficient information about the participant inclusion/exclusion criteria, sample characteristics, intervention type and outcome measures of these studies.

In addition, in several meta-analyses the different levels of heterogeneity (clinical and methodological) may be related to the diverse population, social care systems, duration of trials etc. The assessment of heterogeneity of included studies is a complex area that will warrant further investigations of the possible sources of clinical and methodological heterogeneity in our future follow-up studies.

Another limitation of this review is that the included studies reported placement outcomes at either family or child level and therefore it was not possible to pool data from all studies. As a result, separate meta-analyses were completed. If outcomes were reported in the same way across studies, it might have been possible to conduct further subgroup analyses as there would be a

higher number of studies in each category.

The strength of findings for child level and family level analysis was different. There were in fact two types of child level analysis. In two studies (Berquist, 1993 and Ciliberti, 1998) one "target" child was identified for each family. In all other studies all the children who were the focus of intervention were included. Blythe et al. (1994) previously highlighted the difficulty of outcomes being reported at a mixture of child and family levels. These authors suggested that the unit of analysis should be selected based on the data that are being collected and the outcomes that are assessed. Child level data were considered to be useful when considering placement outcomes and the associated cost as public agencies are interested in the resources spent per child, rather than per family.

For our analysis the fact that child level analysis found stronger findings than family level analysis is difficult to interpret as there are multiple possible explanations. These include the fact that (a) only selecting one child from each family underestimates the impact in reducing care as it excludes the impact of preventing sibling groups from entering care; (b) on the other hand, family grouping effects mean that the impact of the intervention should not be evaluated as if each child was a completely separate case. Usually such considerations would be taken account of through multi-level modelling. However, given that studies did not do so it is possible they over-estimate effect at child level. For future studies we recommend that 'all children' is the appropriate level of analysis with statistical allowance for grouping effects. For the current review the uncertainty over the impact of these possible issues adds a level of necessary caution in interpreting the impact.

Furthermore, the studies varied in how they defined a child's risk of out-of-home placement. Some definitions were more operationalised than others; for example, they included a timeframe (e.g. at risk of placement within 4 week) and the type of placement (e.g. foster care) that the child is at risk of experiencing. However, studies recognised that caseworkers' judgement of risk varied, even with protocols and assessment tools in place (US Department of Health and Human Services, 2002a, US Department of Health and Human Services, 2002b). In many of the studies, the majority of the control group did not enter a placement. For example, in the study by Feldman (1991b) children

were screened for imminent risk of placement and yet only 36.8% of children in the control group experienced out-of-home care at the 3 month follow-up. Targeting IFPS at the desired families is difficult and widely recognised as a limitation of the literature (Dagenais et al., 2004, Lindsay et al., 2002, Rossi, 1992, Schweitzer et al., 2015b). In practice, the targeting effect in the studies reviewed is likely to make it harder to discern the true potential of IFPS for reducing children's placement in care, as if few children in the control group enter care it is difficult for the service to impact on this outcome.

The most important limitation of the review is that it only reports on success in reducing the use of care. We have not collected evidence on the impact on child welfare or safety. This is reported in only a minority of papers and in very varied ways. Care is sometimes the right choice for a child. We therefore have some confidence that IFPS can reduce the use of out-of-home care, but cannot comment on the impact this has on children's welfare and safety either short or long-term.

5.3 Interpreting the findings

Overall our review and pooling of the findings suggested that IFPS tends to work to reduce out-of-home placement. However, as ever in the complicated world of children's services, considerable care needs to be taken in interpreting this finding.

The most important limitation is perhaps that the bulk of the findings come from the USA. There are three UK studies which tend to support the general sense that IFPS can reduce the need for children to be in care. However, the USA's approach to child welfare and protection, the quality of alternative service provision and myriad contextual factors are likely to influence the extent to which IFPS are likely to be effective within the UK.

Second, the language of research can often be confusing. Discussion of the "heterogeneity" of IFPS interventions means that while the core model was relatively clearly delineated, the ways in which it was delivered varied significantly. We know from published information that IFPS was targeted at different groups, offered for varied time periods and delivered in somewhat different ways across studies. In addition, there is much information that it is not possible to capture in studies. For instance, some services will have been led well and others

managed poorly, the quality of the service experienced by families will vary and of course each family and their circumstances are different. Furthermore, as with most studies in this area, we know very little about what the comparison groups received, though we do know that given the level of concern they will rarely have received nothing. These studies are in general therefore comparisons of IFPS with other services provided across a wide range of contexts for children considered to be at risk of entering care.

Some of this variety is probably reflected in the range of success across different studies. There did not seem to be any studies where there was evidence that IFPS made care entry more likely at a statistically significant level. There were a few, particularly when results were reported for families not children, where the IFPS seemed to have little or no impact. In most studies, including almost all of those reporting child level outcomes, IFPS reduced care and in a few of these it was very successful.

In light of these findings two conclusions seem clear. First, IFPS are a promising way of reducing the need for children to enter care. Many local authorities use versions of "edge of care" services, however the Homebuilders model does not seem to be widely used in the UK. There is therefore a strong case for more local authorities to set-up IFPS. Where edge of care services are currently being provided, comparing current provision with the IFPS model may help services in thinking about how to be more effective in reducing the need for children to be in care.

Second, the variety in effectiveness suggests that the quality of implementation is likely to be crucial in influencing how effective IFPS are in reducing care. Focusing on children who are genuinely at high risk of entering care seems to be imperative. It is also likely to be important that other key elements of the model, such as providing a service within 24 hours, very low caseloads to allow intensive work and highly skilled professionals to deliver it are crucial to ensure IFPS are effective.

From a research perspective there are two priorities. First, studies evaluating the impact of IFPS in a UK context are needed. Second, ideally these studies should consider child welfare outcomes and economic costs and benefits as well as care entry.

6 CONCLUSIONS

To complement this review we are carrying out a qualitative study into the implementation of IFPS in a UK context. This is intended to identify the key elements required to make IFPS effective and how to implement it well. We hope it will support practitioners and service leaders who are currently delivering “edge of care” services and/or those interested in delivering IFPS in their area.

IFPS are one of the best-evidenced ways of reducing care we have identified in the research literature. Spreading the use of the approach while

carefully evaluating it in a UK context therefore seems a priority for the sector in addressing the very high numbers of children currently in care.



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- WHITTAKER, J. K., KINNEY, J., TRACY, E. M. & BOOTH, C. 1990. *Reaching high-risk families: Intensive family preservation in human services*, New York, Aldine de Gruyter.
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APPENDICES

Appendix 1: List of databases searched

Published works were searched for in the following databases:

Cumulative Index to Nursing and Allied Health Literature (CINAHL)

Econlit

EMBASE

Education Resources Information Centre (ERIC)

Google Scholar

MEDLINE

NHS Economic Evaluation Database (NHS EED)

PsycINFO

Research papers in Economics (RePEc)

Web of Science Core Collection: Citation Indexes that includes Science Citation Index Expanded (SCI – EXPANDED), Social Sciences Citation Index (SSCI), Conference Proceedings Citation Index – Science (CPCI-S), Conference Proceedings Citation Index – Social Science & Humanities (CPCI-SSH), Emerging Sources Citation Index (ESCI).

Appendix 2: Search strategy in Ovid Medline format

1. (teen or teens or teenage*).tw
2. (adolesc* or preadolesc* or pre-adolesc* or juvenil*).tw.
3. (youth or youths or youngster*).tw.
4. ((young adj (person* or persons or people)) or early adult*).tw.
5. (student or students or schoolchild*).tw.
6. exp infant/
7. exp Child/
8. Young adult/
9. adolescent/
10. (boy* or girl* or child or children or infant or infants or kid or kids).tw.
11. (pediatri* or paediatric*).tw.
12. (pubescen* or puberty).tw.
13. orphan*.tw.
14. (adopt* adj5 (child or children)).tw.
15. Child, Orphaned/
16. Child of impaired parents/
17. or/1-16
18. ((substitute or local authority or out of home or public or order or place* or group) adj (care or placement*)).tw.
19. ((nonparent or non-parent) adj3 care).tw.
20. ((institution* or residential or foster or kinship or group) adj3 (care or home* or placement)).tw.
21. ((children's or childrens) adj home).tw.
22. support* living.tw.
23. looked after.tw.
24. Special guardian*.tw.
25. In care.tw.
26. Edge of care.tw.
27. welfare care.tw.
28. or/18-27
29. 17 and 28
30. ((family preservation or preserv* famil* or multi systemic) adj5 (intensive or team or service* or project* or program*or therap*)).tw.
31. (family recovery adj5 (intensive or team or service* or project* or program*or therap*)).tw.
32. Family adj5 reunif*.tw.
33. ((family support* or support*famil*) adj5 (intensive or team or service* or project* or program*or therap*)).tw.
34. (prevent* adj3 (placement* or placing)).tw.
35. (care adj5 placement prevent*).tw.
36. (Family adj5 (home-based or in-home)).tw.
37. ((family or home) adj (visiting or visitation)).tw.
38. Homebuilders.tw.
39. Intensive Family Preservation Systems.tw.
40. Intensive Family Support Programs.tw.
41. Intensive In-Home Family Treatment Program. tw.
42. Famil* First.tw.
43. (family intervention adj5 (intensive or team or service* or project* or program*or therap*)).tw.
44. (crisis intervention or family crisis or home-based services or in-home services).tw.
45. (family crisis intervention adj5 (intensive or team or service* or project* or program*or therap*)).tw.
46. ((family preservation or preserv* famil*) adj5 (intensive or team or service* or project* or program*or therap*)).tw
47. (intensive family or family centered project or family support project).tw.
48. Or/30-47
49. (randomized controlled trial or randomized controlled study or controlled trial or controlled study).pt. or (randomized or randomised).ab. or placebo.ab. or randomly.ab. or trial.ti.
50. (Experimental stud* or quasi-experimental stud* or controlled before and after study).tw.
51. (cost* or economic* or economic evaluation or cost-effectiveness or cost effectiveness or cost benefit analysis).tw.
52. Or/49-51
53. 29 AND 48 AND 52
54. Limit 53 to yr="1974-Current"

