

Redthread's Youth Violence Intervention Programme:

A Cost Benefit Analysis and case for scaling across hospital Emergency Department locations.

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1. Executive Summary

This report is part of an overall review of Redthread's Youth Violence Intervention Programme (YVIP) intended to support the development of a scaling and sustainability strategy for the intervention.

YVIP aims to reduce serious youth violence for young people aged 11 – 24 years old. YVIP runs in hospital Emergency Departments in partnership with the major trauma network and when young people present with violence related Adversity Related Injuries (ARIs) YVIP's embedded youth workers work alongside clinical staff, to engage with young people at this moment of vulnerability, the 'Teachable Moment'¹. The intervention's specialist youth worker support helps young people to question what behaviour and choices have led them to being in the Emergency Department (ED) and encourages young people to make healthy choices and positive plans to disrupt the cycle of violence that can lead to re-attendance, re-injury, and escalation of the level of violence. It supports a public health approach to addressing violence prevention, particularly knife-related assault-related Adversity Related Injuries (ARIs).

To date the funding for Redthread's YVIP services has been solely on a grant basis and in some cases through a combination of lead grant funder and the balance funding through other grant sources identified by Redthread. There are inherent risks in a service being purely grant funded and the aim of the work summarised in this report is to provide an initial, robust Cost Benefit Analysis (CBA) that can be used with current and potential funders/commissioners to support the sustainment of existing YVIP services and inform the case for commissioning in other locations.

The methodology applied to develop the initial CBA included a mix of: semi-structured interviews with a range of stakeholders to understand their priority outcomes; review of independent evaluations of both Redthread's YVIP and hospital-based violence intervention programmes more broadly; consideration of Redthread's own outcome data; and use of recognised unit cost avoidance/savings benchmarks.

The data and evaluations show typical service structure, cost and activity for a YVIP service to be:

YVIP Service Inputs	YVIP Service Activity
Programme Manager 0.5 FTE	Appropriate Referrals = 360 p.a.
Team Leader (caseload) 1.0 FTE	Proportion young people that engage = 55%
Youth Intervention Specialist (caseload) 2.0 FTE	Number of young people that engage = 198 p.a.
Programme Coordinator (non-practitioner) 1.0 FTE	Proportion of YP with 12 month follow-up = 7%
Cost = £250k p.a.	Number of YP - 12 month follow-up = 25 p.a.

Source: Redthread YVIP cost & activity data, St. Mary's Hospital evaluation² and MOPAC evaluation³

The cost of the YVIP service has been determined using Redthread's latest cost build-up data and has specifically been constructed for purely YVIP, as some current Redthread hospital-based services include staff who are involved in IDVA roles or work with women subject to violence.

¹ Cohen, D.J., Clark, E.C., Lawson, P.J., Casucci, B.A. and Flocke, S.A., (2011). 'Identifying teachable moments for health behavior counselling in primary care'. Patient education and counselling, 85(2), pp.e8-e15.

² NPC Associates (2018) Redthread Youth Violence Intervention Project: St Mary's Hospital. Final Eval Report.

³ Woodcock & Rachael (2016). Evaluation of the Redthread Youth Violence Intervention Programme in Major Trauma Centres – Interim Year 1 Report. MOPAC.

There are four young person outcomes for which independent evaluations of YVIP provide some quantification of impact. The outcomes and quantified impact are:

YVIP Young People Impact	Effect
Reduction in reattendance in hospital ED for assault-related ARI in following 12 months	40%
Reduction in proportion of YP involved in violence without injury recidivism in following 12 months	40%
Reduction in proportion of YP involved in crime recidivism in following 12 months	34%
Additional proportion of young people in stable Employment, Education or Training placement	8%

Source: St. Mary's Hospital YVIP evaluation and Malik et al (2020)⁴

These are largely based upon the impact for those young people where a 6/12 month follow-up was achieved. The cost benefit calculations are based upon these levels of impact being achieved by all the young people who initially engage with the YVIP service (N=1006) as follow-up rates have significantly increased since the St. Mary's Hospital evaluation. Appendix 2 does also contain calculations based upon only those young people who took part in a 6/12 month follow-up (N= 117).

The cost avoidance/saving for improving an outcome and reducing negative activity are based upon recognised, published cost sources. Violence and crime recidivism costs are based upon the Home Office report on the economic and social costs of crime (Heeks et al. 2018)⁵ and the lack of stability in Employment, Education or Training placements related costs are based upon the relevant unit costs from the Greater Manchester Combined Authority (GMCA) Unit Cost Database. The Health service costs related to reattendance at ED for ARIs are based upon the Malik et al (2020) study on the epidemiology and impact on NHS secondary care resources of violence-related knife injuries in Birmingham.

In combination, the levels of young person engagement, outcomes achieved and associated cost avoidance realised result in the following economic and social CBA for YVIP: **£4.90 benefit per £1 spend in YVIP**

The identified and quantified cost benefit is spread across a number of public organisations and agencies, reflecting how YVIP supports a public health approach to addressing violence prevention, with the aggregated economic and social cost benefit being composed of the following aspects:

IMPACT: Cost benefit breakdown by benefit area	Benefit
QALY - Quality-adjusted life year - a measure of the state of health of a person	41%
Lost output - time off work and lower productivity	10%
Health Services	10%
Victim support	0%
Police costs in response to violence / crime	10%
Other CJS costs in response to violence / crime	14%
NEET costs	15%

Source: Heeks et al (2018), Malik et al (2020) and New Economy Manchester Unit Cost Database

⁴ Malik et al. (2020) "Violence-related knife injuries in a UK city; epidemiology and impact on secondary care resources." EClinicalMedicine 20 (2020) 100296

⁵ Heeks et al. (2018). 'The economic and social costs of crime.' Home Office: London.

