PRO BONO ECONOMICS

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Barnardo's

An assessment of the potential savings from Barnardo's interventions for young people who have been sexually exploited

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September 2011

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Pro Bono Economics is delighted to introduce this report, the result of analysis undertaken by Greg Thwaites, Mervyn Tang and Amar Radia from the Bank of England.

Pro Bono Economics was founded in 2009 with the aim of bringing the skills of economists into the third sector, pro bono. Many charities could benefit from the skills of economists, particularly in helping to measure their results and impact. We hope that by bringing together economists and charities we can not only benefit individual charities but also publish economic analysis that can help the third sector more broadly.

Barnardo's work with those who have been sexually exploited is extremely valuable to the young people it helps. The moral case for this work is clear. The work of our volunteer economists aims to make clear the economic case for this intervention, highlighting its value to society as a whole.

We hope that this report will contribute towards a greater understanding and appreciation of the work of Barnardo's in tackling, and helping those affected by, sexual exploitation, and will also serve to demonstrate the value of economic analysis in the third sector.

Pro Bono Economics is grateful to Greg Thwaites, Mervyn Tang and Amar Radia for their time, skill and hard work throughout the project.

We would also like to thank the team at Barnardo's, in particular the significant contribution from Laura Blazey, and Julie Harris, Nicola Smith and Caroline Paskell for the part they played.

This report has been peer reviewed by Michael Barrow from the Economics Department at Sussex University and we are grateful for his comments, advice and insights.

September 2011

Pro Bono Economics is funded by the Economic and Social Research Council, the Esmée Fairbairn Foundation and the Monument Trust. It is with their support that we can undertake this work.

Foreword from Jim O'Neill, Chairman of Goldman Sachs Asset Management and PBE Patron

This report is a superb example of how Pro Bono Economics can help charities in a substantive way. I was involved with getting PBE off the ground and am a big supporter. I am eager to see my profession be more useful for those in society least able to help themselves, and if we can support projects that demonstrate the commercial usefulness of economics for a not-for-profit social benefit, it is very exciting.

When I looked at the approach of the Barnardo's team to the challenge of child sexual exploitation, and their belief about interventions and the related costs and benefits, it seemed like an excellent area for PBE, and so it has proved. By adopting a rigorous framework, the research analyses whether Barnardo's interventions are effective in reducing the risk of sexual exploitation and associated risks, both in principle and, importantly, in a cost effective way.

The research employs some relatively straightforward techniques using the data available, concentrating on identifying the severity of the problem and then, separately, the costs of interventions. In the analysis, several specific cost savings are shown as a result of the interventions. It concludes that the benefits to the taxpayer of the interventions outweigh the costs, substantially. In terms of identifiable savings, the analysis concludes that, depending on the assumptions made, there are potential savings of £6 or £12 for every pound spent, and moreover, that as a result of the interventions, there are substantial reductions in the risk of sexual exploitation beyond the cost savings. Even if the benefits are at the lower end of the estimates, they are more than enough to warrant Barnardo's support for these young people, to help give them the opportunities that most of us are lucky enough to enjoy.

Jim O'Neill

Contents

Executive summary

This report presents the findings from research undertaken by Pro Bono Economics on behalf of Barnardo's into the potential savings from Barnardo's interventions for young people who have been sexually exploited.

The research sought to determine the effectiveness of Barnardo's interventions in reducing the risk of sexual exploitation and associated risk factors, and estimated the fiscal rate of return of such interventions – that is, the saving to the taxpayer for every pound spent by Barnardo's on the intervention.

Statistical methods were employed to measure the effect of Barnardo's interventions on the severity of sexual exploitation and its associated risk factors. The cost of sexual exploitation was estimated for varying degrees of severity using a range of secondary sources. These estimates were then combined to calculate the gross financial benefit of the intervention, and compared to the cost of the intervention to give an overall fiscal rate of return.

Two models are presented – one which assumes that the level of risk remains unchanged in the absence of the intervention, and one which provides an estimate of how the level of risk changes in the absence of an intervention. Both highlight that the benefits to the taxpayer of Barnardo's interventions for young people who have been sexually exploited substantially outweigh the costs, with a potential saving of either £6 or £12 for every £1 spent depending on the assumptions made, in addition to a substantial (non-costed) reduction in the risk of sexual exploitation

Introduction

Barnardo's interventions for young people who have been sexually exploited

Child sexual exploitation refers to the involvement of a child under the age of 18 in sexual activity in return for some 'benefit'. It covers a broad range of illegal activity from seemingly 'consensual' relationships or informal exchanges of sex for attention, accommodation, gifts or cigarettes, through to serious organised crime. Any child or young person, from any background, can be exploited, and boys and young men can be at risk as well as young women and girls.

Barnardo's has been providing services to prevent, and support young people out of, sexual exploitation for 16 years and currently runs 20 services providing interventions for young people who have either been sexually exploited, or are at risk of sexual exploitation. Between 2009 and 2010, Barnardo's worked with 1,098 young people across the UK.

The services all use a similar model of support for young people, referred to as the four As model:

- **Access**

  Barnardo's services offer a friendly and welcome environment for young people. Referrals are accepted from a range of agencies and young people may also able to refer themselves.

- **Attention**

  Young people are given a key worker who stays with them throughout their time with the service, providing a consistent source of support.

- **Assertive Outreach**

  Staff use a range of techniques to engage the young person to help them access support. The persistence of workers, including with young people who show little interest, helps to demonstrate genuine concern for the young person's wellbeing.

- **Advocacy for young people in need**

  Barnardo's services help young people to get access to the services they need, keep appointments and advocate for them when relationships with other services break down.

In addition to direct work with young people who have experienced sexual exploitation, Barnardo's services also undertake a range of awareness-raising activities and preventative work in schools and with professionals.

Box 1: An example of a Barnardo's service

Barnardo's Young Women's Project operates out of its North London base. It provides a safe and friendly place where young people can relax and have fun. It offers young people:

1. A one-to-one worker to support young people on an individual basis around issues such as self esteem, healthy relationships, body image, personal safety, drugs, alcohol, self harm, family difficulties and future goals and aspirations.
2. Weekly group activities (both drop-in, and closed group sessions) offering a range of activities (e.g. cooking, arts and crafts, music and films) alongside peer support.
3. A sexual health nurse based in the project who can offer contraception advice and education (including pregnancy testing, chlamydia testing, and emergency contraception).

The project also has a range of facilities on-site that young people can use including showers, laundry facilities, computer room and an arts and crafts room.

In addition to supporting young people in nearby boroughs in North London, the Young Women's Project also delivers two pan-London programmes of work: a preventative education programme delivered through training to professionals, and group-work for young people in schools, residential units and pupil referral units; and a six-month intervention programme for young people who have been identified as victims of sexual exploitation.

The research question

Sexual exploitation costs the taxpayer money, for example related to

- Health
- Crime
- Going missing
- Educational participation and attainment

However, there is also a cost associated with providing interventions for young people who have been sexually exploited.

This research therefore set out to answer the following questions:

1. Are these interventions effective?
    - Do they reduce the incidence of sexual exploitation and associated risks?
2. Are they cost effective?
    - What are the financial returns to Barnardo's sexual exploitation work?
    - For every pound spent by Barnardo's, how much taxpayers' money is saved?

Overview of method

There were a number of stages to the research:

1. Employing statistical methods to measure the effect of Barnardo's in terms of the severity of sexual exploitation and its associated risk factors based on outcome data recorded by Barnardo's.
2. Estimating the cost of the varying degrees of severity using secondary sources.
3. Combining the two estimates to calculate the gross financial benefits of the intervention.
4. Comparing the financial benefits to the cost of the intervention.

The result is a fiscal rate of return. A fiscal rate of return of X implies that £1 spent by an organisation saves £X of public spending.

Data

Outcome data

Each sexual exploitation service records 10[1] core outcomes for every young person receiving an intervention (See Appendix I for a full list of outcomes). The young person's worker will assign a score against a range of risk and protective factors using a 5-point grading scale, with 5 indicating the highest level of risk and 1 the lowest. Assessments are made approximately every 3 months according to a common framework, with a final assessment at the end of the intervention.[2]

This analysis focuses on a reduction in the risk of sexual exploitation as the primary outcome of the intervention, and four associated outcomes that can be assigned a monetary value:

- Reduced missing episodes
- Reduced alcohol and drug abuse
- Improved engagement in education, training or employment
- Reduced accommodation and housing need

Table 1 summarises the indicators of the highest and lowest levels of risk for each of these outcomes (see Appendix II for full grading guidance for each outcome).