Appendix 3: List of experts contacted

Name	Country	Email address
Channa Al	Netherlands	channa@augeo-foundation.nl
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Center for the Study of Social Policy	USA	info@cssp.org

Appendix 4: Description of excluded papers

No	Country	Reason for excluding
1	AuClaire, P. & Schwartz, I. M. (1986). An evaluation of the effectiveness of intensive home-based services as an alternative to placement for adolescents and their families. Humphrey Center.	Repetition of findings
2	Bagdasaryan, S. (2005). Evaluating family preservation services: Reframing the question of effectiveness. <i>Children and Youth Services Review</i> , 27(6):615-35.	Uncontrolled study
3	Berry, M. (1990). Keeping families together: An evaluation of an intensive family preservation program. University of California, Berkeley.	Uncontrolled study
4	Berry, M. (1991). The assessment of imminence of risk of placement: Lessons from a family preservation program. <i>Children and Youth Services Review</i> , 13(4), 239-56.	Uncontrolled study
5	Berry, M. (1992). An evaluation of family preservation services: Fitting agency services to family needs. <i>Social Work</i> , 37(4), 314-21.	Uncontrolled study
6	Biehal, N. (2005). Working with adolescents at risk of out of home care: the effectiveness of specialist teams. <i>Children and Youth Services Review</i> , 27(9):1045-59.	Uncontrolled study
7	Burggraf, S. B. (1999). The efficacy of family preservation services for adolescents in the prevention of out-of-home placement and acute symptom reduction. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> , 60(2), 0821.	Uncontrolled study
8	Center for the Study of Social Policy (1988). State family preservation programs: a description for six states' progress in developing services to keep families together.	Unable to obtain
9	Child & Family Services. (1974). Final Report on the West Side Children's Services Project. Available at: https://eric.ed.gov/?id=ED106441	Uncontrolled study
10	Farrington, G. & Rominger, P. (1987). Illinois preplacement prevention project for black families: final report. Springfield, IL: Department of Children and Family Services.	Placement prevention rates not reported
11	Forrester, D., Holland, S., Williams, A. & Copello, A. (2016). Helping families where parents misuse drugs or alcohol? A mixed methods comparative evaluation of an intensive family preservation service. <i>Child & Family Social Work</i> , 21(1), 65-75.	Repetition of findings
12	Fraser, M. W., Pecora, P. J. & Haapala, D. A. (1991). Family preservation services to prevent out-of-home placement: The family-based intensive treatment project. <i>Families in crisis: The impact of intensive family preservation services</i> , 1-6.	Descriptive book chapter

Appendix 4: Description of excluded papers (continued)

No	Country	Reason for excluding
13	Fraser, M. W., Pecora, P. J. & Lewis, R. E. (1991). The correlates of treatment success and failure for intensive family preservation services. <i>Families in crisis: The impact of intensive family preservation services</i> , 181-224.	Placement and prevention rates not reported
14	Fuqua, R. (1988). Bethany new dimensions project evaluation report: supplement to the Iowa family preservation project evaluation report. Ames, IA: Iowa State University.	Placement and prevention rates not reported
15	Fuqua, R. (1988). Iowa family preservation project evaluation report. Ames, IA: Iowa State University.	Placement and prevention rates not reported
16	Henggeler, S. W., Melton, G. B. & Smith, L. A. (1992). Family preservation using multisystemic therapy: an effective alternative to incarcerating serious juvenile offenders. <i>Journal of consulting and clinical psychology</i> , 60(6), 953.	The intervention is not an IFPS
17	Henggeler, S. W., Melton, G. B., Smith, L. A., Schoenwald, S. K. & Hanley, J. H. (1993). Family preservation using multisystemic treatment: Long-term follow-up to a clinical trial with serious juvenile offenders. <i>Journal of Child and Family Studies</i> , 2(4), 283-93.	The intervention is not an IFPS
18	Hennepin County Community Services Department. (1980). Family study project: Demonstration and research in intensive services to families. Minneapolis: Hennepin County Community Services Department.	Unable to obtain
19	Jiordano, M. (1990). Intensive family preservation services to crack-using parents: Hope and help in preserving the family. <i>The Prevention Report</i> ; 4.	Placement prevention rates not reported
20	Jones, M. A., Newman, R. & Shyne, A. W. (1976). A second chance for families: evaluation of a program to reduce foster care. New York: Child Welfare League of America.	Duplication
21	Kirk, R. S., Reed-Ashcraft, K. & Pecora, P. J. (2002). Implementing intensive family preservation services: A case of infidelity. <i>Journal of Family Strengths</i> , 6(2), 6	Descriptive
22	Kirk, R. S., Griffith, D. P. & Martens, P. (2007). An examination of intensive family preservation services. National Family Preservation Network. 2007.	Focus on family reunification
23	Landsman, M. J. (1985). Evaluation of fourteen child placement prevention projects in Wisconsin in 1983–1985. Iowa City, IA: National Resource Center on Family Based Services.	Uncontrolled study
24	Leeds, S. J. (1984). Evaluation of Nebraska's intensive services project: Lincoln and McCook, Nebraska March 1983–February 1984. Iowa City, IA: The National Resource Center on Family Based Services.	Uncontrolled study
25	Lewis, R. E. (1990). Service-Related Correlates of Treatment Success in Intensive Family Preservation Services. Unpublished doctoral dissertation, University of Utah.	Uncontrolled study

Appendix 4: Description of excluded papers (continued)

No	Country	Reason for excluding
26	Lewis, R. E. (2005). The effectiveness of Families First services: An experimental study. <i>Children and Youth Services Review</i> , 27(5), 499-509.	Placement and prevention rates not reported
27	Lyle, C. G. & Nelson, J. (1983). Home based vs. traditional child protection services: a study of the home based services demonstration project in the Ramsey County Community Human Services Department. St. Paul, MN: Ramsey County Community Human Services Department.	Unable to obtain
28	McKenzie, C. A., Shennum, W. A & Jones, G. (1992). The use of home-based services in the prevention of serious or fatal child abuse. Department of Health and Human Services: National Center on Child Abuse and Neglect.	Placement and prevention rates not reported
29	Meezan, W. & McCroskey, J. (1996). Improving family functioning through family preservation services: Results of the Los Angeles experiment. <i>Journal of Family Strengths</i> , 1(2), 5.	The intervention is not an IFPS
30	Mitchell, C., Tovar, P., & Knitzer, J. (1989). The Bronx homebuilders program: An evaluation of the first 45 families. New York: Bank Street College of Education.	Unable to obtain
31	Nebraska Department of Public Welfare the University of Nebraska Medical Center. (1981). Final report: intensive services to families at-risk project. Omaha: Nebraska Department of Public Welfare the University of Nebraska Medical Center.	Unable to obtain
32	Pearson, C. L. & King, P. A. (1987). Intensive family services: Evaluation of foster care prevention in Maryland: Final report. Baltimore: Maryland Department of Human Resources.	Placement prevention rates not reported
33	Pecora, P. J., Fraser, M. W., Bennett, R. B. & Haapala, D. A. (1991). Placement rates of children and families served by intensive family preservation services programs. In Fraser, M. W., Pecora, P. J. & Haapala, D. A. <i>Families in crisis: The impact of intensive family preservation services</i> . New York: Aldine De Gruyter.	Repetition of results
34	Scannapieco, M. (1993). The importance of family functioning to prevention of placement: A study of family preservation services. <i>Child and Adolescent Social Work Journal</i> , 10(6), 509-20.	Uncontrolled study
35	Scherer, D. G., Brondino, M. J., Henggeler, S. W., Melton, G. B. & Hanley, J. H. (1994). Multisystemic family preservation therapy: Preliminary findings from a study of rural and minority serious adolescent offenders. <i>Journal of Emotional and Behavioral Disorders</i> , 2(4), 198-206.	The intervention is not an IFPS
36	Schuerman, J. R., Rzepnicki, U. & Littell, J. H. (1992). Evaluation of the Illinois Family First Placement Prevention Program: Progress Report, June 1992. Chicago: Chapin Hall for Children, University of Chicago.	Final report included, rather than progress report

Appendix 4: Description of excluded papers (continued)

No	Country	Reason for excluding
37	Schwartz, I. M., AuClaire, P. & Harris, L. (1990). Family Preservation as an Alternative to the Out-of-Home Placement of Seriously Emotionally Disturbed Adolescents: The Hennepin County Experience. Ann Arbor, MI: Center for the Study of Youth Policy, University of Michigan School of Social Work.	Repetition of findings
38	Schwartz, I. R. & AuClair, P. (1989). Intensive Home-Based Service as an Alternative to Out-of-Home Placement: The Hennepin County Experience. Unpublished manuscript, Minneapolis.	Repetition of findings
39	Smith, M. K. (1995). Utilization-focused evaluation of a family preservation program. Families in Society, 76(1):11.	Uncontrolled study.
40	Thleman AA, Dail PW. (1992). Family preservation services: Problems of measurement and assessment of risk. Family Relations, 186-91.	Uncontrolled study.
41	Thieman, A.A. & Dail P. W. (1992). Iowa's family preservation program: FY 1991 evaluation. Ames, IA: Iowa State University.	Uncontrolled study.
42	Thieman, A. A., Fuqua, R. & Linnan, K. (1990). Iowa family preservation 3 years pilot project: final evaluation report. Iowa: Iowa State University.	Placement prevention rates not reported
43	US Department of Health and Human Services. (2001). Evaluation of family preservation and reunification programs. Washington, DC: Department of Health and Human Services. Available at: https://aspe.hhs.gov/report/evaluation-family-preservation-and-reunification-programs-interim-report	Final report included, rather than interim report
44	Veerman, J. W., de Kemp, R. A. & ten Brink, L. T. (1997). Evaluation Study of Families First: The Netherlands. An Overview of the Results. Netherlands: NIZW Publishing Department. Available at: https://eric.ed.gov/?id=ED443511	Uncontrolled study
45	Westat, Chaapin Hall Center for Children & James Bell Associates. (2002). Evaluation of Family Preservation and Reunification Programs: Final Report. Available at: https://eric.ed.gov/?id=ED480610	Duplication
46	Wheeler, C. E., Reuter, G., Struckman-Johnson, D., & Yuan, Y. T. (1992). Evaluation of State of Connecticut intensive family preservation services: Phase V annual report. Sacramento, CA: Walter R. McDonald & Associates.	Unable to obtain
47	Willems, D. N., & Rubeis, R. (1981). The effectiveness of intensive services for families with abused, neglected or disturbed children: Hudson County project final report. Trenton: Bureau of Research, New York Division of Youth and Family Services.	Unable to obtain
48	Yuan, Y., McDonald, W., Wheeler, C., Struckman-Johnson, D., & Rivest, M. (1990). Evaluation of AB 1562 in-home care demonstration projects: Final report. Sacramento, CA: Walter R. McDonald and Associates, Inc.	Unable to obtain