The data, stakeholder interviews and benchmark costs also showed that even though historically a significant proportion of young people the YVIP service worked with were the subject of knife related ARIs, the intervention has proven equally relevant to other forms of violence prevention. Indeed, the health and other economic and social costs benefits are higher for a number of other violence related ARIs.

In conclusion:

- The benefits of the YVIP service are realised across a range of organisations and agencies and over varying timeframes, reflecting YVIP's nature as part of a public health approach to violence prevention.
- The YVIP CBA delivers a positive net economic and social benefit based upon the outcomes that are currently captured and evidenced.
- The YVIP intervention is relevant and impactful in addressing violence prevention for a range of ARIs beyond those that are knife-related.

Recommendations:

- The CBA of YVIP will be further enhanced by capturing the following data and information:
 - YVIP Youth Worker contribution to improved depth of NHS activity coding and therefore contribution to increased revenue for the NHS Trust.
 - YVIP Youth Worker contribution to the re-engagement of young people in their care and treatment plans and therefore a reduction in likelihood of DNAs to Outpatient and Day Case follow up, and need for unscheduled care.
- The Education, Employment or Training related benefit calculations would be enhanced by capturing the following breakdown:
 - For young people of school age up to Year 11 capture and track their attendance / permanent or temporary exclusion situation as these are strong Risk of NEETs indicators.
 - For young people 17 & 18 years old who should be in Education, Employment or Training capture and track the status of their placement.
 - For young adults aged over 18 years old also capture and track the status of their Education, Employment or Training situation.
- The risk assessment and follow-up for 'appropriate contact with other agencies' is reported in more detail so that cost benefits can be considered against sustained engagements with each relevant agency. For example, Knapp et al (2016) found that of those young people aged 16 to 25 with a severe mental illness, nearly half (46%) were not receiving mental health services. Evidence that YVIP services support increased and sustained young person engagement in mental health services will result in economic and social benefit across a range of aspects such as NEETs, welfare benefits and criminal justice system for which there are benchmark costs. This information can then be used to quantify additional cost benefits that have not been possible to incorporate in this report.
- Continue to grow the proportion of young people with whom 6/12 month follow-ups are achieved.
- Undertake a further evaluation of a YVIP service considering similar research objectives to the St Mary's Hospital evaluation to provide more current evidence of reach and impact of the service, reflecting the evolution of the YVIP service since its commencement.

2. Background

Redthread developed a Youth Violence Intervention Programme (YVIP) that runs in hospital Emergency Departments in partnership with the major trauma network. It aims to reduce serious youth violence for young people aged 11 – 24 years old through helping to identify young people presenting to ED as a result of ARI and to assess, support and to provide psychosocial support alongside emergency care provided by clinical staff.

When young people present with violence related Adversity Related Injuries (ARIs) YVIP's embedded youth workers work alongside clinical staff, to engage with young people at this moment of vulnerability, the 'Teachable Moment' ⁶. The programme applies a theory of change centred on this "teachable moment" encompassing the crisis event as a starting point for the young person to consider alternatives in order to reduce their personal risk and avoid further crises and injury. Although situated in a health context, the programme aims to meet the wider needs of such young people and to integrate and coordinate services in a way that by definition, crosses existing institutional and organisation boundaries

The intervention's specialist youth worker support helps young people to question what behaviour and choices have led them to being in the Emergency Department and encourages young people to make healthy choices and positive plans to disrupt the cycle of violence that can lead to re-attendance, re-injury, and escalation of the level and frequency of violence.

YVIP builds upon the experiences of hospital-based violence intervention programmes in the United States⁷ and since the first programme's introduction at King's College Hospital thirteen years ago the YVIP service has now been provided in ten MTC/ED sites across London and the East and West Midlands. The existing Redthread YVIP operating model and Theory of Change are contained in Appendix 1.

To date the funding for Redthread's YVIP services has been solely on a grant basis and in some cases through a combination of lead grant funder and the balance funding through other grant sources identified by Redthread. There are inherent risks in a service being purely grant funded and the aim of the work summarised in this report is to provide an initial, robust Cost Benefit Analysis (CBA) that can be used with current and potential funders/commissioners to support the sustainment of existing YVIP services and inform the case for commissioning in other locations.

⁶ Cohen, D.J., Clark, E.C., Lawson, P.J., Casucci, B.A. and Flocke, S.A., 2011. Identifying teachable moments for health behavior counselling in primary care. *Patient education and counselling*, 85(2), pp.e8-e15.

⁷ <https://www.thehavi.org/>

3. Methodology

The findings presented in this report are the culmination of stakeholder interviews, desk research and financial modelling. Detailed below are the key activities completed to inform this YVIP Cost Benefit Analysis research, with a fuller description contained in Appendix 2.