[1] Initially, the sexual exploitation services recorded outcomes for alcohol and drug abuse separately, giving 11 outcomes in total. Later, these two categories were merged to create one outcome for both alcohol and substance abuse. A merged alcohol and substance abuse score was therefore constructed in the earlier data to give 10 outcomes.

[2] The final assessment may reflect a range of different circumstances, including situations where a young person's involvement with a service has come to an end because they are no longer at risk. However, the intervention may also come to an end because it is a time-limited intervention due to funding arrangements; because the young person has been moved out of area; or because the young person has disengaged with the service.

Table 1: Overview of outcomes and indicators of risk

Outcome	Highest level of risk	Lowest level of risk
Risk of sexual exploitation	Currently experiencing exploitation (known or suspected)	Young person has exited exploitation and is no longer at risk
Missing episodes	Frequent and prolonged missing episodes (over 24 hours, 3 or more times a month)	No missing episodes
Alcohol and drug abuse	Dependent on drugs or alcohol (known or suspected)	No concerns about drug use
Engagement in education, training or employment	Not engaged in education or training, and shows no interest in accessing educational opportunities.	Engaged in full time education.
Accommodation and housing need	Young person is homeless and is staying with friends or sofa surfing	Young person is satisfied with their accommodation and it meets all their needs

Properties of the dataset

Outcome data was extracted from Barnardo's internal monitoring system for all cases open from 1st April 2008 to 31st March 2010[3]. The extracted dataset included 801 cases where multiple assessments had been made and 540 where an assessment had been made at one time point only. In addition to data on the 10 outcomes, the dataset also included demographic data (age, ethnicity and disabilities) and background information on the young person's circumstances, such as involvement in the care system, and experience of violence or trafficking (see Appendix III for full details). Although outcome data are recorded on a 5-

[3] The internal system Barnardo's uses for recording outcomes changed as of 1st April 2010. To ensure data was comparable, only cases that opened pre-1st April 2010 were included in the analysis.

point scale, data for some outcomes were transformed into less than five categories to create groups with common properties that could be costed. For more details on this, see the section 'Costing sexual exploitation' (p.20).

The dataset was cleaned, removing duplicate entries and erroneous data points. The analysis reported here focuses on the 539 cases in the dataset where the case was closed for a known reason[4]. This is to exclude open cases, and cases which appear closed when they are in fact open. Otherwise it is not reliably known that the intervention had come to an end in each case. For more details on data cleaning and other manipulations carried out to arrive at this sample, see Appendix III.

Data on the breakdown of these cases is presented in Box 2.

Box 2: Characteristics of the 539 service users

- At first contact, average age is 16.04, ranging between 10.8 and 18 years old (any cases where the young person is older than 18 at first review were excluded)
- 85% female
- 75% White British ethnicity
- 3% are parents
- 25% are looked-after children

[4] For more details about how this sample of 539 cases was arrived at see Appendix III.

Assessing the effectiveness of the intervention

How to isolate the effect of the intervention

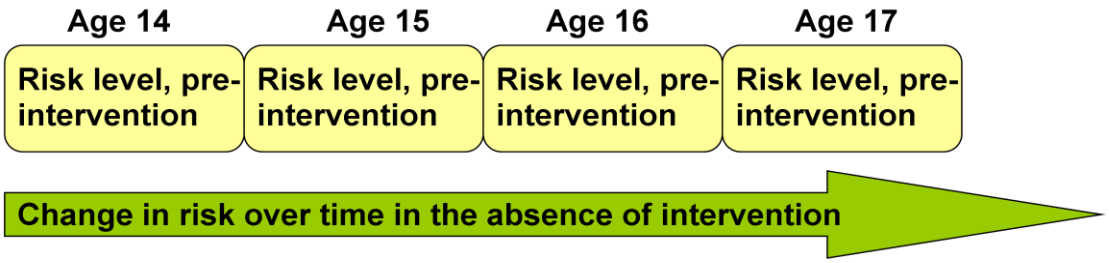
The dataset presented two challenges in determining the effect of the intervention:

1) Without a control group, it is not known how the risk of sexual exploitation would change over time in the absence of intervention

2) Whether a young person receives an intervention or not, and when they receive the intervention, is not random.

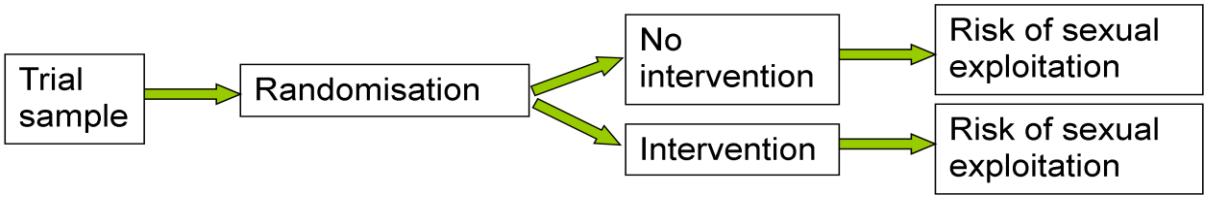
When assessing how effective an intervention is, it is important to understand how the underlying issue that is being addressed may change over time in the absence of an intervention (see Figure 1).

Figure 1: The evolution of risk over time in a control group



One way of doing this is to use a 'randomised controlled trial' (see Figure 2) in which one group of individuals are randomly assigned to receive an intervention or treatment, and a second group – the control group – continues to receive standard care.

Figure 2: A randomised controlled trial



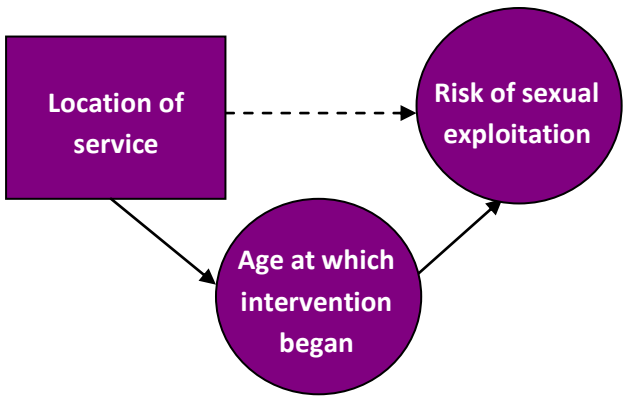
However, it would be unethical to deny an intervention to young people in need and then monitor their risk of sexual exploitation. Hence data has only been recorded from young people who have received an intervention.

To overcome the first of these challenges, and to determine how the risk of sexual exploitation may change over time in the absence of an intervention (see Figure 1), a synthetic counterfactual 'control' group was constructed based on pre-intervention cases at different ages. This was used to build up a picture of the progression of risk over time in the absence of the young person receiving any intervention. This group was then compared to the group receiving the intervention at different ages.

However, whether a young person receives an intervention or not, and when they receive the intervention, is not random. In fact, it will most likely depend on the underlying risk of exploitation, with more serious cases being more likely to receive support earlier. As a result, simply comparing two young people of the same age – one in the intervention group and one in the 'control' group that has been constructed – is not a valid exercise; the person receiving the intervention may have been at higher risk, earlier on.

To overcome the second challenge presented by the dataset, the location of service where the young person received an intervention was used to isolate the effect of the intervention. This variable was used because it is likely to correlate with the age at which intervention begins but not be related to the severity of risk (see Figure 3). Since referral practices are likely to vary across the country, the location of the service will affect the timing of the intervention in the young person's life, but not their risk of sexual exploitation[5]. Box 3 shows an example that illustrates this effect.

Figure 3: The relationship between location of service, age at which the intervention began, and risk of sexual exploitation



[5] Data on age of first review supports this assumption, with the average age ranging between 14.2 and 17.2 depending on service location.

Box 3: Isolating the effect of the intervention

The timing of when an individual receives an intervention is likely to depend on the underlying risk of exploitation, with more serious cases being more likely to receive support earlier. This means that it's not possible to compare two young people of the same age – one in the intervention group and one in the 'control' group – from the same Local Authority because the person receiving the intervention may have been at higher risk, earlier on.