Appendix 5: Descriptive characteristics of the published studies

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACES	Intervention	Main components	Length	Outcome time point	Outcome measure
Biehal (2005)	UK	CT	Newly referred families with a child at-risk of placement within 4 weeks. Alternatively, cases where a young person or parent has requested a placement.	NR	144/65 children	Usual care	NR	Aged 11-16; 55% male; 80% white	13% of parents reported substance misuse problems, 72% had poor mental health and 43% had experienced past or current domestic violence. Concerns at the time of referral included emotional abuse (34%), neglect (17%), physical abuse (11%) and sexual abuse (3%).	Specialist support team	Improving family relationships; enhancing parenting skills; developing strategies for behaviour change.	5 months	6 months	Child level out-of-home placement as reported in interviews.
Brandon & Connolly (2006)	UK	CT	Families with a child at high risk of an out-of-home placement and/or in crisis.	NR	57/ 29 families	Families who refused, dropped out or could not be offered the service.	NR	NR	NR	Families First	Agreeing common goals; developing skills; changing identified behaviour.	28 days	12 months	Family level out-of-home placement from records.

Appendix 5: Descriptive characteristics of the published studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Ciliberti (1998)	US	CT	African-American or mixed-race families living in the catchment area with a child (<6 years) at imminent risk of placement. Children currently in a placement have a plan for them to return home within 3 to 7 days after admission to the service.	High-risk sexual and physical abuse cases. Families who have a history of violence between the adults or are homeless.	46/43 families	Usual care	Int: 2.73 children per family Con: 2.71 children per family	Int: 2.57 years old Con: 3.47 years old	Int: 65% of families had substance misuse problems. Maltreatment concerns included neglect and threat of harm (62%), physical abuse (12%) and sexual abuse (2%). Con: Maltreatment concerns included neglect and threat of harm (63%), physical abuse (12%) and sexual abuse (6%).	Family Enhancement programme	Skill development; improving parent education; counselling; engaging with other services.	4- 6 weeks (optional 90 day after care period)	6 and 12 months	Child level out-of-home placement from records.
Dagenais et al. (2003)	Canada	CT	Families with a child (<14 years) at imminent risk of placement who were willing to accept the service.	NR	88/ 21 children	Usual care	NR	NR	NR	PRIME childhood intervention programme	Therapeutic support; help with concrete services.	4- 6 weeks	3, 6 and 12 months	Child level out-of-home placement from records.

Appendix 5: Descriptive characteristics of the published studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Forrester et al. (2008)	UK	CT	Families with a child who is at-risk of entering care and there are concerns about parental substance misuse.	NR	279/89 children	Usual care	Int: 3.4 children per family Con: 2.6 children per family	Int: 7.3 years old Con: 6.1 years old	Substance misuse is a concern for all families. Int: 39% of children live with their mother only, 4% live with father only. Con: 21% of children live with their mother only and 35% with their father only.	Option 2	Family oriented activities; motivational interviewing.	4 weeks	3.5 years	Child level out-of-home placement from records
Forrester et al. (2014)	UK	CT	Families with a child who is at-risk of entering care and there are concerns about parental substance misuse.	NR	52/32 children	Usual care	87% of participants were mothers; 38% of parents were aged 18-30 and 62% were aged over 30; 100% white British	9 years old; 59% male	50% of families had alcohol use issues and 44% had drug problems.	Option 2	Family oriented activities; motivational interviewing.	4 weeks	5.6 years	Child level out-of-home placement as reported in family interviews.

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int./Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Kirk & Griffith (2004)	US	CT	Children at imminent risk of placement who were referred based on a substantiated high risk maltreatment report.	Families that did not receive a family visit within 2 days of the referral or their case was open for longer than 6 weeks.	542/25,722 children	Usual care	NR	Int: 49% male; 59% white and 41% non-white; 30% aged 0-2, 17% aged 3-5, 28% aged 6-10, 10% aged 11-12 and 15% aged 13 and over. Con group: 50% male; 54% white and 46% non-white; 33% aged 0-2, 20% aged 3-5, 26% aged 6-10, 7% aged 11-12 and 14% aged 13 and over	Int: Maltreatment concerns included neglect (41%), physical or emotional abuse (8%) and sexual abuse (2%). Con: Maltreatment concerns included neglect (44%), physical or emotional abuse (8%) and sexual abuse (5%).	IFPS	Parent skill training; counselling; referral to support services.	42 days	1 year	Child level out-of-home placement from records.
Raschick (1997)	US	CT	Families who are voluntarily seeking help and not currently involved with the child protection system.	NR	33/18 families 65/ 39 children	Usual care	NR	Int: 9.0 years old Con: 9.9 years old	NR	Intensive Family Based Service	Improving parent education; developing communication skills; help with budgeting and home management.	3-6 months	720 days	Child level out-of-home placement from records.

Appendix 5: Descriptive characteristics of the published studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Rubin (1997)	US	CT	Families with substance misuse problems who agree to seek help. At least one parent living at home and a family or friend available to help care for the child if needed. No serious physical abuse.	Parents who were actively psychotic or have a learning disability.	45/23 children	Usual care	The mean age of mothers was 28 years old and fathers were 32 on average; 58% of the treatment group and 26% of the comparison group were African-Americans; 3 children per family	Int: 7.5 years old Con: 10.4 years old	Substance misuse was a concern for all families. 64% of the treatment group and 57% of the comparison group were single mothers.	Anonymous Demonstration Project	Improving parenting; engaging with other community services.	90 days, then extended to 1 year	End of programme, 6 months and 1 year.	Child level out-of-home placement from records.
Szykula & Fleischman (1985)	US	RCT	Families with a child aged between 3 and 12 who is at-risk of placement because of abuse and neglect.	Children who were at-risk of placement for another reason (e.g. parent's mental health).	24/24 children	Usual care	NR	NR	NR	Social learning treatment	Teaching new skills; reinforcing the child's positive behaviours.	NR	NR	Child level out-of-home placement from records.

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Walton (1997)	US	RCT	Families referred for child abuse or neglect who were considered moderate or high risk.	Referrals not actioned within 5 days.	69/65 families	Usual care	31 years old (SD=8.6); 89.2% female; 64.2% Caucasian; 2 children per household	6.5 years old (SD=4.9); 50.7% female; 56% Caucasian	49% referred for neglect. 45.5% of caregivers were married	IFPS	Improving problem solving and decision making skills; establishing a support network; receiving help concrete services.	2 weeks	6 months	Child level out-of-home placement from records and interviews.
Walton (2001)	US	RCT	Families referred for child abuse or neglect who were considered to be high risk.	NR	97/111 families	Usual care	80% of the primary caregivers were female and aged 35 on average; 3 children per family	8 years old; 54.6% male 90.1% white	74.5% of children were referred for physical abuse. A third of families consisted of birth parents living together.	IFPS	Improving problem solving and decision making skills; establishing a support network; receiving help concrete services.	4 weeks	7 months	Family level out-of-home placement from records and interviews.
Wood et al. (1988)	US	CT	Families with a child at-risk of placement. Referral submitted by a social worker due to child abuse or neglect concerns.	NR	26/ 24 families 59/ 49 children	Usual care	72% of mothers were white, 15% black, 9% Asian and 4% Hispanic	57% male Int: 8.9 years old Con: 5.4 years old	NR	Families First	Family therapy; support for concrete services; engagement with other community services.	4- 6 weeks	1 year	Child level out-of-home placement from interviews and records.

Abbreviations: ACEs= Adverse Childhood Experiences, Con= control group CT= controlled trial,

IFPS= Intensive Family Preservation Services, Int= intervention group,

RCT= randomised control trial, NR= not reported

Appendix 6: Descriptive characteristics of the grey literature studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Dennis-Small & Washburn (1986)	US	CT	Families with a child at-risk of out-of-home placement who is not in immediate danger. Parents wanted their child to remain at home.	Families considered able to function independently. Parents with chronic psychosis or severe learning disability.	87/85 families	Usual care	Approximately 53% of families were Anglo, 28% black, 15% Hispanic and 4% mixed or other ethnicities; 3.01 children per family	NR	NR	Family-Centred, Home-Based Intervention	Improving parenting and communication skills; supporting household management; engaging with other community services.	3 to 14 months	Up to two years	Child level out-of-placement from records.
DHHS (2002) 1	US	RCT	Families in severe crisis with a child (under 18) who is at imminent risk of placement. There are no options for long-term placement with relatives. One parent is willing to meet with the case worker. There are family strengths that can be utilized	Families in which there has been sexual abuse of a child and the perpetrator is still in the home or the child is at-risk from recurring sexual abuse. Families in which an adult is drug	174/175 families	Usual care	Average age of caregivers was 32 (SD=9.49); 55% white, 43% African America, 1% Hispanic and 1% other; 3 children per family.	On average, the youngest child was 4.6 years (SD=4.35) and the oldest child in the family was 9.9 years (SD=5.00).	3% of caregivers reported that they had too much to drink in the last week and 1% used drugs several times a week. 19% of caregivers were divorced and 21% separated. 55% of the respondents reported feeling "blue or depressed". 35% of caregivers reported having been abused, neglected or both as a child. Prior to randomisa-	Family Preservation Service	Counselling; developing anger management skills; enhancing parenting techniques; engaging with community services; receiving practical support.	4 to 6 weeks	1, 6, 12 and 18 months	Family level out-of-home placement from records.