Interviews were conducted with a range of ten stakeholders identified by Redthread. The stakeholders spanned commissioners and agencies that would be beneficiaries of YVIP's impact. The interviews explored areas such as:

- Impact and policy priorities and how YVIP could support these?
- The key outcomes YVIP does and could contribute to and which organisations/agencies realise the benefit?
- The (costed) benefits to the stakeholder of the impacts/outcomes being achieved/to be addressed?
- The range of needs/outcomes across different sub-cohort and are there underserved sub-cohorts?
- Impact of improving young person engagement with other services e.g. registering with a GP?

The interviews informed the selection of costed outcomes and the appropriate unit costs for the CBA, and identified areas for future outcomes data capture and sub-cohorts/needs to which the YVIP could be appropriately applied.

In determining a typical cost the fact that a range of Redthread YVIP services are in a mix of service scopes and funding arrangements, in several cases operating in conjunction with providing IDVA and Women Sexual Violence related services, had to be taken into consideration. The London Mayor's Office for Policing And Crime (MOPAC) tender in Autumn 2019 for 'Embedded Youth Work Hospital A&E Service' provided the opportunity to establish bottom-up costs per hospital Emergency Department location for a service purely focused on YVIP. These costs were then used for this CBA.

Redthread 2018/19 activity, assessment and outcome data for all YVIP teams was used in conjunction with data from London Major Trauma Centre YVIP teams for 2016/17 and 2017/18 and the St Mary's Hospital, London evaluation data from 2015-16 to 2017-18 to provide a typical model of referral and engagement activity and follow-up 6/12 months after commencement of engagement.

The following evaluations of Redthread's YVIP service were considered to inform referral to engagement rates and levels of impact:

- Redthread Youth Violence Intervention Project: St Mary's Hospital. Final Evaluation Report, March 2018. NPC Associates.
- Woodcock & Rachael (2016). Evaluation of the Redthread Youth Violence Intervention Programme in Major Trauma Centres – Interim Year 1 Report. MOPAC.
- Miller & Clarke (2019). The Redthread Youth Violence Intervention Programme (YVIP): An evaluation to assess the potential for spread and sustainability within the English emergency care system. Interim Evaluation Report. Nottingham University Hospitals.

These were triangulated with evaluations of hospital-based violence intervention programmes in the United States as these provided the largest body of comparable interventions, including:

- Strong et al (2016) The effects of health care–based violence intervention programs on injury recidivism and costs: A systematic review. *Journal of Trauma Acute Care Surgery* Volume 81, Number 5.
- Chong et al (2015) ‘Hospital-centered violence intervention programs: a cost-effectiveness analysis.’ *The American Journal of Surgery* (2015) 209, 597-603.

The unit costs used to determine the CBA were obtained from the following sources:

- Heeks et al (2018) ‘The economic and social costs of crime. Second Ed.’ Home Office: London.
- Malik et al. (2020) ‘Violence-related knife injuries in a UK city; epidemiology and impact on secondary care resources.’ *EClinicalMedicine* 20 (2020) 100296
- New Economy Manchester (now GMCA Research Unit) Unit Cost database v2.0

The nature of the impact and outcomes data collated for YVIP meant the main cost benefit elements and approach strongly align with the work of Heeks et al (2018) and their approach to the economic and social costs of crime against individuals and forms the majority of the YVIP unit cost benefit elements. This approach is also reflected in the Wieshmann et al (2020) report ‘Violence in London: what we know and how to respond’ for the Mayor of London’s Violence Reduction Unit, which uses the Heeks et al (2018) crime types and costs in estimating the total cost of violence in London.

Some of the Redthread data enabled specific impacts beyond those included in the Heeks et al (2018) costs to be identified. For health service activities the Malik et al (2020) study on the secondary care costs of violence-related knife injuries in hospitals/MTC in Birmingham provided directly relevant data for the YVIP cohort and so has been used for quantifying secondary care costs. For other areas, such as improvement in NEETS, the New Economy Manchester Unit Cost database v2 was used.

The CBA was constructed around the following four quantified impact areas, with a) based upon Malik et al (2020) study and b, c & d based upon St Mary’s Hospital evaluation data:

- a) Calculating the cost benefit related to reducing recidivism for assault related ARI Emergency Department attendances within the 12 months following the young person’s engagement with YVIP.
- b) Calculating the cost benefit related to reduced violence without injury recidivism at 6/12 month following the young person’s engagement with YVIP.
- c) Calculating the cost benefit related to reduced crime recidivism at 6/12 month following the young person’s engagement with YVIP.
- d) Calculating the cost benefit related to increased stable Education, Employment or Training involvement at 6/12 month following the young person’s engagement with YVIP.

In calculating the cost benefit related to reduced crime recidivism, initially the Heeks et al (2018) crime type of ‘Theft from Person’ was used as the proxy for the typical level of crime avoided by the young people who engaged with the YVIP service. However, Wieshmann et al (2020) used the ‘Robbery’ crime type in their study and upon reflection this was taken as the most relevant proxy cost. It is not known what the crime type breakdown is for the specific YVIP cohort so the lower and upper levels have been considered in the detail analysis and an anticipated ‘typical’ unit cost calculated using a weighted average of the crime costs using Heeks et al (2018) individual crime type unit costs and estimated total number of crimes by type.