		Age 14	Age 15	Age 16	Age 17
Local authority A	Intervention	**X**			
	Pre-intervention	**X**			
Local authority B	Intervention				
	Pre-intervention				

However, different local authorities may have different referral practices. For example, Local Authority B might refer the same young person a year later than Local Authority A.

		Age 14	Age 15	Age 16	Age 17
Local authority A	Intervention	**X**			
	Pre-intervention				
Local authority B	Intervention		**X**		
	Pre-intervention				

If the age at which the young person receives the intervention varies according to local referral practices as opposed to severity of risk, comparing the risk outcomes of young people of the same age from different local authorities allows us to infer what the impact of the intervention is.

		Age 14	Age 15	Age 16	Age 17
Local authority A	Intervention				
	Pre-intervention		**X**		
Local authority B	Intervention		**X**		
	Pre-intervention				

Therefore, by comparing young people of the same age in two different local authorities, it is possible to isolate the effect of the intervention.

The econometric model

There were two other issues to address in the dataset. First, the data is ordinal, and on a scale of 1-5 for the risk of sexual exploitation, and 1-3 or 1-2 for the other risk factors. To address this, an 'ordered probit model' was used. Second, the data is longitudinal. Individuals were therefore tracked through the use of 'random effects'.

To address these issues, a random effects ordered probit model with location as an instrumental variable was used.

$$S_{it}^{*} = \alpha' X_{it} + \gamma' \hat{R}_{it}(Z_{it}) + u_{it}$$

$$S_{it} = \begin{cases} 1 \text{ if } S_{it}^{*} < 0 \\ 2 \text{ if } 0 \le S_{it}^{*} < \mu_1 \\ 3 \text{ if } \mu_1 \le S_{it}^{*} < \mu_2 \end{cases}$$

Where S is the risk of SE (or another problem), S* is a latent continuous variable representing the underlying quantity that the ordinal scale S is attempting to measure, X is a set of control variables (ethnicity, gender etc), R is an indicator coding whether or not the case has been treated (with the ˆ denoting that this an estimate), and Z is a set of instruments (which must include something not already controlled for in X).

Estimated results from this model were used to derive the 'synthetic control group'. The econometric model estimated the effect of the intervention on any given case. This quantity was used to estimate what the risk score would have been in the absence of intervention, by taking the risk score of closed cases and effectively subtracting the estimated effect of the intervention. Strictly speaking, the model was used to predict the risk score of every completed case in the absence of the intervention. This procedure generated a distribution which constituted the synthetic control group – the counterfactual against which the treated group can be compared.

Further detail on the econometric methodology will be available at the end of September 2011.

Results

The following charts show how the risk of sexual exploitation and other risk factors vary before and after the intervention based on the number of young people at each level of risk, where lower scores indicate lower risk. The bars of a given colour are always equal to the total number of cases, meaning that the higher the bars on the left-hand side of the chart, the lower the bars on the right-hand side of the chart (and vice-versa) and hence the lower average risk in the sample.

Correlation coefficients between the risk of sexual exploitation and the other risk factors were significant at the 0.01% level, both before and after the intervention.

Figure 4: The number of young people at each level of risk for sexual exploitation (SE) before and after the intervention

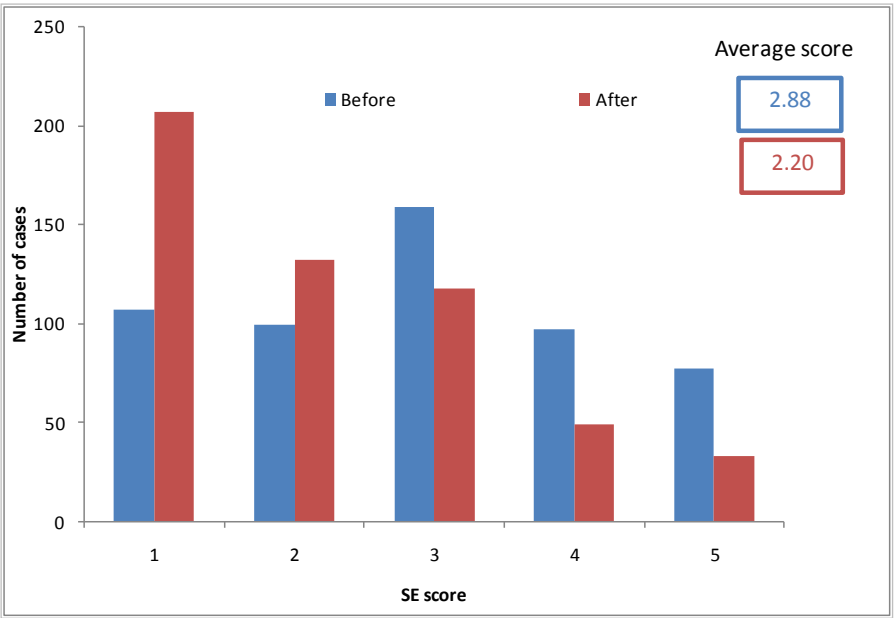
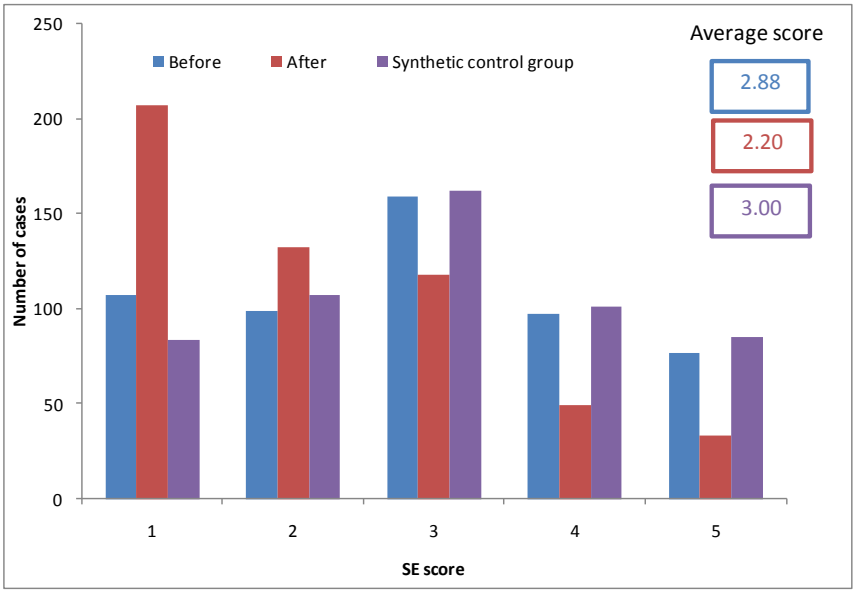


Figure 4 shows that the risk of sexual exploitation is generally lower after the intervention than before. The number of young people with low risk scores increases from first assessment (before the intervention) to final assessment (after the intervention), while the number of young people with high risk scores falls. This is shown by the shift in the distribution of the red bars, showing the score after intervention, towards lower values.

However, it is not known how the risk of sexual exploitation changed in the absence of an intervention – it could be the case that the risk would have fallen without an intervention. Yet, the regression estimate based on a comparison with the synthetic control group

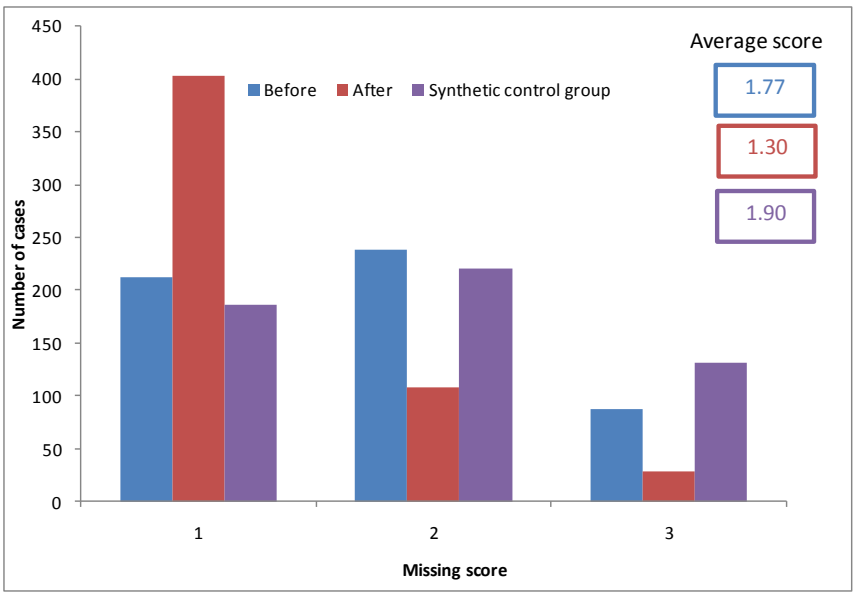
strengthened the result. Without the intervention (in the control group), it is estimated that the risk of sexual exploitation would have got worse.