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACES	Intervention	Main components	Length	Outcome time point	Outcome measure
			to increase safety. Less intensive services would not be sufficient.	dependent and not in active treatment. Reunification cases where the child has been in care more than seven days.					tion 77% of families had experience a substantiated allegation; reasons included physical abuse (44%), neglect (32%) and sexual maltreatment (24%).					
DHHS (2002) 2	US	RCT	Families in severe crisis with a child (under 18) who is at imminent risk of placement. There are no options for long-term placement with relatives. One parent is willing to meet with the case worker. There are family strengths that can be utilized to increase safety. Less intensive services would not be sufficient.	Families with substance misuse problems who were not following a treatment plan. Reunification cases where the child has been in care more than seven days.	275/167 families	Usual care	Average age of caregivers was 39 (SD=10.8); 47% white, 42% African America, 9% Hispanic and 2% other; 2.9 children per family.	On average, the youngest child was 7.1 years (SD=5.4) and the oldest child in the family was 12.5 years (SD=4.3).	0.9% of caregivers reported that they had too much to drink the last week and 0.9% used drugs several times a week. 34% of caregivers were divorced or separated. 58% of the respondents reported feeling "blue or depressed". 32% of caregivers reported having been abused, neglected or both as a child. Prior to randomisation 89% of families had experience a substantiated allegation; reasons included neglect (20%), sexual abuse (5%) and emotional abuse (5%).	Family Preservation Service	Counselling; developing anger management skills; enhancing parenting techniques; engaging with community services; receiving practical support.	4 to 8 weeks	1, 6, 12 and 18 months	Family level out-of-home placement from records.

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACES	Intervention	Main components	Length	Outcome time point	Outcome measure
DHHS (2002) 3	US	RCT	Families in severe crisis with a child who is at imminent risk of placement. One child in the family was under 13. There are no options for long-term placement with relatives. One parent is willing to meet with the case worker. There are family strengths that can be utilized to increase safety. Less intensive services would not be sufficient.	Families with substance misuse problems who were not following a treatment plan. Reunification cases where the child has been in care more than seven days. Families who refuse the service or want their child to be placed. Cases where the child is not considered to be safe due to the physical abuse or because the perpetrator of the sexual abuse lives in the same	98/49 families	Usual care	Average age of caregivers was 33 (SD= 8.5); 83% African America, 15% Caucasian and 1% Hispanic; 3.3 children per family.	On average, the youngest child was 4.0 years (SD= 4.2) and the oldest child in the family was 10.8 years (SD= 4.8).	2.5% of caregivers reported that they had too much to drink the last week and 7.7% used drugs several times a week. 14% of caregivers were separated and 13% divorced. 61% of the respondents reported feeling "blue or depressed". 38% of caregivers reported having been abused, neglected or both as a child. Prior to randomisation 81% of families had experience a substantiated allegation; reasons included physical abuse (76%) and neglect (8%).	HomeTies	Identifying family goals; Improving communication, relationship and anger management skills; creating links with other community services.	4 to 6 weeks	1, 6 and 12 months	Family level out-of-home placement from records.

Appendix 6: Descriptive characteristics of the grey literature studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
				house. Families who move constantly to avoid harm from the drug community. Adults who are unable to engage in the intervention due to their substance abuse.										
DHHS (2002) 4	US	RCT	Children (under 18) who are at intermediate risk of removal from home.	NR	209/144 families	Usual care	Average age of caregivers was 32 (SD= 9.11); 80% African America, 15% Caucasian, 5% Hispanic and other; 3.4 children per family.	On average, the youngest child was 3.45 years (SD= 3.75) and the oldest child in the family was 9.8 years (SD= 4.47).	5% of caregivers reported that they had too much to drink the last week and 8% used drugs several times a week. 11% of caregivers were separated and 7% divorced. Over half reported feeling "blue or depressed". 37% of caregivers reported having been abused, neglected or both as a child. Prior to randomisation 81% of families had experience a substantiated allegation; reasons	Family Preservation Service	Counselling; improving parenting skills; help with concrete services; receiving housing and employment advice.	12 weeks	1, 6, 12 and 18 months	Family level out-of-home placement from records.

Appendix 6: Descriptive characteristics of the grey literature studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Feldman (1991a)	US	RCT	Families with a child (under 18) at imminent risk of first-time out-of-home placement. Less intensive services were not suitable. At least one parent or adult agreed to meet with a caseworker.	Families currently or at imminent risk of homelessness.	117/97 families	Usual care	Int: 51.3% white and 48.7% minority ethnicity; 2.6 children per family (SD=1.4). Con: 33.0% white and 67.0% minority ethnicity; 2.4 children per family (SD=1.3).	13.0 years (SD=4.0).	included physical abuse (29%), neglect (66%) and sexual maltreatment (2%). 46.2% were single-parent household. 25.1% of referrals were due to abuse, neglect or risk of abuse or neglect.	Family Preservation Service	Setting goals; improving techniques for child management; developing interpersonal skills; managing emotions; help with concrete services.	4 to 6 weeks	End of placement then 1, 2, 3, 6, 9 and 12-months follow-up.	Family level out-of-home placement as reported in caregiver interviews.
Feldman (1991b)	US	RCT	Families with a child (under 18) at imminent risk of first-time out-of-home placement. Less intensive services were not suitable. At least one parent or adult agreed to meet with a caseworker.	Families currently or at imminent risk of homelessness.	96/87 families	Usual care	Int: 51.0% white; 2.7 children per family (SD=1.4). Con: 34.5% white; 2.4 children per family (SD=1.4).	12.97 years (SD=3.64).	57.9% were single-parent households. 23.2% of referrals were due to abuse, neglect or risk of abuse or neglect. 1.1% of referrals were due to parental emotional problems and/or substance abuse.	Family Preservation Service	Setting goals; improving techniques for child management; developing interpersonal skills; managing emotions; help with concrete services.	4 to 6 weeks	End of placement then 1, 2, 3, 6, 9 and 12-months follow-up.	Family level out-of-home placement as reported in caregiver interviews.

Appendix 6: Descriptive characteristics of the grey literature studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Halper & Jones (1981)	US	CT	Families living in the catchment area with a child (under the age of 14) at-risk of out-of-home placement. At least one parent is willing to agree to the service and the child is not in imminent danger.	Referrals due to the mental or emotional health of the child and a specialized placement has been recommended. The primary caregiver is actively psychotic (and the service is not recommended) or addicted to drugs (with the exception of methadone).	60/60 Families 156/130 children	Usual care	The median age of mothers was 26 and fathers were 28 on average; 74% were single-parent families; 46% of families were black, 42% Hispanic and 12% white, non-Hispanic; 2.36 children per family.	The median age was 5.5 years; 53% female; 51% of at-risk children were black, 38% Hispanic and 11% white, non-Hispanic.	An emotional problem or mental illness was identified as a problem for 58% of families. 18% of mothers were separated and 7% divorced. 25% of fathers were physically abusive to their partners and 14% were assaultive or abusive to children or others.	Preventative service	Counselling; developing confidence; improving parenting skills; assisting with housing or employment.	11 months on average	End of 2 year project	Child level out-of-home placement as reported in interviews and from records.

Appendix 6: Descriptive characteristics of the grey literature studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Hennepin County Community Services Department (1980) ³	US	RCT	Families with a child (under 15) at-risk of out-of-placement but not at imminent risk of abuse or neglect.	NR	66/72 families	NR	NR	NR	NR	NR	NR	NR	18 months	Family level out-of-home placement (source not reported).
Jones (1976)	US	RCT	Families with at least one child (under 14) at-risk of out-of-home placement or continuance in placement. Children had a parent or close relative in the community that they could remain or return to.	Parents who requested the placement or were unwilling to care for the child. Families who did not require intensive support or refused the service. Families who were unable to take part due to the parent's or child's functioning or behaviour.	373/176 Families 663/329 children	Usual care	The median age of mothers was 27 and fathers were 33; 51% of mothers were black, 31% white and 18% Hispanic; 69% of households were single parent; 3.1 child per family.	57% male; median age was 6.0.	19% of mothers were separated and 8% were divorced.	Preventative Services Demonstration Project	Counselling; financial assistance; help with housing, medical and school related services.	7.7 months on average	8.5 months	Child level out-of-home placement as reported by staff.

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Jones (1985)	US	RCT	Families with at least one child (under 14) at-risk of out-of-home placement. Families who were not under protective service investigation or on remand from court.	NR	98/44 Families 175/68 children	Usual care	The median age of mothers was 32 and fathers were 5 years older on average; 53% of mothers were black, 26% Hispanic and 21% white; 3.2 children per family	The median age of age at-risk children was 8 years; 60% male	6% of mothers had a problem with alcohol and 4% with drugs. 30% of mothers were separated or divorced. Martial conflict was identified as a problem by a worker in 15% of cases. Parental emotional or mental health problems were identified in 49% of cases. 20% of mothers had a diagnosed or suspected mental illness. Workers believed that emotional neglect was a problem in 39% of cases, physical neglect in 17% of cases and physical abuse in 3% of cases.	Preventative Services Demonstration Project	Counselling; financial assistance; help with housing, medical and school related services.	19 months on average	6.5 years	Child level out-of-home placements from records.
Lyle & Nelson (1983) ³	US	RCT	NR	NR	98/44 Families 175/68 children	Usual care	NR	NR	NR	Family-centred, home-based unit	Counselling; support with concrete services.	10-12 months	3 months	Family level out-of-home placement (source not reported).