The cost benefit/avoidance for the four evidenced outcomes detailed above were largely based upon 2015/16 costs and were therefore escalated using published HM Treasury deflators to a 2018/19 cost basis. Despite this escalation Office of National Statistics (ONS) data shows that the ‘violence against

the person Crime Severity Score' doubled since 2015/16⁸ and therefore suggests that the unit costs used in the CBA may be conservative estimates versus current costs.

Though the YVIP service contributes to reduced violence with injury incidents for the young people it engages, and in particular knife related injuries, the cost impact of avoiding a knife related homicide has not been included in the CBA as this cost and any associated assumptions would significantly skew the analysis. However, contributing to the avoidance of such homicides is very much part of the intent of the service.

⁸ Wieshmann et al (2020) 'Violence in London: what we know and how to respond' Mayor of London's Violence Reduction Unit

4. Cost of YVIP Service

The range of Redthread YVIP services are in a mix of service scopes and funding arrangements, in several cases operating in conjunction with providing IDVA and Women Sexual Violence related services. Building upon the YVIP operating model detailed in Appendix 1 the following staffing structure has been developed by Redthread for a typical YVIP service site team.

Role	Responsibilities
Youth Intervention Programme Manager 0.5 FTE	<ul style="list-style-type: none"> - Managing youth work teams and supporting complex cases - Overseeing partnership working in the local community - Safeguarding lead and MOPAC contract manager - Providing liaison to other Redthread YVIPs.
Youth Intervention Team Leader (caseload-holding) 1.0 FTE	<ul style="list-style-type: none"> - Delivery, safeguarding, and quality assurance oversight - Building/managing relationships for multi-agency working - Holding a small caseload, joint-working most complex cases - Team management and development.
Youth Intervention Specialist (caseload-holding) 2.0 FTE	<ul style="list-style-type: none"> - Providing bespoke support for a caseload of young people - Providing 'teachable moment' interventions within the hospital and working out into the community - Training and supporting hospital-staff.
Programme Coordinator (non-practitioner) 1.0 FTE	<ul style="list-style-type: none"> - Identifying, processing and allocating all referrals - Managing data, monitoring activity, collating impact reporting - Ensuring optimum integration with hospital systems & staff - Supporting overall function to maximise delivery and impact.

Source: Redthread YVIP operating model

The London Mayor's Office for Policing And Crime (MOPAC) tender for 'Embedded Youth Work Hospital A&E Service' in Autumn 2019 provided the opportunity to establish bottom-up costs per hospital Emergency Department location for a service purely focused on YVIP based upon the above staffing structure. These costs have been used for calculating the CBA and equate to **£250k p.a.**

5. Activity, Outcomes and Impact

The analysis is a combination of Redthread's own data, evaluations of the YVIP service and evaluations of other UK and international hospital-based violence reduction interventions to build a rounded picture. Activity, assessment and outcome data was provided by Redthread for all YVIP teams 2018/19. Further data was provided for London Major Trauma Centre YVIP teams for 2016/17 and 2017/18. The evaluations of Redthread's YVIP service that have been considered include:

- Redthread Youth Violence Intervention Project: St Mary's Hospital. Final Evaluation Report, March 2018. NPC Associates.
- Woodcock & Rachael (2016). Evaluation of the Redthread Youth Violence Intervention Programme in Major Trauma Centres – Interim Year 1 Report. MOPAC.
- Miller & Clarke (2019). The Redthread Youth Violence Intervention Programme (YVIP): An evaluation to assess the potential for spread and sustainability within the English emergency care system. Interim Evaluation Report. Nottingham University Hospitals.

A series of studies of United States hospital-based violence reduction interventions have been published. The most relevant reports considered were Strong et al (2016) and Chong et al (2015). 'The effects of health care-based violence intervention programs on injury recidivism and costs: A systematic review.' Journal of Trauma Acute Care Surgery Volume 81, Number 5. Strong et al (2016) considered the impact and cost benefit of a range of hospital-based violence intervention programmes and 'Hospital-centered violence intervention programs: a cost-effectiveness analysis.' The American Journal of Surgery (2015) 209, 597-603. Chong et al (2015) the impact and cost-effectiveness of Youth ALIVE! HVIP.

The datasets and identified research were used to determine the following key metrics:

- The **number of appropriate YVIP referrals for a hospital Emergency Department** that would be dealt with by a YVIP team typically equates to **360 per annum**.
- The **proportion of appropriate referrals that engage** in some form with the YVIP service averages **55%**, which gives the **number of young people engaging with YVIP as 198 p.a.**
- The proportion of young people for whom a **6/12 month follow-up** is captured historically averages around **7%** which gives the **number of young people with record follow-up as 25 p.a.**

There are four young person outcomes for which independent evaluations of YVIP provide some quantification of impact. The outcomes and quantified impact are:

YVIP Young People Impact	Effect
Reduction in reattendance in hospital ED for assault-related ARI in following 12 months	40%
Reduction in proportion of YP involved in violence without injury recidivism in following 12 months	40%
Reduction in proportion of YP involved in crime recidivism in following 12 months	34%
Additional proportion of young people in stable Employment, Education or Training placement	8%

Source: St. Mary's Hospital YVIP evaluation and Malik et al (2020)

These are largely based upon the impact for those young people where a 6/12 month follow-up was achieved. The cost benefit calculations are based upon these levels of impact being achieved by all the young people who initially engage with the YVIP service (N=1006) as follow-up rates have significantly increased since the St. Mary's Hospital evaluation. Appendix 2 does also contain calculations based upon only those young people who took part in a 6/12 month follow-up (N= 117).