Figure 5: The number of young people at each level of risk for sexual exploitation (SE) before and after the intervention, and in the absence of intervention



The number of cases in the control group (shown in purple in Figure 5) at high risk is greater than the number in the pre-intervention group. This indicates that the risk of sexual exploitation would have got worse in the absence of an intervention and that the effect of the intervention is larger than the simple before-after comparisons would suggest.

Figure 6: The number of young people at each level of risk for missing episodes before and after the intervention, and in the absence of intervention



As shown by Figure 6, the same broad pattern holds for the risks relating to missing episodes. Using the revised categories based on the number of missing episodes per month (see p. 21), Figure 6 shows that after the intervention, there is an increase in the number of young people at the lowest level of risk and a reduction in the number of young people at the higher levels of risk. In contrast, in the absence of an intervention, the number of young people at high risk increases.

Figure 7: The number of young people at each level of risk for education before and after the intervention, and in the absence of intervention

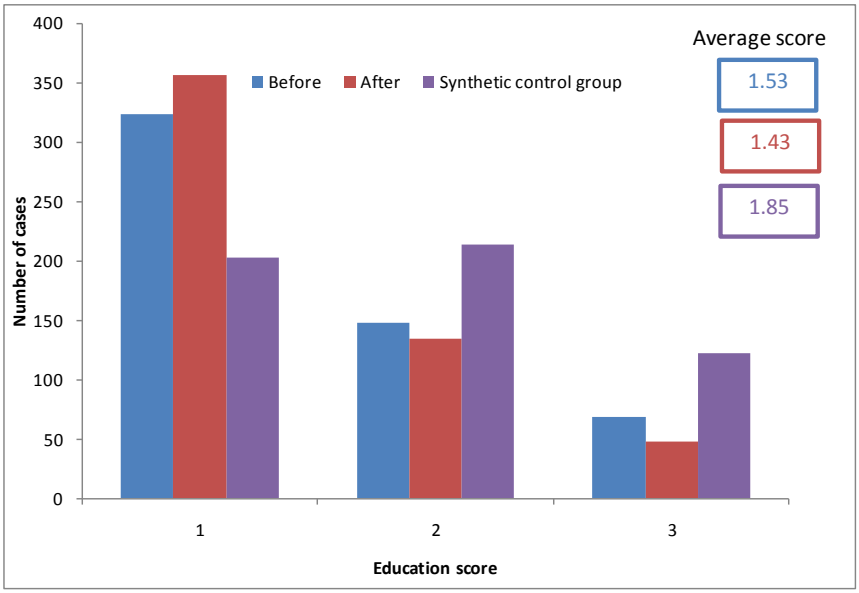
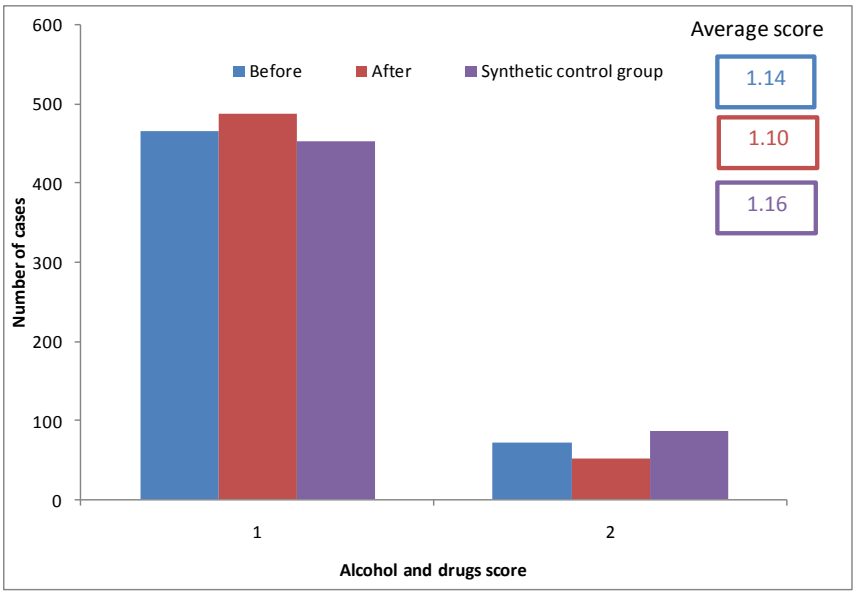


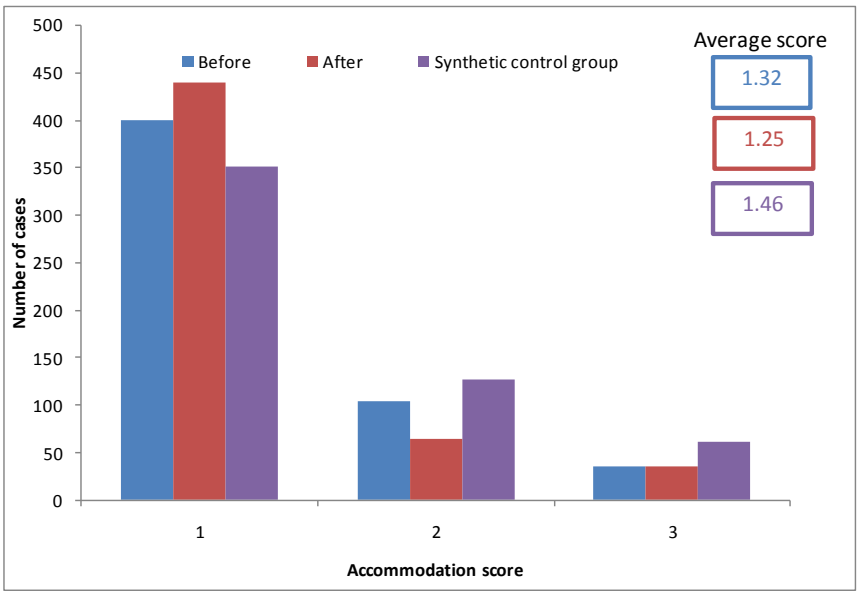
Figure 7 shows that the same pattern holds for the risk of dropping out of education. The risk is lower after intervention, whereas it is estimated that it would have risen without it.

Figure 8: The number of young people at each level of risk for alcohol and drug abuse before and after the intervention, and in the absence of intervention



This relationship is also true of risk of substance abuse (Figure 8). Once again the risk is lower after intervention, whereas it is estimated that it would have risen without it.

Figure 9: The number of young people at each level of risk for accommodation need before and after the intervention, and in the absence of intervention

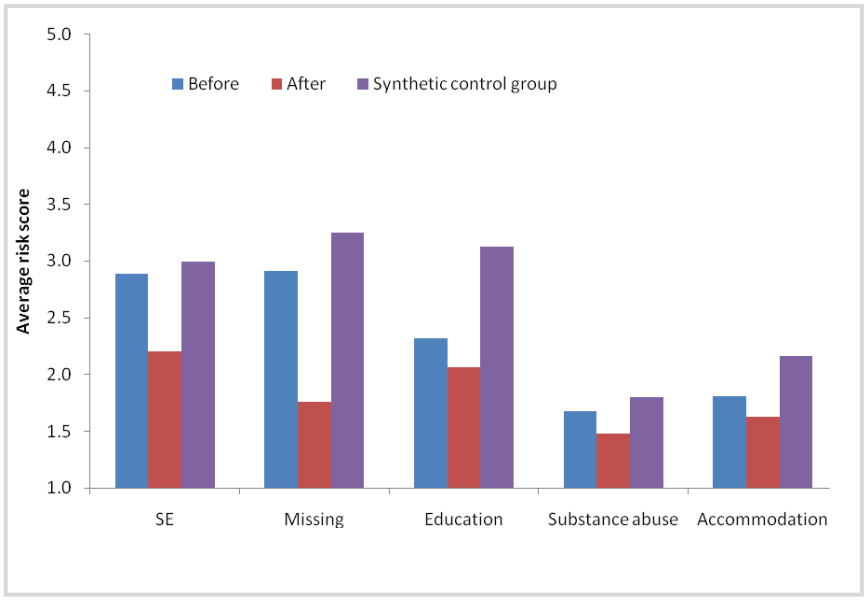


Finally, the same pattern is observed for the risk of temporary accommodation and homelessness. The risk is lower after intervention, whereas it is estimated that it would have risen without it.