Appendix 6: Descriptive characteristics of the grey literature studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Mitchell, et al. (1989) ³	US	RCT	NR	NR	43/12 Families	Usual care	NR	Children referred from the welfare service were 8.3 years and children referred from the court assessment service were 13.3 years.	NR	Homebuilders	NR	35 days	3 and 12 months	Family level out-of-home placement (source not reported).
Nebraska Department of Public Welfare (1981) ³	US	RCT	Families with a child at-risk of out-of-home placement due to actual or suspected child maltreatment.	NR	80/73 Families	NR	NR	NR	NR	NR	NR	NR	NR	Family level out-of-home placement (source not reported).
Pecora, et al. (1991)	US	CT	Families with a child at risk of out-of-home placement within one week. At least one parent agreed to meet with a caseworker and the safety of the child could be maintained.	Cases where the child had run away or the worker was unable to locate the family.	446/26 families 582/27 children	Usual care	Int: 36.0 years (SD=7.1); 91.1% female, household size of 4.5 (SD=1.7); 16.8% of families were non-Caucasian.	The average age of the oldest child was 12.5 years (SD=4.0).	Int: 36.7% of parents were divorced or separated. Con: 46% of parents were divorced or separated.	Family-Based Intensive Treatment	Counselling; help with concrete services; improving anger management and parenting techniques.	30 days (in Washington) or 60 days (in Utah)	0 months and 12 months	Child level out-of-home placements from records and interviews with primary care givers.

Appendix 6: Descriptive characteristics of the grey literature studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Schuerman et al. (1994)	US	RCT	Families with a child (aged 12 or under) who was at imminent risk of out-of-home placement. Families were the subject of an abuse or neglect investigation and they had been the subject of three or fewer investigations where the harm to a child had been confirmed. The child's safety could be maintained while at home.	NR	995/569 families	Usual care	Con: 4.3 members per family; all but two families were Caucasian. 28 years; 72% African-America, 24% white, 3% Latino and less than 1% other; 51% were single-parent families; 17% of households has one child, 29% two children, 24% three, 15% five and 16% had five or more children.	The average age of the oldest child was 12.5 years (SD=4.0). The average age of the youngest child was 3 and the oldest child was 8; 50% male.	Int: Workers identified drug abuse as a problem for 39% of families and alcohol abuse as a concern for 19% of families. Domestic violence was a problem for 12% of families. Maltreatment concerns included neglect (64%), abuse (27%) and both neglect and abuse (9%). Con: NR	Families First	Counselling; help with concrete services; parenting education; assistance with housing and employment.	Median length of 108 days	1, 3, 6 and 12 months	Family level out-of-home placement from records

Appendix 6: Descriptive characteristics of the grey literature studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Schwartz, AuClaire & Harris (1991)	US	CT	Children aged 12- 17 approved for an out-of-home placement. Children who were not a ward of the state or under court order into placement.	NR	58/58 children	Children were referred to placement services	45% of children lived in single-parent families. 45% of children had two or more siblings, 35% had one sibling and 20% had no siblings.	54% male; more than two-thirds were white; 45% were aged <14 years and 55% were 15 years or over.	NR	Home-Based Treatment Program	Agreeing goals; empowering parents.	4 weeks	12 months	Child level out-of-home placement from records.
Walters (2006) ¹	US	RCT	Families with a child at imminent risk of out-of-home placement. At least one parent agreed to the service. Less intensive services were not considered suitable and it was believed the family could participate in the intervention. There were no safety concerns and	Families with a child at imminent risk of out-of-home placement. At least one parent agreed to the service. Less intensive services were not considered suitable and it was	120/82 children	Foster care services	Int: the average age of mothers was 31.4 years old (SD= 7.9); 79% African-American, 17% Caucasian 1% Hispanic and 3% other ethnicity. Fathers were 39.9 years (SD=7.6);	Intervention group: 55.5% male; 7.7 years (SD= 5.4). Control group: 47.6% male; 7.3 years (SD= 4.6).	Int: 19.2% of the caregivers were divorced and 8.3% separated. Con: 17.1% of caregivers were divorced and 4.9% separated.	Families First	Counselling; improving parenting skills; help with household management; engaging with other community services.	4 to 6 weeks	6 and 12 months	Child level out-of-home placement from records.

INTENSIVE FAMILY PRESERVATION SERVICES TO PREVENT OUT-OF-HOME PLACEMENT OF CHILDREN / A SYSTEMATIC REVIEW AND METAANALYSIS

Appendix 6: Descriptive characteristics of the grey literature studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Wheeler et al (1992) ⁴	US	CT	Families with a child at-risk of placement.	NR	195/97 Level NR	NR	ethnicity. 56.1% of children lived with three or more children.	NR	NR	NR	Family therapy; improving life skills; support with concrete services.	NR	12 months	Out-of-home placement (source not reported). Level (family or child) unknown.
Willemis & DeRubeis (1981) ³	US	RCT	Families with a child at-risk of placement within two years.	NR	45/45 families	NR	NR	NR	NR	Special Services Project	Group therapy; legal advocacy; support with financial services; referrals to community services.	NR	End of 3-year project	Family level out-of-home placement (source not reported).

Appendix 6: Descriptive characteristics of the grey literature studies (continued)

Study	Country	Design	Inclusion criteria	Exclusion criteria	N Int/Con	Control	Parent demographics	Child demographics	ACEs	Intervention	Main components	Length	Outcome time point	Outcome measure
Yuan et al (1990) ³	US	CT	Families with a child at imminent risk of out-of-home placement due to abuse or neglect.	152/152 families		Children were referred to placement services	47% of primary caregivers were under the age of 30; 49% were single-parent families; 2.4 children per family.	6.7 years	Reason for referral include physical abuse (43%), child neglect (33%), sexual abuse (12%) and emotional abuse (6%).	Family preservation	Counselling; improving parenting skills; support with concrete services.	7 weeks	8 months	Family and child level out-of-home placement (source not reported).

Abbreviations: ACEs= Adverse Childhood Experiences, Con= control group CT= controlled trial, IFPS= Intensive Family Preservation Services, Int= intervention group, RCT= randomised control trial, NR= not reported

DHHS (2002) study sites: 1= Kentucky, 2= New Jersey, 3= Tennessee, 4= Philadelphia,

1. Blythe and Jayaratne (2002) and Walter (2006) report findings from the same study.
2. Data extracted from a secondary source (Fraser et al., 1991) due to difficulties accessing the primary report.
3. Data extracted from Schuerman et al. (1994) due to difficulties accessing the primary reports.
4. Data extracted from Heneghan et al. (1996) due to difficulties accessing the primary report.

Appendix 7: Glossary of terms

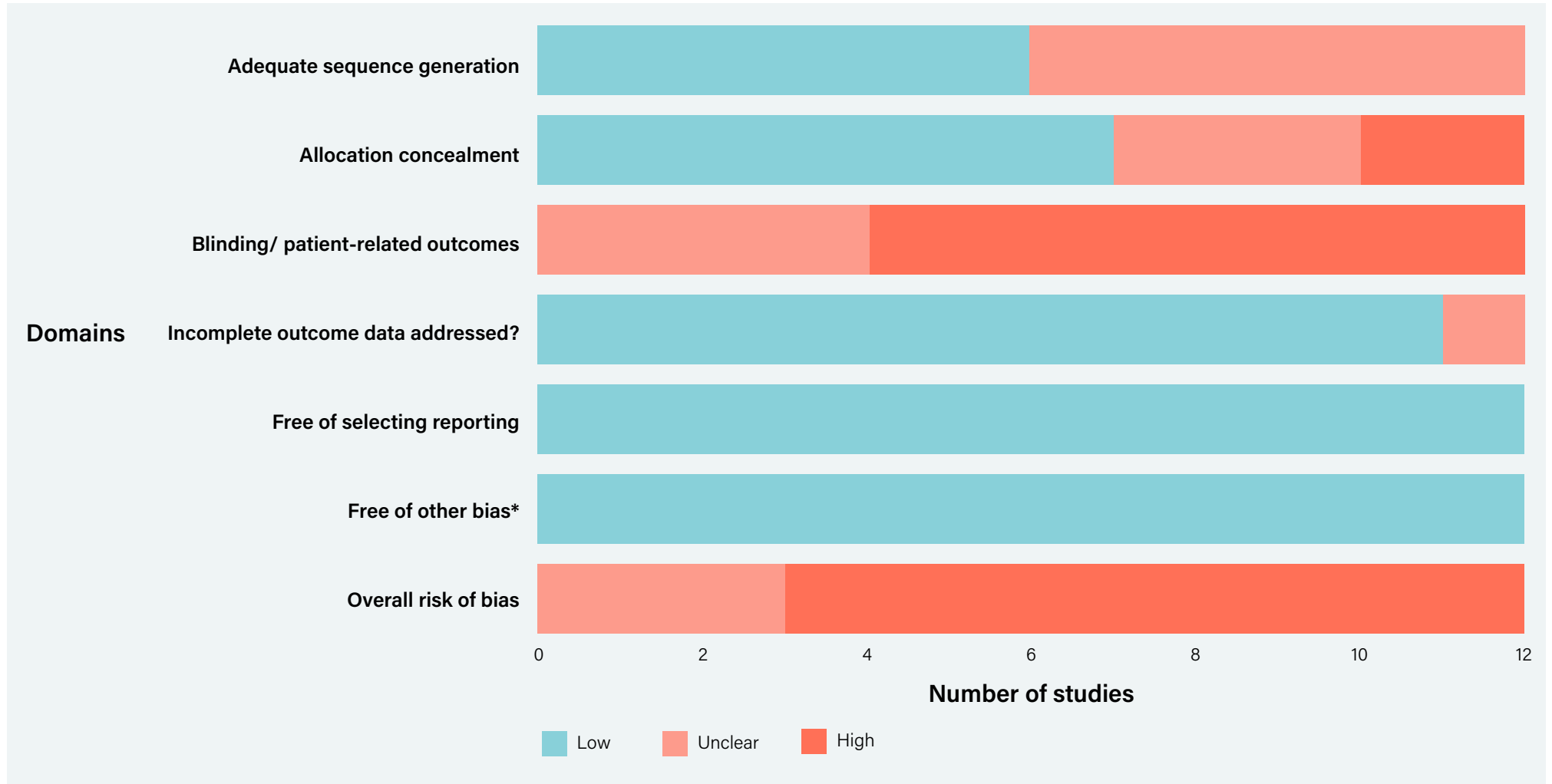
Term	Definition
Controlled trials	A study with more than one group where some participants receive the intervention that is being tested and others do not (or they receive an alternative service). The participants are however, not randomly assigned to their group.
Cost-analysis	A partial economic evaluation comparing the costs of an intervention and a comparator.
Cost-benefit analysis	A full economic evaluation where both costs and outcomes are measured in monetary terms.
Cost-consequence analysis	A full economic evaluation where a list of disaggregated costs and a range of appropriate outcomes are reported for both the intervention and comparator.
Cost-cost offset analysis	A partial economic evaluation measuring the cost savings as a result of the intervention.
Cost-effectiveness analysis	A full economic evaluation where costs are measured in monetary terms and outcomes are measured in units directly related to the intervention e.g. number of children avoided care.
Cost-minimisation analysis	A full economic evaluation that is used when outcomes across the intervention and comparator arms of a study are known to be equivalent. In this type of economic evaluation, costs only are compared with the aim of deciding on the least costly intervention to implement to achieve the same outcome.
Cost-utility analysis	A full economic evaluation where costs are measured in monetary terms and outcomes are measured using quality-adjusted life years that capture the effects on both the extension and the quality of life in a single metric.
Economic evaluation	An evaluation that compares both the costs and outcomes of an intervention of interest against a suitable comparator.
Incremental cost-effectiveness ratio	The main result of a full economic evaluation calculated by dividing the difference in costs by the difference in outcomes to provide a ratio of the incremental cost per extra unit of benefit.
Randomised controlled trial	Participants in the study are allocated at random to two (or more) groups. One group receives the intervention that is being tested and the other group(s) receive no intervention or an alternative service.