Reduction in reattendance in hospital ED for assault-related ARI

Based upon the YVIP evidenced level of ARI-related ED attendance recidivism reduction of 40%, its comparability with studies from the United States, and the more recent and detailed levels of recidivism established by Malik et al (2020), the cost benefit was constructed using a 40% reduction in the 18.5% recidivism, which rounds to **7-percentage point improvement**. It is not known if the young people engaged with the YVIP present at other hospitals for any subsequent events. However, some of the studies from the United States have attempted to understand the effect in the health system more broadly and the 2-percentage point improvement taken from the systematic review does reflect this to a degree.

When combined with a typical appropriate referral rate of 360 p.a. and YVIP engagement rate of 55%, this indicates:

- **14 re-attendances for ARIs at the Emergency Department from the YVIP cohort will be avoided per annum per YVIP service.**

Reduction in proportion of YP involved in violence without injury recidivism

The level of reduction in violence recidivism was taken from the NPC Associates (2018) evaluation of the St Mary's Hospital YVIP service, which showed a **40% reduction in the young people's involvement with violence up to 12 months following engagement with YVIP**. Violence with injury incidents will tend to manifest as re-attendances at the hospital Emergency Department and so it has been assumed that these reductions are related to incidents of violence without injury. This indicates:

- **79 violence without injury incidents will be avoided per annum per YVIP service.**

Reduction in proportion of YP involved in crime recidivism

The level of reduction in crime recidivism was taken from the NPC Associates (2018) evaluation of the St Mary's Hospital YVIP service, which showed a **34% reduction in the young people's involvement with crime up to 12 months following engagement with YVIP**. This indicates:

- **67 crime incidents will be avoided per annum per YVIP service.**

Increase in stable Employment, Education or Training placements

The increase in stable Education, Employment or Training placements was taken from the evaluation of the St Mary's Hospital YVIP service, which showed an 8% improvement in the young people's stable involvement in an EET placement up to 12 months following engagement with YVIP. This indicates:

- **16 young people per annum will avoid being NEET per annum per YVIP service.**

6. Benchmark Costs

The cost avoidance/saving for improving an outcome and reducing negative activity are based upon recognised, published cost sources. The unit costs used to determine the CBA were obtained from the following sources:

- Heeks et al. (2018). 'The economic and social costs of crime.' Home Office: London.
- Malik et al. (2020) "Violence-related knife injuries in a UK city; epidemiology and impact on secondary care resources.' *EClinicalMedicine* 20 (2020) 100296
- New Economy Manchester (now GMCA Research Unit) Unit Cost database v2.0

The nature of the impact and outcomes data collated for YVIP meant the main cost benefit elements in relation to violence with and without injury and crime strongly align with the work of Heeks et al (2018) and this approach to the economic and social costs of crime against individuals forms the majority of the YVIP unit cost benefit elements. The lack of stability in Employment, Education or Training placements related costs are based upon the relevant unit costs from the Greater Manchester Combined Authority (GMCA) Unit Cost Database. The Health service costs related to reattendance at ED for ARIs are based upon the Malik et al (2020) study on the epidemiology and impact on NHS secondary care resources 'of violence-related knife injuries in Birmingham as it is directly relevant data for the YVIP cohort. These were used to produce the following unit benchmark cost for each YVIP outcome:

YVIP Young People Impact	Unit Cost per YP
Reduction in reattendance in hospital ED for assault-related ARI in following 12 months	£17,175
Reduction in proportion of YP involved in violence without injury recidivism in following 12 months	£5,820
Reduction in proportion of YP involved in crime recidivism in following 12 months	£4,283
Additional proportion of young people in stable Employment, Education or Training placement	£10,631

Source: Heeks et al (2018), Malik et al (2020) and New Economy Manchester Unit Cost Database

The detailed methodology for the selection and construction of the benchmark costs is contained in Appendix 2.

7. Cost Benefit Analysis

The combination of the outputs, outcomes and unit benchmark costs per young person provide the following benefits for each of the upper and lower cases:

Outcomes	Impact	Benefit
Hospital ED reduced re-attendance in following 12 months		
40% improvement in 18.5% recidivism = 7 percentage point lower hospital ED re-attendance	A 7% reduction with all 198 YP engaged by YVIP p.a. = 14 YP p.a. who do not re-attend ED	14 YP p.a. x £17,175 cost benefit per re-attendance = £238k p.a. cost benefit
Reduction in violence at 6/12 month follow-up		
40% increase of YP engaged by YVIP no longer involved in violence	40% of all 198 YP engaged by YVIP p.a. = 79 YP pa no longer involved in violence	79 YP p.a. x £5,820 per YP no longer involved in violence = £461k p.a.
Reduction in crime at 6/12 month follow-up		
34% increase of YP engaged by YVIP no longer involved in crime	34% of all 198 YP engaged by YVIP p.a. = 67 YP pa no longer involved in crime	67 YP p.a. x £4,283 per YP no longer involved in crime = £288k p.a.
Increase in stable Employment, Education & Training engagement at 6/12 month		
8 percentage point increase in YP engaged by YVIP with stable EET	Additional 8% of all 198YP engaged by YVIP p.a. = 16 YP p.a. now in stable EET	16 YP p.a. x £19,161 per YP in stable EET = £168k p.a. cost benefit