Summary of intervention effectiveness

Figure 10 summarises these results, showing the average risk scores before and after intervention, and the estimate of what they would have been in the absence of an intervention. The scores have been rescaled to a 1-5 scale to allow comparison across the different factors.

Figure 10: Average risk scores before and after the intervention, and in the absence of intervention, for each of the five risk factors



As shown by Figure 10, the risk of sexual exploitation and associated risk factors are lower after intervention than before. These risks could have improved without an intervention. However, the estimate of what would have happened in the absence of an intervention indicates that they would have got worse. The effect of the intervention therefore appears to be materially larger than a simple before-after comparison would suggest

Costing sexual exploitation

Overview

Rather than cost sexual exploitation directly, a subset of more tangible risk factors associated with it were costed (see p. 21). This is due to the difficulty in creating a scale from a subjective set of guidance that could be easily costed. For example it is unclear how moving from low to medium risk of sexual exploitation would compare to moving from medium to high risk. There is further difficulty in mapping costs to outcomes without data on the length and period of time each child was sexually exploited.

The guidance used by Barnardo's to assign a score to the level of risk for each factor were translated into outcomes which could be assigned a monetary value based on estimates from existing empirical studies. A public finance approach was adopted in which only costs to the taxpayer were taken into account.

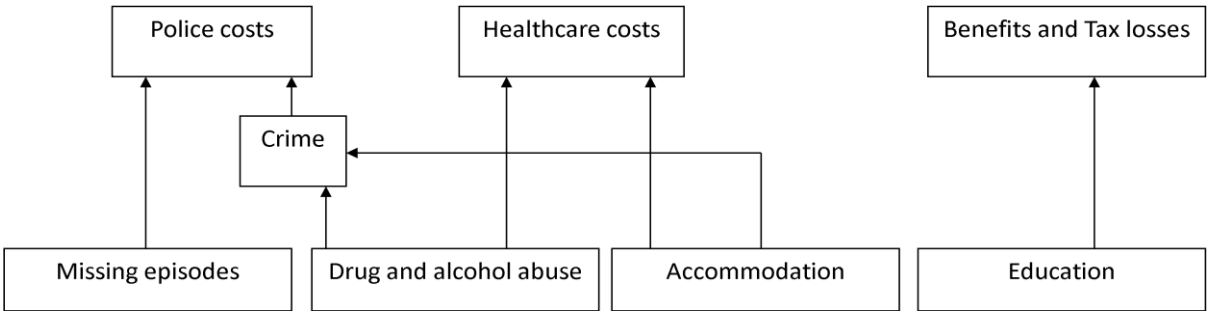
Correlation coefficients between the score for risk of sexual exploitation and the other scores were significant at a 0.01% level, both before and after the intervention. To calculate the average cost of a case at any stage in the process, the costs of being in each category were multiplied with the percentage of cases in that category. The average costs after the intervention were then compared with what they were before, and the estimate of what they would have been without intervention. The difference between these figures is an estimate of the savings from the intervention.

Each risk factor was attributed to a particular cost in order to limit overlapping cost estimates (see Figure 11). For example, substance abuse will also affect benefits and tax losses, but partly through the impact on education. In reality, the outcomes are likely to interact. A young person with both substance abuse issues and low educational attainment will be more likely to require higher benefits. However, these multiplicative effects have not been estimated, or accounted for in order to be conservative about the benefits that the intervention yields. Non-public finance costs, for example lost private earnings or increased risk of social exclusion, and other costs that are more difficult to isolate and estimate, such

as the increased risk of accidents for missing persons or increased fear of crime, have not been included.

Future costs were discounted to a present value using the Treasury Test Discount Rate (3.5%) and were inflation-adjusted to 2010 prices. (For more information please see Appendix IV).

Figure 11: Mapping of risk factors onto costs



The following sections set out how each of the four risk factors has been costed.

Costing of individual risk factors – missing episodes

Table 2: The revised guidance used to assign a cost to missing episodes

Outcome scale	Guidance	Revised	Cost
1	No concerns about young person going missing.	Group 1- No missing episodes.	£0
2	Young person stays out beyond agreed time, but carers know where young person is.		
3	Goes missing for over 24 hours, but less than 3 times a month. Missing for 24 hours or under, but less than 3 times a month.	Group 2- 1 missing episode per month	£21,198
4	Missing for 24 hours or less, goes missing most weeks i.e. 3 times a month or more.	Group 3- 3 missing episodes per month	£63,594
5	Goes missing for over 24 hours, goes missing most weeks i.e. 3 times a month or more.		

The two left-hand columns of Table 2 show the guidance used by Barnardo's project workers to assign a risk score to a young person's missing episodes. To assign a cost to the different levels of risk, the guidance was converted into the minimum number of missing

episodes per month and it was assumed that each episode has an investigation cost of £1054 (Lancashire Constabulary[6]). Other costs from missing episodes were ignored.

The average age (16.3) of those with missing episodes was used to calculate average lifetime missing episodes. This figure was converted into a discounted lifetime cost by assuming that missing person cases continue at the same rate until they stop at the age of 18. Ideally a more realistic evolution of missing episodes over time would be mapped out; however, there was not sufficiently detailed data for this. It is worth noting that NPIA data[7] suggests that missing episodes fall sharply after the age of 18 as many cases are no longer reported, which provides some possible justification for the approach used.

Costing of individual risk factors - education, employment and training

Table 3: The revised guidance used to assign a cost to education, employment and training

Outcome scale	Guidance	Revised	Cost
1	Engaged in full time education, training or employment	Group 1- In employment, education or training	£0
2	Registered in full time education, irregular attendance **or** Young person is attending a pupil referral unit (PRU)/receiving private tuition (full time equivalent) **or** Young person is attending college or a training scheme (part time or irregular attendance) or is employed on a part time basis		
3	Young person excluded from school, no provision being made or undertaking some education / training (part time). Poor attendance **or** Young person is attending PRU/receiving private tuition (not full time)	Group 2- Persistent truant	£16,651
4	Not engaged in full time education, training or employment BUT shows an interest in accessing opportunities.	Group 3- Not in employment, education or training.	£47,017
5	Not engaged in education, training or employment. Shows no interest in accessing educational or training opportunities.		

[6] *Mountains Into Molehills*, Lancashire Police (2005)
[7] *Missing Persons: Data and Analysis 2009/2010,* NPIA *(2010)*

The guidance used by Barnardo's to assess the level of risk associated with lack of engagement in education, training or employment was revised into 3 groups: 1) In employment, education or training; 2) persistent truants; 3) not in employment, education or training. The estimated lifetime costs of £44,468 from a New Philanthropy Capital study (NPC)[8] for persistent truants was used to estimate the cost of being in Group 2. The estimate from a York University study[9] of public finance costs of £56,300 for 16-18 year olds for those not in employment, education or training was used to estimate the cost of being in Group 3. It was assumed that this cost is the same for other age groups in our sample. Compared to Group 1, those in Group 3 will have had 2.5 years less of secondary school education, given that the average age of those that began in Group 3 was 16.5. Using the average annual Department for Education (DfE) spending per secondary school pupil of £5,363[10] and assuming that 12.6% of Group 1 would be in employment or employer-funded training (from DfE data), it can be calculated that the discounted saving for the government from not providing education to Group 3 at £11,404 per person. The net cost of Group 3 is hence £47,107.

The non-public finance costs from both studies were stripped out to arrive at the cost estimates. Crime and health care costs were then stripped out to leave costs from higher benefits and lower taxes. Smaller costs such as those from higher teenage pregnancy and increased use of social services were retained. It is recognised that this cost estimate may be underestimated if sexual exploitation leads to a greater likelihood and cost of a young person becoming disengaged from education, employment or training.