Appendix 8a: Critical appraisal of included RCTs assessed by the Cochrane Risk of Bias tool

Study (Author, year, country)	Adequate sequence generation	Allocation concealment	Blinding/ patient-related outcomes	Incomplete outcome data addressed	Free of selecting reporting	Free of other bias	Overall risk of bias judgment
DHHS, 2002, US ¹	Low	Low	High	Low	Low	Low	High
DHHS, 2002, US ²	Low	Low	High	Low	Low	Low	High
DHHS, 2002, US ³	Low	Low	High	Low	Low	Low	High
DHHS, 2002, US ⁴	Low	Low	High	Low	Low	Low	High
Feldman, 1991a and Feldman, 1991b, US	Unclear	Low	Unclear	Low	Low	Low	Unclear
Halper & Jones, 1981, US	Low	Low	High	Low	Low	Low	High
Jones, 1976 and Jones, 1985, US	Unclear	Unclear	High	Low	Low	Low	High
Schuerman, 1994, US	Low	Low	Unclear	Low	Low	Low	Unclear
Szykula & Fleischman, 1985, US	Unclear	High	High	Unclear	Low	Low	High
Walters, 2006 and Blythe & Jayaratne, 2002, US	Unclear	Unclear	High	Low	Low	Low	High
Walton, 1997, US	Unclear	High	Unclear	Low	Low	Low	High
Walton, 2001, US	Unclear	Unclear	Unclear	Low	Low	Low	Unclear

Note: DHHS (2002) study sites: ¹Kentucky, ²New Jersey, ³Tennessee, ⁴Philadelphia

Appendix 8b: Risk of bias graph: review authors' judgement about each risk of bias item presented as a percentage across included RCTs



Appendix 8c: Risk of bias summary: review authors' judgements about each risk of bias item for included RCTs

Study (Author, year, country)	Adequate sequence generation	Allocation concealment	Blinding/ patient-related outcomes	Incomplete outcome data addressed	Free of selecting reporting	Free of other bias	Overall risk of bias judgment
DHHS, 2002, US ¹	+	+	-	+	+	+	-
DHHS, 2002, US ²	+	+	-	+	+	+	-
DHHS, 2002, US ³	+	+	-	+	+	+	-
DHHS, 2002, US ⁴	+	+	-	+	+	+	-
Feldman, 1991a and Feldman, 1991b, US	?	+	?	+	+	+	?
Halper & Jones, 1981, US	+	+	-	+	+	+	-
Jones, 1976 and Jones, 1985, US	?	?	-	+	+	+	-
Schuerman, 1994, US	+	+	?	+	+	+	?
Szykula & Fleischman, 1985, US	?	-	-	?	+	+	-
Walters, 2006 and Blythe & Jayaratne, 2002, US	?	?	-	+	+	+	-
Walton, 1997, US	?	-	?	+	+	+	-
Walton, 2001, US	?	?	?	+	+	+	?

Note: DHHS (2002) study sites: ¹Kentucky,

²New Jersey, ³Tennessee, ⁴Philadelphia

Appendix 9: Critical appraisal of included CTs assessed by the ROBINS-I tool

Study (Author, year, country)	Domain							Overall risk of bias judgment
	Bias Due to Confounding	Selection bias	Misclassification bias	Contamination (bias due to deviations from intended interventions)	Bias in outcome assessment (detection bias)	Missing data (attrition bias)	Selective outcome reporting (reporting bias)	
Berquist et al., 1993, US	Moderate	Moderate	Moderate	Moderate	Moderate	Serious	Moderate	Serious
Biehal, 2005, UK	Serious	Serious	Moderate	Moderate	Moderate	Low	Moderate	Serious
Brandon & Connolly, 2006, UK	Serious	Serious	Serious	Serious	Moderate	Low	Moderate	Serious
Ciliberti, 1998, US	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Moderate	Moderate
Dagenais et al., 2003, Canada	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Dennis-Small & Washburn, 1986, US	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Moderate	Moderate
Forrester et al., 2008 and Forrester et al., 2014, UK	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Kirk & Griffth, 2004, US	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Moderate	Moderate
Pecora et al., 1991, US	Moderate	Moderate	Moderate	Moderate	Serious	Serious	Moderate	Serious
Raschick, 1997, US	Serious	Moderate	Moderate	Moderate	Moderate	Low	Moderate	Serious
Rubin, 1997, US	Serious	Serious	Serious	Critical	Moderate	Serious	Moderate	Critical
Schwartz et al., 1991, US	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Wood, 1988, US	Serious	Moderate	Moderate	Moderate	Moderate	Low	Moderate	Serious

Appendix 10: GRADE evaluation of certainty of findings

Table A: Intensive Family Preservation Services to prevent out-of-home placement of children (all studies) at 3 months

Outcome	Setting
Out-of-home placement ¹ at 3 months' time point following IFPS intervention vs controls	Any setting
Patient or population	Intervention
Children and young people ≤18 years old who are in need of out-of-home care.	Intensive Family Preservation Services
	Comparison
	Usual care

Certainty assessment							Certainty
No of participants (studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other consideration	Relative effect	
492 (2 CTs)	Serious ²	Serious ³	Not serious	Not serious	Publication bias suspected ⁴	RR= 0.57 (95% CI 0.35 to 0.93)	⊕⊕ Low

GRADE Working Group grades of evidence

High quality

We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality

We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality

Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

- Reasons for entry into care can include: abuse and neglect (e.g. sexual abuse, emotional abuse, physical abuse, supervisory neglect); acute family problems (e.g. parental substance misuse); family in acute stress (e.g. financial crisis); child's disability; carer's illness or disability; socially unacceptable behaviour (pre entry into juvenile court system). Out-of-home care is defined as a child or young person being looked after by a local authority (or international equivalent), including those who are placed under a court order or a formal voluntary agreement with parents.
- Risk of bias was judged as "serious" as one study had a serious risk of bias (Berquist et al., 1993) and the other had a moderate risk of bias (Daegnais et al., 2003).
- Inconsistency was judged as "serious" due to the high levels of heterogeneity.
- Publication bias was indicated by funnel plots (see Appendix 12) and by a Egger test (P=0.0002) (Sterne et al., 2011).

Table B: Intensive Family Preservation Services to prevent out-of-home placement of children (all studies) at 6 months

Outcome

Out-of-home placement¹ at 6 months' time point following IFPS intervention vs controls

Patient or population

Children and young people ≤18 years old who are in need of out-of-home care.

Setting

Any setting

Intervention

Intensive Family Preservation Services

Comparison

Usual care

Certainty assessment							Certainty
No of participants (studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other consideration	Relative effect	
1616 (5; 2 RCTs and 3 CTs)	Serious ²	Serious ³	Not serious	Not serious	Publication bias suspected ⁴	RR= 0.49 (95% CI 0.26 to 0.91)	⊕⊕ Low

GRADE Working Group grades of evidence**High quality**

We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality

We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality

Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

- Reasons for entry into care can include: abuse and neglect (e.g. sexual abuse, emotional abuse, physical abuse, supervisory neglect); acute family problems (e.g. parental substance misuse); family in acute stress (e.g. financial crisis); child's disability; carer's illness or disability; socially unacceptable behaviour (pre entry into juvenile court system). Out-of-home care is defined as a child or young person being looked after by a local authority (or international equivalent), including those who are placed under a court order or a formal voluntary agreement with parents.
- Risk of bias was judged as "serious" as three studies were assessed as having a serious or high risk of bias (Berquist et al., 1993, Biehal, 2005, Blythe and Jayaratne, 2002). One study had a moderate risk of bias (Daegnais et al., 2003) and a further study could not be assessed because the full paper was unobtainable (Yuan et al., 1990).
- Inconsistency was judged as "serious" due to the high levels of heterogeneity.
- Publication bias was indicated by funnel plots (see Appendix 12) and by an Egger test (P=0.0002) (Sterne et al., 2011).

Table C: Intensive Family Preservation Services to prevent out-of-home placement of children (all studies) at 12 months**Outcome**

Out-of-home placement¹ at 12 months' time point following IFPS intervention vs controls

Patient or population

Children and young people ≤18 years old who are in need of out-of-home care.