The above benefits and the YVIP service costs detailed in section 4 above produce a **cost benefits £4.90 for each £1 expenditure** on the YVIP service, escalated to 2019 costs.:

The identified and quantified cost benefit is spread across a number of public organisations and agencies, and reflecting how YVIP supports a public health approach to addressing violence prevention, with the aggregated economic and social cost benefit being composed of the following aspects:

IMPACT: Cost benefit breakdown by benefit area	Benefit
QALY - Quality-adjusted life year - a measure of the state of health of a person	41%
Lost output - time off work and lower productivity	10%
Health Services	10%
Victim support	0%
Police costs in response to violence / crime	10%
Other CJS costs in response to violence / crime	14%
NEET costs	15%

Source: Heeks et al (2018), Malik et al (2020) and New Economy Manchester Unit Cost Database

The detailed methodology for construction of the CBA is contained in Appendix 2.

The above construction of the CBA reflects a main, though not exclusive, focus of YVIP on knife / sharp instrument related ARIs in hospital A&E. However, a number of the interviewed stakeholders raised that outside of London there is nearly half the level of knife related ARIs but higher levels of body wound ARI from violence. A number of the unit costs related body wound ARI are actually higher than knife crime ⁹and so if YVIP achieved the same level of recidivism reduction with body wound violence related ARIs then the CBA would actually be higher for outside of London.

⁹ Heeks et al (2018)

8. Conclusions and Recommendations

In conclusion:

- The benefits of the YVIP service are realised across a range of organisations and agencies and over varying timeframes, reflecting YVIP's nature as part of a public health approach to violence prevention.
- The YVIP CBA delivers a positive net economic and social benefit based upon the outcomes that are currently captured and evidenced.
- The YVIP intervention is relevant and impactful in addressing violence prevention for a range of ARIs beyond those that are knife-related.

The following recommendations are made in light of the analysis and conclusions:

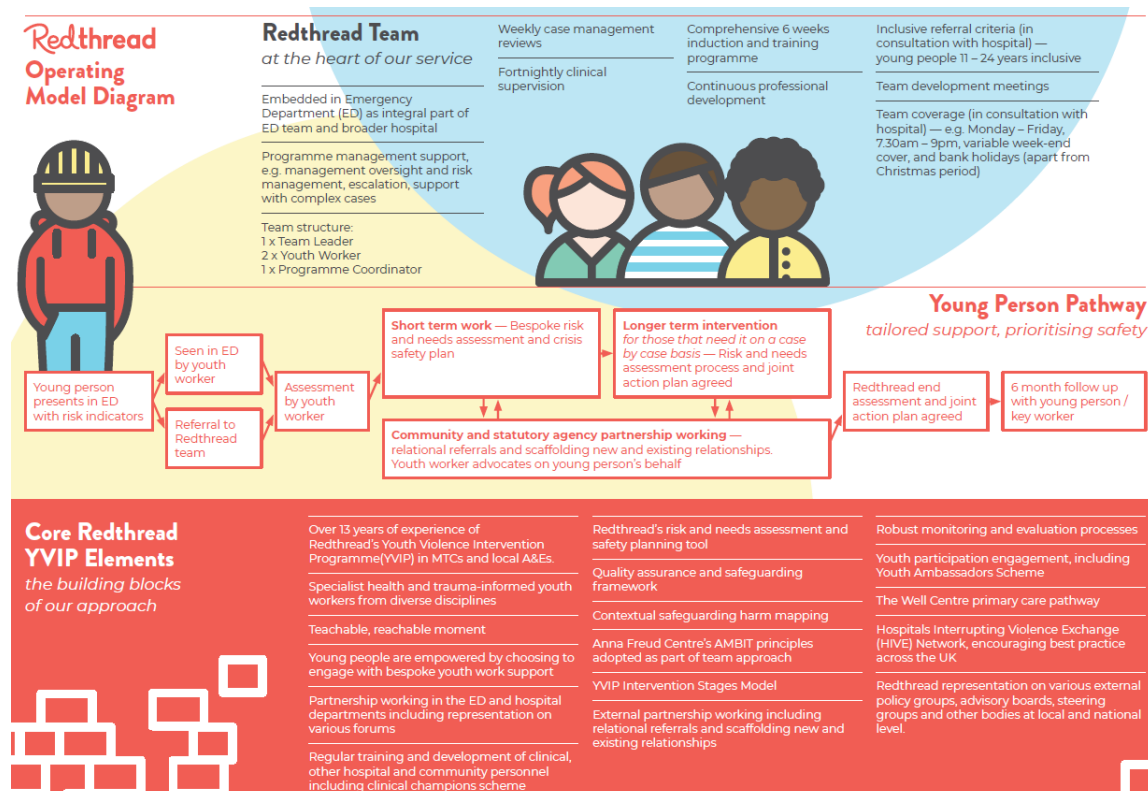
- The CBA of YVIP will be further enhanced by capturing the following data and information:
 - YVIP Youth Worker contribution to improved depth of NHS activity coding and therefore contribution to increased revenue for the NHS Trust.
 - YVIP Youth Worker contribution to the re-engagement of young people in their care and treatment plans and therefore a reduction in likelihood of DNAs to Outpatient and Day Case follow up, and need for unscheduled care.
- The Education, Employment or Training related benefit calculations would be enhanced by capturing the following breakdown:
 - For young people of school age up to Year 11 capture and track their attendance / permanent or temporary exclusion situation as these are strong Risk of NEETs indicators.
 - For young people 17 & 18 years old who should be in Education, Employment or Training capture and track the status of their placement.
 - For young adults aged over 18 years old also capture and track the status of their Education, Employment or Training situation.
- The risk assessment and follow-up for 'appropriate contact with other agencies' is reported in more detail so that cost benefits can be considered against sustained engagements with each relevant agency. For example, Knapp et al (2016) found that of those young people aged 16 to 25 with a severe mental illness, nearly half (46%) were not receiving mental health services. Evidence that YVIP services support increased and sustained young person engagement in mental health services will result in economic and social benefit across a range of aspects such as NEETs, welfare benefits and criminal justice system for which there are benchmark costs. This information can then be used to quantify additional cost benefits that have not been possible to incorporate in this report.
- Continue to grow the proportion of young people with whom 6/12 month follow-ups are achieved.
- Undertake a further evaluation of a YVIP service considering similar research objectives to the Queen Mary Hospital evaluation to provide more current evidence of reach and impact of the service, reflecting the evolution of the YVIP service since its commencement.