[8] *Misspent youth- The costs of truancy and exclusion,* New Philanthropy Capital (2007)
[9] *Estimating the life-time cost of NEET: 16-18 year olds not in Education, Employment or Training*- Coles et al (2010)
[10] Gross revenue expenditure per pupil for secondary schools excluding academies (DfE school spending data 2009-2010)

Costing of individual risk factors – alcohol and drug abuse

Table 4: The revised guidance used to assign a cost to alcohol and drug abuse

Outcome scale	Guidance	Revised	Cost
1	No drug & alcohol use, or does not appear to impact on daily life, drug & alcohol use is responsible.	Group 1- No Dependency	£0
2	Young person does not appear to be dependent on drug & alcohols, but drug & alcohol use leads to risky situations. Drug & alcohol use is currently increasing.		
3	Regular drug & alcohol use acknowledged, may escalate e.g. occasional binge drug & alcohol use.		
4	Drug & alcohol use suspected: behavioural indications. Behaviour suggests drug & alcohol dependency: offending	Group 2-Dependency	£31,584
5	Clear evidence of problematic drug & alcohol use, disclosure of use.		

The risk scores for alcohol and drug abuse were separated into two groups: 1) dependency; 2) no dependency. Information from the older batch of data (where alcohol and drug abuse was recorded separately) was used to estimate the proportion of cases that have alcohol dependence, drug dependence or both (see footnote 1, p.9). Of those with substance abuse problems it was estimated that 45% abuse alcohol only, 26% abuse drugs only and 29% abuse both. Given that there was no information on the type of drugs used, the very conservative assumption was taken that there were no cases of Class A drug users, only cannabis and other drugs. No existing studies that investigated the joint impact of alcohol and drug abuse were found. Since alcohol users have a higher cost than non Class A drug users, those who abuse both were classified as just alcohol abusers.

The approach here follows the method used by Frontier Economics[11], estimating the probability that young substance abusers become problematic and not problematic drug

[11] *Specialist Drug and Alcohol Services for Young People – A Cost-Benefit Analysis*, Frontier Economics (2011)

users and alcohol users. The estimates below come from Patton et al. (2006)[12], a paper that surveyed a random sample of young people in the state of Victoria, Australia. It is likely that young people from Barnardo's sexual exploitation services may have a greater probability of becoming adult substance abusers, as research has linked childhood sexual abuse to increased probability of substance abuse.[13] Given that no clear quantifiable adjustment can be made to the probabilities below from existing research, the probabilities have not been changed, but it is noted that they may underestimate the true probability of becoming an adult substance abuser. Conversely, the benefits of Barnardo's sexual exploitation services may be overstated given that some of the reduction in drug abuse must be attributed to referrals to specialist drug and alcohol services. Given the lack of the data required data to separate this effect, it is noted as a caveat.

Table 5: Costing drugs and alcohol abuse

		Probability of becoming:		
	% of sample	***Problem drug user***	***Non-problem drug user***	***Problem alcohol user***
Alcohol users	74%	1%	10%	20%
Cannabis and other drugs	26%	1%	23%	14%
Class A drug users	0%	95%	0%	0%
Inflation adjusted lifetime cost		**£414,315**	**£22,285**	**£143,341**

The Frontier Economics study uses a number of other studies[14,15] to form a range of cost estimates, estimating that each addict has a "career" of drug abuse over 20 years. The cost estimate used here was obtained by using the lowest cost estimate in the Frontier Economics study and then stripping away costs attributable to the workplace and wider economy, leaving crime and healthcare costs. The estimated probabilities were then used to calculate an expected cost of dependency. It is noted that this may be an underestimate

[12] *Behavior Problems in Sexually Abused Young Children,* Friedrich et al (1984)
[13] *Alcohol abuse in abused and neglected children followed-up: Are there increased risk?,* Widom et al (1995)
[14] *Alcohol misuse: How much does it cost?* – Cabinet office (2003)
[15] *An ounce of prevention: a pound of uncertainty*, RAND (1999)

because it is possible that crime and healthcare costs may be larger for young adults that have been sexually exploited.

Costing of individual risk factors - accommodation

Table 6: The revised guidance used to assign a cost to accommodation

Outcome scale	Guidance	Revised	Cost
1	Young person is settled where they are living, they do not have any unmet needs. Placement is stable and secure.	Group 1- Not at risk	£0
2	Accommodation appears to meet most of the needs of young people, and young person is relatively settled. Some talk about moving young person to another placement or home environment. Does not appear to be constant, some periods where young person is dissatisfied.		
3	Accommodation does not meet needs of young person e.g. young person needs specialist therapeutic support. Young person is at risk of being thrown out or transferred to another placement.	Group 2- At risk- Settled accommodation	£29,241
4	Young person is in a Bed and Breakfast or hostel, considered unsuitable/unstable.	Group 3- At risk- Temporary accommodation	£87,723
5	Can include, staying with friends (sofa surfing), in overnight hostel		

The guidance used by Barnardo's to assess the level of risk associated with accommodation need was revised into 3 groups: 1) not at risk; 2) at risk in settled accommodation; 3) at risk in temporary accommodation.

In addition to indirect benefits in accommodation – for example, stability achieved through improved relationships with parents or carers as a result of reductions in risk-taking behaviour - Barnardo's also helps young people with accommodation issues through advice and referring them to other programmes. The Department of Communities and Local Government[16] estimates the net benefit (mainly from reduced reoffending) of their Supporting People programme at £1,900 a year for young people in settled accommodation

[16] *Research into the financial benefits of the Supporting People programme,* Department of Communities and Local Government (2009)

and £5,700 for those in temporary accommodation. It was assumed that Barnardo's increases the participation of these types of programmes, and the net benefit was attributed to their intervention. This was then converted to a lifetime estimate assuming 20 years continued benefits (this is consistent with other studies used where there are annual costs) and discounted to a present value, giving estimates of lifetime benefits at £29,241 and £87,723 respectively.

Calculating the savings from the intervention

Overview of method

To calculate the average cost of a case at any point in time, the cost associated with being in each risk category was multiplied by the percentage of cases in that category. The average costs after the intervention were compared with what they were before, and with the estimate of what they would have been without intervention. The difference between these figures is an estimate of the savings from the intervention.

Savings – Missing Episodes

Table 7: Savings on missing episodes

	% of cases			Average cost per case (£)	Average saving per case - after intervention vs. (£)
Missing	**Group 1**	**Group 2**	**Group 3**		
After intervention	75%	20%	5%	7,551	
Before intervention	40%	44%	16%	19,664	12,113
Counterfactual (if no intervention)	35%	41%	24%	24,235	16,684

Table 7 shows the average fiscal costs associated with the risk of going missing, after intervention, are approximately £8,000. This figure is obtained by multiplying the relative frequency of each group after the intervention – 75% for Group 1, 20% for Group 2 and 5% for Group 3 – by the average costs of being in each group – zero, £21,198 and £63,594 respectively. If the risk of going missing remains at the level at the inception of the intervention, these costs would be around £20,000, as the probability of being in (the more costly) Groups 2 and 3 is higher, at the expense of the (by assumption costless) Group 1. One simple estimate of the saving from the intervention is therefore: £20,000-£8,000=£12,000 (after rounding). But if the risk without intervention increases, as the estimate shows it would have done, the associated cost rises to £24,000, and the saving rises to £17,000.

Savings – Education

Table 8: savings on education

	% of cases			Average cost per case (£)	Average saving per case - after intervention vs. (£)
Education	**Group 1**	**Group 2**	**Group 3**		
After intervention	66%	25%	9%	8,327	
Before intervention	60%	27%	13%	10,504	2,177
Counterfactual (if no intervention)	38%	40%	23%	17,312	8,985

The average fiscal costs associated with the risk of reduced engagement with education are approximately £8,000 after intervention. The savings from the intervention are approximately £2,000 if it is assumed that there is no change in risk in the absence of the intervention, or £9,000 with the estimate of what would have happened in the absence of an intervention.