Setting

Any setting

Intervention

Intensive Family Preservation Services

Comparison

Usual care

Certainty assessment							Certainty
No of participants (studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other consideration	Relative effect	
28,478 (10; 2 RCTs and 8 CTs)	Serious ²	Serious ³	Not serious	Not serious ⁴	Publication bias suspected, ⁵ large sample size ⁶	RR= 0.60 (95% CI 0.48 to 0.76)	⊕⊕ Moderate

GRADE Working Group grades of evidence**High quality**

We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality

We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality

Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

- Reasons for entry into care can include: abuse and neglect (e.g. sexual abuse, emotional abuse, physical abuse, supervisory neglect); acute family problems (e.g. parental substance misuse); family in acute stress (e.g. financial crisis); child's disability; carer's illness or disability; socially unacceptable behaviour (pre entry into juvenile court system). Out-of-home care is defined as a child or young person being looked after by a local authority (or international equivalent), including those who are placed under a court order or a formal voluntary agreement with parents.
- Half of the studies were assessed as serious or high risk of bias (Berquist et al., 1993, Blythe and Jayaratne, 2002, Jones, 1976, Pecora et al., 1991, Wood et al., 1988) and the other half were judged as having a moderate risk of bias (Ciliberti, 1998, Dagenais et al., 2004, Dennis-Small and Washburn, 1986, Kirk and Griffith, 2004, Schwartz et al., 1991).
- Inconsistency was judged as "serious" due to the high levels of heterogeneity.
- There were narrow confidence intervals at the 12 months' time point indicating precision of the findings.
- Publication bias was suggested by funnel plots (see Appendix 12) and by an Egger test (P=0.0002) (Sterne et al., 2011).
- There was a large sample size of 28,478 children at this time point.

Table D: Intensive Family Preservation Services to prevent out-of-home placement of children (all studies) at 24 months

Outcome

Out-of-home placement¹ at 24 months' time point following IFPS intervention vs controls

Patient or population

Children and young people ≤18 years old who are in need of out-of-home care.

Setting

Any setting

Intervention

Intensive Family Preservation Services

Comparison

Usual care

Certainty assessment							Certainty
No of participants (studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other consideration	Relative effect	
562 (3; 1 RCT and 2 CTs)	Serious ²	Serious ³	Not serious	Not serious	Publication bias suspected ⁴	RR= 0.51 (95% CI 0.30 to 0.87)	⊕⊕ Low

GRADE Working Group grades of evidence**High quality**

We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality

We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality

Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

- Reasons for entry into care can include: abuse and neglect (e.g. sexual abuse, emotional abuse, physical abuse, supervisory neglect); acute family problems (e.g. parental substance misuse); family in acute stress (e.g. financial crisis); child's disability; carer's illness or disability; socially unacceptable behaviour (pre entry into juvenile court system). Out-of-home care is defined as a child or young person being looked after by a local authority (or international equivalent), including those who are placed under a court order or a formal voluntary agreement with parents.
- Risk of bias was judged as "serious" as the RCT has a high risk of bias (Halper and Jones, 1981) and the CTs were assessed as serious (Raschick, 1997) or moderate (Dennis-Small and Washburn, 1986) risk of bias.
- Inconsistency was judged as "serious" due to the high levels of heterogeneity.
- Publication bias was indicated by funnel plots (see Appendix 12) and by a Egger test ($P=0.0002$) (Sterne et al., 2011).

Table E: Intensive Family Preservation Services to prevent out-of-home placement of children (all studies) at more than 2 years

Outcome

Out-of-home placement¹ at more than 2 years' time point following IFPS intervention vs controls

Patient or population

Children and young people ≤18 years old who are in need of out-of-home care.

Setting

Any setting

Intervention

Intensive Family Preservation Services

Comparison

Usual care

Certainty assessment							Certainty
No of participants (studies)	Risk of bias	Inconsistency	Indirectness	Imprecision	Other consideration	Relative effect	
695 (3; 1 RCT and 2 CTs)	Serious ²	Serious ³	Not serious	Not serious	Publication bias suspected ⁴	RR= 0.63 (95% CI 0.36 to 1.12)	⊕⊕ Low

GRADE Working Group grades of evidence**High quality**

We are very confident that the true effect lies close to that of the estimate of the effect

Moderate quality

We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low quality

Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

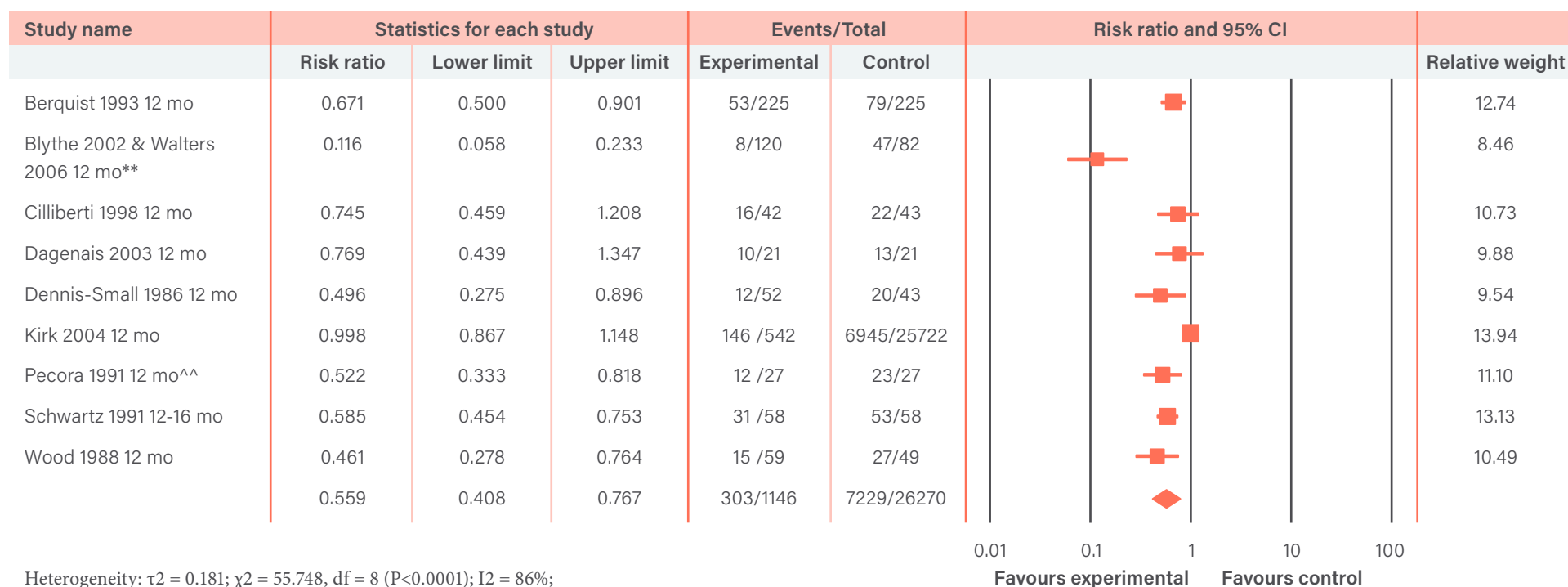
- Reasons for entry into care can include: abuse and neglect (e.g. sexual abuse, emotional abuse, physical abuse, supervisory neglect); acute family problems (e.g. parental substance misuse); family in acute stress (e.g. financial crisis); child's disability; carer's illness or disability; socially unacceptable behaviour (pre entry into juvenile court system). Out-of-home care is defined as a child or young person being looked after by a local authority (or international equivalent), including those who are placed under a court order or a formal voluntary agreement with parents.
- Risk of bias was judged as "serious" as one study had a high risk of bias (Jones, 1985) and two were assessed as having a moderate risk of bias (Forrester et al., 2008a, Forrester et al., 2014).
- Inconsistency was judged as "serious" due to the high levels of heterogeneity.
- Publication bias was indicated by funnel plots (see Appendix 12) and by a Egger test (P=0.0002) (Sterne et al., 2011).

Study (Author, year, country)	Based on Home-builders	Imminent risk of placement	Services available within 24 hours of referral	24/7 availability	Caseload of 3 families or less	Total number of components met	Overall fidelity assessment
Berquist et al. (1993)	Yes	Present	Present	Present	Present	4	High
Biehal (2005)	No	Present	Unknown	Unknown	Unknown	1	Low
Brandon & Connolly (2006)	Yes	Present	Unknown	Unknown	Unknown	1	Low
Ciliberti (1998)	Yes	Present	Present	Present	Present	4	High
Dagenais et al. (2003)	Yes	Present	Absent	Present	Absent	2	Low
Dennis-Small & Washburn (1986)	No	Present	Present	Present	Unknown	3	High
DHHS (2002) 1	Yes	Present	Present	Present	Present	4	High
DHHS (2002) 2	Yes	Present	Absent	Present	Present	3	High
DHHS (2002) 3	Yes	Present	Absent	Present	Present	3	High
DHHS (2002) 4	No	Absent	Absent	Unknown	Absent	0	Low
Feldman (1991a) & Feldman (1991b)	Yes	Present	Present	Present	Present	4	High
Forrester et al (2008) and Forrester et al (2014)	Yes	Present	Unknown	Present	Present	3	High
Halper & Jones (1981)	No	Present	Absent	Present	Absent	2	Low
Jones (1976) and Jones (1985)	No	Present	Absent	Unknown	Absent	1	Low
Kirk & Griffith (2004)	No	Present	Present	Present	Absent	4	High
Pecora et al. (1991) 1	Yes	Present	Absent	Present	Absent	2	Low
Pecora et al. (1991) 2	Yes	Present	Present	Present	Present	4	High
Raschick (1997)	No	Absent	Unknown	Unknown	Absent	0	Low
Rubin (1997)	No	Unknown	Unknown	Unknown	Unknown	0	Low
Schuerman et al. (1994)	Yes	Present	Present	Present	Unknown	3	High
Schwartz et al. (1991)	No	Present	Unknown	Present	Present	3	High
Szykula & Fleischman (1985)	No	Present	Unknown	Unknown	Unknown	1	Low
Walters (2006) and Blythe & Jayaratne (2002)	Yes	Present	Present	Present	Present	4	High
Walton (1997)	No	Present	Present	Unknown	Unknown	2	Low
Walton (2001)	Yes	Present	Unknown	Unknown	Unknown	1	Low
Wood et al. (1988)	Yes	Present	Unknown	Present	Present	3	High

Note: Pecora, Fraser & Haapala (1991) study sites: 1= Utah, 2= Washington; DHHS (2002) study sites: 1= Kentucky, 2= New Jersey, 3= Tennessee, 4= Philadelphia.