9. References

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Appendix 1 – YVIP Theory of Change and Operating Model

The figure below explains the Redthread Youth Violence Intervention Programme operating model.



The figure below outlines the theory of change proposed by Redthread to explain the effectiveness of the Youth Violence Intervention Programme within NHS Emergency Care settings.



Appendix 2 – CBA Detailed Methodology

The findings presented in this report are the culmination of stakeholder interviews, desk research and financial modelling. Below are detailed the key activities completed to inform this YVIP Cost Benefit Analysis research.

1. Interviews

Interviews were conducted with a range of stakeholders identified by Redthread. The stakeholders spanned commissioners and agencies that would be beneficiaries of YVIP's impact. The interviewees detailed below are sincerely thanked for their time, insights and advice:

- Mark Ainsworth-Smith MBE - Consultant Pre-Hospital Care Practitioner, South Central Ambulance Service NHS Foundation Trust
- Dr Hannah Baynes - Consultant Paediatrician, King's College Hospital NHS FT
- Miriam Bullock – Redthread Trustee & UCL Collaborative Centre for Inclusion Health
- Dr Simon Chapman - Consultant in Paediatrics and Adolescent Medicine, King's College Hospital NHS FT
- Jane Roberts – Joint Clinical Lead Mental Health, Liverpool CCG
- Jackie Rooney – NHS England Cheshire & Merseyside
- Emma Seria-Walker - Public Health Consultant in Health & Wellbeing, PHE South East
- Dan Stoten – Integrated Assistant Director, Children's Commissioning NHS Lambeth CCG & LB Lambeth
- Caroline Tredwell - Senior Policy & Commissioning Manager - Safer Children & Young People, MOPAC
- Dave Wakelin – Director of the Violence Reduction Unit for Nottingham City & County

The interviews explored areas such as:

- Impact and policy priorities and how YVIP could support these?
- The key outcomes YVIP does and could contribute to and which organisations/agencies realise the benefit?
- The (costed) benefits to the stakeholder of the impacts/outcomes being achieved/to be addressed?
- The range of needs/outcomes across different sub-cohort and are there underserved sub-cohorts?
- Impact of improving young person engagement with other services e.g. registering with a GP?

The interviews informed the selection of costed outcomes and the appropriate unit costs for the CBA, and identified areas for future outcomes data capture and sub-cohorts/needs to which the YVIP could be appropriately applied.

2. Calculating the cost of YVIP service

The range of Redthread YVIP services are in a mix of service scopes and funding arrangements, in several cases operating in conjunction with providing IDVA and Women Sexual Violence related services. The London Mayor's Office for Policing And Crime (MOPAC) tender for 'Embedded Youth Work Hospital A&E Service' in Autumn 2019 provided the opportunity to establish bottom-up costs per hospital Emergency Department location for a service purely focused on YVIP. These costs have been used for this CBA and equate to **£250k p.a. for the YVIP service structure** detailed in table A1 below **which will give a capacity to receive 360 appropriate referrals per annum.**

Table A1: Typical YVIP service team structure.