Savings – Substance Abuse

Table 9: savings on substance abuse

	% of cases		Average cost per case (£)	Average saving per case - after intervention vs. (£)
Alcohol and drug abuse	**Group 1**	**Group 2**		
After intervention	90%	10%	3,047	
Before intervention	86%	14%	4,278	1,231
Counterfactual (if no intervention)	84%	16%	5,057	2,010

The savings relating to drug abuse are £1-2,000 per case depending on what is assumed about the evolution of risk in the absence of intervention

Savings – Accommodation

Table 10: savings on accommodation

	% of cases			Average cost per case (£)	Average saving per case - after intervention vs. (£)
Accommodation	**Group 1**	**Group 2**	**Group 3**		
After intervention	81%	12%	6%	9,223	
Before intervention	74%	19%	6%	11,338	2,115
Counterfactual (if no intervention)	65%	23%	11%	16,904	7,681

The savings relating to the risk of homelessness and temporary accommodation are £2-8,000 per case, again depending on what is assumed about the evolution of risk in the absence of intervention.

Savings – Total

Table 11: total savings

	Average cost per case (£)	Average saving per case - after intervention vs. (£)
Total		
After intervention	28,148	
Before intervention	45,784	17,636
Counterfactual (if no intervention)	63,508	35,360

Across each of the four areas above, Barnardo's intervention saves an average of £18,000 per case if it is assumed that the risk of exploitation and the four associated risk factors remain unchanged in the absence of intervention. If the risks increase in the absence of intervention, as the econometric model suggests, the average savings rise to £35,000 per case.

Costing the intervention

To establish the cost effectiveness of the intervention, it was necessary to compare the savings generated by the intervention with the cost of the intervention itself. The following section sets out the method used to determine the unit cost of the intervention.

Barnardo's sexual exploitation services typically deliver a range of work around sexual exploitation, including interventions for young people who have experienced sexual exploitation. The funding for each of these activities, and the associated costs, is not necessarily distinct. This posed a potential challenge in establishing a unit cost for supporting young people at risk of sexual exploitation.

To overcome this, the cost of interventions for young people at risk of sexual exploitation was separated out from the cost of other work undertaken using three approaches:

Approach 1: Direct work as a proportion of service expenditure

Service managers were asked to estimate the proportion of total expenditure for 2009/2010 that was attributable to interventions for young people at risk of sexual exploitation. Expenditure was then averaged across the number of young people supported by the service to give a unit cost.

Approach 2: Funding streams specifically supporting direct work with young people

Services were identified where interventions for young people at risk of sexual exploitation are funded separately from other work, or where other work forms a small part of the service. The income from each funding stream attributable to providing these interventions was then averaged across the number of young people supported by that source of funding.

Approach 3: Spot purchase prices for direct work

A number of Barnardo's sexual exploitation services offer interventions on a spot purchase basis where the service is contracted by a local authority, or other care provider, for an individual case. These agreements are specific to the type of work undertaken and therefore provide a discrete cost for intervention work.

Costs established by each approach were compared to give a final estimate of the cost of the intervention.

Table 12 below shows the average unit cost established by each method for comparison. See Appendix V for individual unit costs.

Table 12: The unit cost of intervention

	Minimum cost	**Maximum cost**	**Median**	**Mean**
Approach 1	£1,597	£5,137	£1,953	£2,426
Approach 2	£2,402	£5,107	£2,580	£3,154
Approach 3	£2,810	£5,108	£3,370	£3,664
Overall			£2,580	£2,918

While there is a degree of variation in the unit cost of the intervention due to differences in overheads, the number of interventions delivered and associated costs such as travel, the average unit cost of providing an intervention is estimated to be in the region of £2,000 to £3,500 per intervention, with a central estimate of £2,918.

Fiscal rate of return

Summary

Our central estimate of the average cost of intervention is £2,918.

Our estimates of the benefits are:

- £17,636 – assuming conservatively that risk would have remained unchanged on average in the absence of intervention.
- £35,360 – using our synthetic control group as an estimate of what would have happened without intervention.

Table 13: Detail of potential savings

Benefits	**Missing episodes**	**Education**	**Substance abuse**	**Accommodation**	**Total**
Compared with before the intervention	£12,113	£2,177	£1,231	£2,115	£17,636
Compared with synthetic control group	£16,684	£8,985	£2,010	£7,681	£35,360

Both of these estimates greatly exceed the estimated cost of the intervention. The fiscal rate of return is 6 if it is assumed that the level of risk would remain unchanged in the absence of intervention, and 12 based on how that risk might increase over time. For every £1 spent by Barnardo's, the taxpayer potentially saves £6 or £12 depending on the comparator group.

Risks and uncertainties

These estimates are imprecise for a number of reasons:

- The risk scores are based on subjective judgement of the case worker (although guidance is provided to aid consistent scoring).

- The estimated effect on risk scores (i.e. the evolution of risk without intervention) is uncertain.
- The mapping from risk scores to fiscal costs is uncertain, both in terms of the translation of risk scores into quantifiable outcomes and the attribution of fiscal costs to these outcomes.
- The third-party estimates of the fiscal costs associated with sexual exploitation are also uncertain.
- The estimates of the cost of intervention are widely dispersed.

However, these sources of uncertainty do not obviously lean in either direction. The study does contain some possible sources of upward bias. In particular, the fiscal cost of risk factors is assumed to be zero in the lowest category, when there is clearly a risk that costs will be positive. On the other hand, there are also sources of possible downward bias. The main one is that only a subset of fiscal costs were considered. For example, the health risks of sexual exploitation, over and above those which relate to the factors explicitly considered (e.g. drug and alcohol abuse), were not taken into account, nor of the possible increased use of the criminal justice system. Further, no non-fiscal costs were contemplated (e.g. pecuniary and subjective non-pecuniary cost to the victim of abuse). The state may be willing to pay to defray these.

The estimates are subject to all the caveats and uncertainties outlined above, and there are as many good reasons to believe that the true figure is higher, as there are to believe that it is lower. In particular, it seems unrealistic to assume that the level of risk would remain unchanged in the absence of an intervention. Overall, it seems reasonable to believe that the intervention pays for itself many times over.

Conclusions

The aim of this research was to establish whether Barnardo's intervention for young people who have been sexually exploited were effective at reducing the risk of sexual exploitation and associated risk factors, and to determine whether the interventions provided a cost effective method of doing so.

The conservative method employed suggests that the benefits to taxpayer of Barnardo's interventions for young people who have been sexually exploited substantially outweigh the costs:

- There is a potential saving, depending on the assumptions, of £6 or £12 for every £1 spent.
- There is also a substantial (non-costed) reduction in the risk of sexual exploitation.

Appendix I – Recording outcomes

The 10 outcomes recorded by each service are:

- risk of sexual exploitation
- missing episodes
- engagement in education, training or employment
- drug and alcohol abuse
- relationship with parents/carers
- accommodation and housing need
- risk to others
- awareness of rights and risks
- engagement with the service
- knowledge and awareness of sexual health strategies

Appendix II – Grading guidance

Grading used to assess level of risk: Sexual exploitation

Item	Guidance
1) Exited, no longer at risk/no risk.	Concerns regarding referral appear to relate to 'normal teenage behaviour'. Young person has exited sexual exploitation and no longer places self at risk.
2) Low risk, preventative work	Early intervention through outreach work e.g. contact with PRU. Some concerns initiated referral e.g. young person has older boyfriend, but does not appear to be exploitative. Significant protective factors in young person's life.
3) Medium risk	Concerns are not immediate, but some behaviour in young persons life puts them at risk, e.g. young person has exited exploitation and has new set of peers, though still goes missing. Some protective factors e.g. engaged in education, can assert rights. Young person remains vulnerable to exploitation but not at immediate risk.
4a) High Risk (previous history) b) High Risk, (no previous history)	Known or suspected exploitation in the past, e.g. young person has previously accessed service. Urgent and immediate concerns about risk. Young person's lifestyle places them at a high risk e.g. associating with peers involved in prostitution or sexually exploited, multiple risk taking e.g. missing frequently and concerns about drug taking. As above, but no previous history of concerns.
5a) Experiencing current exploitation: known 5b) Suspected	Young person has disclosed current exploitation (does not have to of recognised it as this). Evidence of exploitation e.g. police proceedings against perpetrator. Sexual exploitation not confirmed, but behaviours and information given strongly suggest exploitation.