Appendix 12: Sensitivity analyses

Figure 1: Relative risk of out-of-home placement at 12 months following IFPS intervention vs controls (random-effects model) (child level) (sensitivity analysis) (without Jones 1976; 8.5 months)

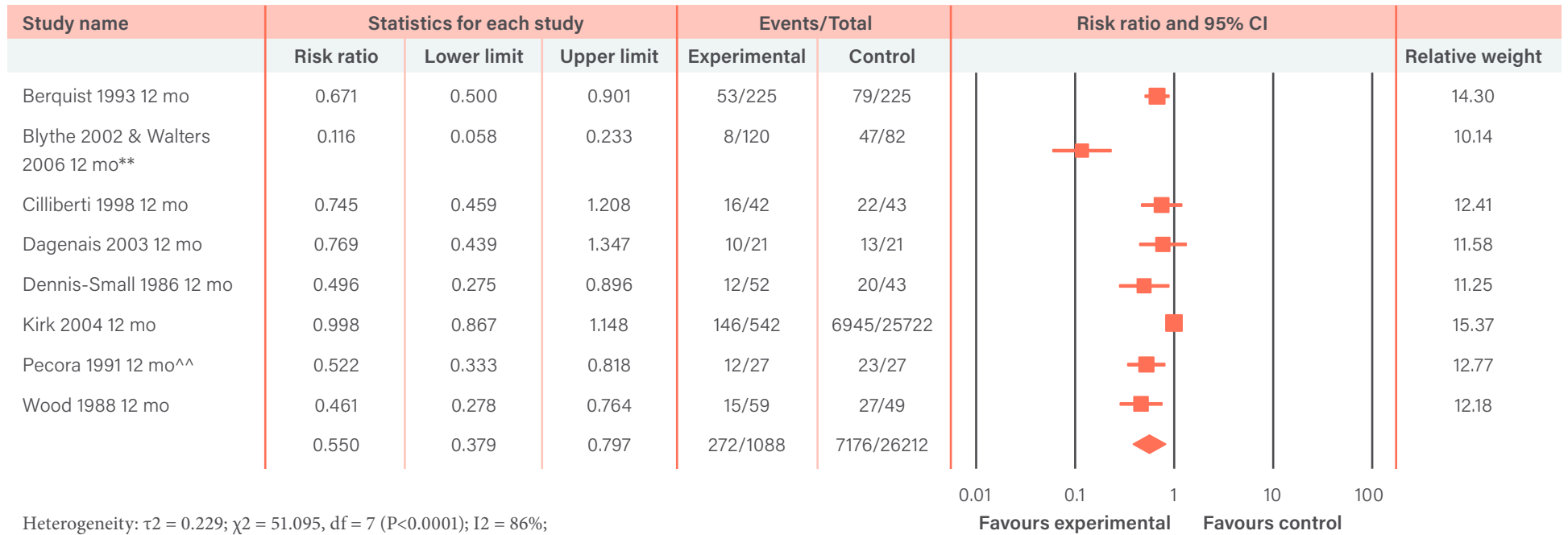


Heterogeneity: $\tau^2 = 0.181$; $\chi^2 = 55.748$, $df = 8$ ($P < 0.0001$); $I^2 = 86\%$;
Test for overall effect: $Z = -3.608$ ($P < 0.0001$)

** Figures for children living in foster care or with relatives.

^^ Utah only with a matched treatment and comparison cases.

Figure 2: Relative risk of out-of-home placement at 12 months following IFPS intervention vs controls (random-effects model) (child level) (sensitivity analysis) (without Schwartz 1991; 12-16 months)

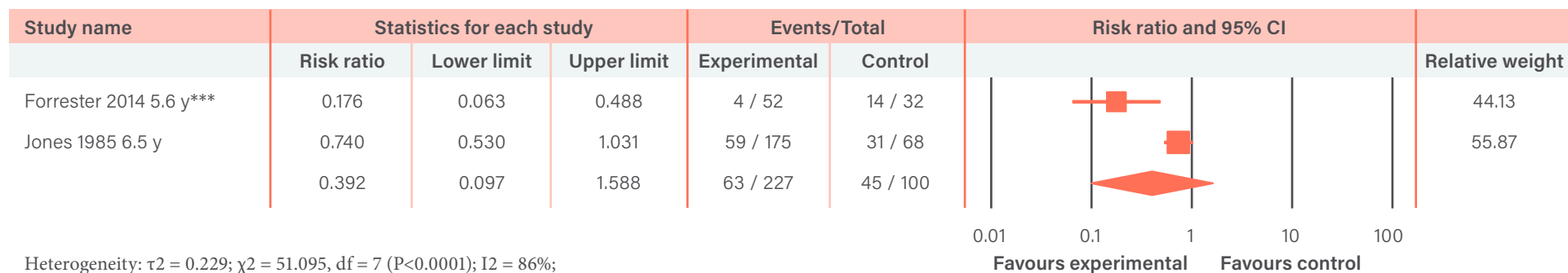


Heterogeneity: $\tau^2 = 0.229$; $\chi^2 = 51.095$, $df = 7$ ($P < 0.0001$); $I^2 = 86\%$;
 Test for overall effect: $Z = -3.157$ ($P < 0.002$)

** Figures for children living in foster care or with relatives.

^^ Utah only with a matched treatment and comparison cases.

Figure 3: Relative risk of out-of-home placement at more than 2 years following IFPS intervention vs controls (random-effects model) (child level) (sensitivity analysis) (without Forrester 2008; 3.5 years)



Heterogeneity: $\tau^2 = 0.229$; $\chi^2 = 51.095$, $df = 7$ ($P < 0.0001$); $I^2 = 86\%$;
 Test for overall effect: $Z = -3.157$ ($P < 0.002$)

** Figures for children living in foster care or with relatives.

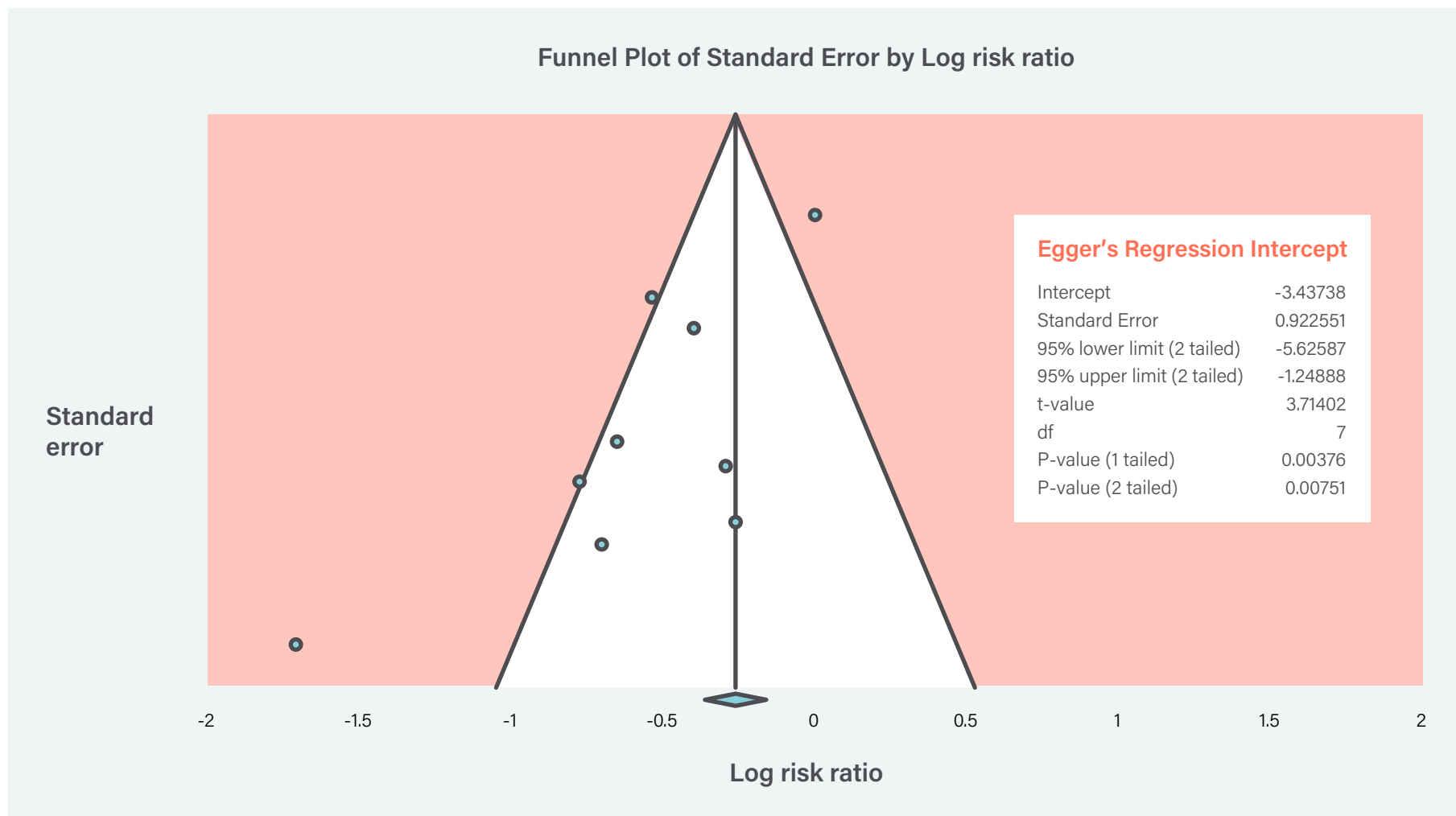
^^ Utah only with a matched treatment and comparison cases.

Appendix 13: Funnel plots

Figure 1. Funnel plot showing the log odds ratios of relative risk of out-of-home placement at any time points following IFPS intervention vs controls (child level)



Figure 2. Funnel plot showing the log odds ratios of relative risk of out-of-home placement at 12 months following IFPS intervention vs controls (child level)



Studies included: Berquist et al. (1993); Blythe & Jayaratne (2002) & Walters (2006); Ciliberti (1998); Dagenais et al. (2003); Dennis-Small & Washburn (1986); Kirk & Griffith (2004); Pecora et al. (1991); Schwartz et al. (1991); Wood et al. (1988).



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