Grading used to assess level of risk: Missing episodes

Item	Guidance
1) No missing episodes.	No concerns about young person going missing.
2) Stays out late, no missing.	Young person stays out beyond agreed time, but carers know where young person is.
3) Occasionally goes missing, prolonged episodes or Occasionally goes missing, short episodes.	Goes missing for over 24 hours, but less than 3 times a month. Missing for 24 hours or under, but less than 3 times a month.
4) Frequent and short missing episodes.	Missing for 24 hours or less, goes missing most weeks i.e. 3 times a month or more.
5) Frequent and prolonged missing episodes.	Goes missing for over 24 hours, goes missing most weeks i.e. 3 times a month or more.

Grading used to assess level of risk: Alcohol and Drug Abuse

Item	Guidance
1) No concerns.	No drug & alcohol use, or does not appear to impact on daily life, drug & alcohol use is responsible.
2) Some concern about use of drugs & alcohol.	Young person does not appear to be dependent on drug & alcohols, but drug & alcohol use leads to risky situations. Drug & alcohol use is currently increasing.
3) Problematic drugs & alcohol use, of concern.	Regular drug & alcohol use acknowledged, may escalate e.g. occasional binge drug & alcohol use.
4) Suspected drugs & alcohol use or dependency.	Drug & alcohol use suspected: behavioural indications. Behaviour suggests drug & alcohol dependency: offending
5) Drugs & alcohol use known-disclosure. Appears dependent on drug & alcohols & alcohol.	Clear evidence of problematic drug & alcohol use, disclosure of use.

Grading used to assess level of risk: Engagement in education, training and employment

Item
1) Engaged in full time education, training or employment
2) Registered in full time education, irregular attendance or Young person is attending PRU/receiving private tuition (full time equivalent) or Young person is attending college or a training scheme (part time or irregular attendance) or is employed on a part time basis
3) Young person excluded from school, no provision being made or undertaking some education / training (P/T). Poor attendance or Young person is attending PRU/receiving private tuition (not full time)
4) Not engaged in full time education, training or employment BUT shows an interest in accessing opportunities.
5) Not engaged in education, training or employment. Shows no interest in accessing educational or training opportunities.

Grading used to assess level of risk: Accommodation and housing need

Item	Guidance
1) Young person is satisfied with accommodation. Meets the young person's needs.	Young person is settled where they are living, they do not have any unmet needs. Placement is stable and secure.
2) Young person is generally satisfied with accommodation. Accommodation meets most of the needs of young person. Some concerns about longer term stability.	Accommodation appears to meet most of the needs of young people, and young person is relatively settled. Some talk about moving young person to another placement or home environment. Does not appear to be constant, some periods where young person is dissatisfied.
3) Unstable or unsuitable accommodation. Young person is not satisfied where they are living.	Accommodation does not meet needs of young person e.g. young person needs specialist therapeutic support. YP is at risk of being thrown out or transferred to another placement.
4) In temporary accommodation.	Young person is in a Bed and Breakfast or hostel, considered unsuitable/unstable.
5) Homeless	Can include, staying with friends (sofa surfing), in overnight hostel

Appendix III – Dataset description and data cleaning

In addition to the outcome data for each young person, the following variables were also included in the dataset.

Case details:

- Name of service
- Reason for referral
- Date of each review
- Date of case closure
- Reason for case closure

Demographic data:

- Age at first review
- Ethnicity
- Disability

Additional information:

- Parenthood status of young person
- Statement of educational need (Yes/No)
- Looked-after child (Yes/No)
- Current care status
- International trafficking (Known/Suspected/Unknown/None)
- Internal trafficking (Known/Suspected/Unknown/None)
- Peers involved in exploitation (Yes/No)
- Current and past experience of violence (Known/Suspected/Unknown/None)
- History of youth offending (Yes/No, Unknown)
- Involvement in gun or knife crime (Known/Suspected/Unknown/None, Type)

Data cleaning

In order to get to the final sample, the original data underwent several stages of cleaning.

The following were excluded:

- All observations without outcome data for the risk of sexual exploitation and the four outcomes that could be assigned a monetary value.
- All observations where the age at first review was greater than 18.
- All observations from cases where there had not been an intervention (ie there was only a single, initial case review).
- All intermediate observations from each case (leaving only data from the initial and final reviews).

This process resulted in a final sample consisting of 1078 observations - a panel of 539 cases each with an initial and final review that could be used to assess the impact of intervention.

Appendix IV – Discounting and inflation adjusting costs

Discounting

Future costs were discounted into present value using the Treasury Test Discount Rate currently at 3.5% where required. For each outcome annual cashflows were calculated and discounted accordingly. While cashflows are likely to be distributed more randomly compared to the assumptions made here, this approach helped to simplify calculations especially given data constraints. The time frames that were used where discounting took place depended on the outcomes concerned:

Missing episodes: 1.7 years of missing episodes
Education, employment and training: 2.5 years of education
Alcohol and drug abuse: Costs already discounted within Frontier study.
Accommodation: Annual benefits as a result of additional participation in the Supporting People programme were assumed to continue for 20 years.

Inflation adjusting costs

Prices and costs were adjusted to end-2010 prices using the retail price index at the end of each year (non-seasonally adjusted) calculated by the Office of National Statistics (and collected through Datastream). This index was then used to calculate an inflation adjustment factor that was applied to prices at the given year.

Year	UK RPI (Non seasonally adjusted)	Inflation adjustment factor
2000	170.25	1.31
2001	173.35	1.29
2002	176.18	1.27
2003	181.32	1.23
2004	186.69	1.20
2005	191.97	1.16
2006	198.11	1.13
2007	206.57	1.08
2008	214.82	1.04
2009	213.68	1.05
2010	223.56	1.00

Appendix V – Unit cost of intervention

Eight services from seven different regions of the UK provided information on estimated expenditure that was attributable to sexual exploitation interventions. [17]

Approach 1

SERVICE	ESTIMATED EXPENDITURE ON INTERVENTIONS[18]	NUMBER OF YOUNG PEOPLE SUPPORTED (April 2009 - March 2010)	UNIT COST
Service 1	£212,384	100	£2,124
Service 2	£235,967	79	£2,987
Service 3	£103,126	58	£1,778
Service 4	£108,560	68	£1,597
Service 5	£115,258	59	£1,954
Service 6	£284,324	151	£1,882
Service 7	£195,213	38	£5,137
Service 8	£158,201	81	£1,953

Approach 2

Three services from two regions of the UK were identified where interventions were funded separately from other work, or where it formed a small part of the service. One service provided information for two separate funding streams.

[17] Data from five services where work is delivered in partnership with other voluntary organisations, or as part of a multi-agency team, were excluded from the analysis. The remaining services did not respond to the request for information or did not feel able to apportion costs in this way.

[18] March 2010 prices converted to December 2010 values using rate of 1.034889

SERVICE	INCOME FOR INTERVENTIONS	NUMBER OF YOUNG PEOPLE SUPPORTED (April 2009 - March 2010)	UNIT COST
Service 1	£60,954[19, 20]	25	£2,438
	£19,216[19, 21]	8	£2,402
Service 2	£136,068[20]	50	£2,721
Service 3	£50,559[22]	10	£5,056

Approach 3

Four services were identified who offer interventions on a spot purchase basis. The terms of the spot purchase arrangements varied, but were all are based on a minimum length of intervention. To allow comparisons to be made across services, prices are given for an equivalent 6 month intervention.

SERVICE	COST PER HOUR	MINIMUM LENGTH OF INTERVENTION	SPOT PURCHASE PRICE	UNIT COST - 26 WEEK INTERVENTION	UNIT COST - INFLATION ADJUSTED[23]
Service 1	£55	2 hours per week, 6 weeks	£660	£2,860	£2,810
Service 2	£55	2 hours per week, 26 weeks	£2,860	£2,860	£2,810
Service 3[24]	£50	5 hours per week, 6 weeks	£1,500		
	£40	5 hours per week, 12 weeks	£2,400	£5,200	£5,108
Service 4	-	26 weeks	£4,000	£4,000	£3,929

[19] Based on an estimate of funds allocated to interventions due to a small amount of awareness-raising work also being delivered.
[20] April 2009 prices converted to December 2010 values using rate of 1.079905
[21] July 2009 prices converted to December 2010 values using rate of 1.070291
[22] September 2008 prices converted to December 2010 values using rate of 1.051565
[23] March 2011 prices converted to December 2010 values using rate of 0.982366
[24] The service use a tapered pricing structure where the cost per hour decreases as the length of intervention increases