Role	Responsibilities
Youth Intervention Programme Manager 0.5 FTE	<ul style="list-style-type: none">- Managing youth work teams and supporting complex cases- Overseeing partnership working in the local community- Safeguarding lead and MOPAC contract manager- Providing liaison to other Redthread YVIPs.
Youth Intervention Team Leader (caseload-holding) 1.0 FTE	<ul style="list-style-type: none">- Delivery, safeguarding, and quality assurance oversight- Building/managing relationships for multi-agency working- Holding a small caseload, joint-working most complex cases- Team management and development.
Youth Intervention Specialist (caseload-holding) 2.0 FTE	<ul style="list-style-type: none">- Providing bespoke support for a caseload of young people- Providing 'teachable moment' interventions within the hospital and working out into the community- Training and supporting hospital-staff.
Programme Coordinator (non-practitioner) 1.0 FTE	<ul style="list-style-type: none">- Identifying, processing and allocating all referrals- Managing data, monitoring activity, collating impact reporting- Ensuring optimum integration with hospital systems & staff- Supporting overall function to maximise delivery and impact.

3. Data, research and analysis review

Activity, assessment and outcome data was provided by Redthread for all YVIP teams 2018/19. Further data was provided for London Major Trauma Centre YVIP teams for 2016/17 and 2017/18 and through the SMH evaluation.

The evaluations of Redthread's YVIP service that have been considered include:

- Redthread Youth Violence Intervention Project: St Mary's Hospital. Final Evaluation Report, March 2018. NPC Associates.

- Woodcock & Rachael (2016). Evaluation of the Redthread Youth Violence Intervention Programme in Major Trauma Centres – Interim Year 1 Report. MOPAC.
- Miller & Clarke (2019). The Redthread Youth Violence Intervention Programme (YVIP): An evaluation to assess the potential for spread and sustainability within the English emergency care system. Interim Evaluation Report. Nottingham University Hospitals.

A series of studies of United States hospital-based violence reduction interventions have been published. The most relevant reports considered were Strong et al (2016) and Chong et al (2015). 'The effects of health care-based violence intervention programs on injury recidivism and costs: A systematic review.' Journal of Trauma Acute Care Surgery Volume 81, Number 5. Strong et al (2016) considered the impact and cost benefit of a range of hospital-based violence intervention programmes and 'Hospital-centered violence intervention programs: a cost-effectiveness analysis.' The American Journal of Surgery (2015) 209, 597-603. Chong et al (2015) the impact and cost-effectiveness of Youth ALIVE! HVIP.

The datasets and identified research were used to determine the following key metrics:

- The **number of appropriate YVIP referrals for a hospital Emergency Department** that would be dealt with by the size team costs in section 1 above when current site IDVA and YWS related referrals are excluded, and when triangulated with the MOPAC 'Embedded Youth Work Hospital A&E Service' tender, equated to a typical number of **360 per annum**.
- The **proportion of appropriate referrals that engage** in some form with the YVIP service varies across the locations and associated datasets. The Redthread All Sites Impact Report 2018-19 & MTC data 2015-18 showed a referral engagement rate of 54%, the SMH evaluation showed 64% and these were triangulated with MOPAC intermediate evaluation which showed 50%. A weighted average across these gave **55%**, which was used in the CBA and gives the **number of young people engaging with YVIP as 198 p.a.**
- The 6/12 month follow-up data received as proportion of appropriate referrals based upon Redthread All Sites Impact Report 2018-19 data showed 6.1% and the SMH evaluation 7.4%. The outcome changes identified for these cohorts through the follow-ups have been used to calculate two CBA scenarios based upon: impact only with the young people for whom there is a follow up; and impact representative of all the young people that have engaged with the YVIP service.

4. Information on relevant impact costs

The unit costs used to determine the CBA were obtained from the following sources:

- Heeks et al. (2018). 'The economic and social costs of crime.' Home Office: London.
- Malik et al. (2020) "Violence-related knife injuries in a UK city; epidemiology and impact on secondary care resources.' EclinicalMedicine 20 (2020) 100296
- New Economy Manchester (now GMCA Research Unit) Unit Cost database v2.0

The nature of the impact and outcomes data collated for YVIP meant the main cost benefit elements and approach strongly align with the work of Heeks et al (2018) and this approach to the economic and social costs of crime against individuals forms the majority of the YVIP unit cost benefit elements.

Heeks et al (2018) considered three main cost areas:

- Costs in anticipation of crime, including defensive expenditure and insurance related.
- Costs as a consequence of crime, including value of property stolen/damaged, physical and emotional harm, lost output, health services and victim services, where 'lost output' aims to estimate the cost of lost productivity through both: time taken off work as a result of the crime; and, reduced productivity at work as a result of physical and emotional injuries
- Costs in response to crime, including police costs and other CJS costs.

This CBA work for YVIP used the relevant costs as a 'consequence of crime' and the 'response to crime' related to the individual, but did not include those related to 'in anticipation of crime' as for the size and age of the cohorts under consideration these would be less relevant.

Some of the Redthread data enabled specific impacts beyond those included in the Heeks et al (2018) costs to be attempted. For health service activities such as admittance to ward and therefore inpatient episode or to ITU, a combination of the NHS Nation Schedule of Reference Cost 2017-18 and New Economy Manchester Unit Cost database v2 were originally considered. However, the Malik et al (2020) study on the secondary care costs of violence-related knife injuries in hospitals/MTC in Birmingham provided directly relevant data for the YVIP cohort and so has been used for quantifying secondary care costs. Malik et al (2020) report provided data on the level of reattendance at ED and the specific health costs of knife related ARIs. For other areas, such as improvement in NEETS, the New Economy Manchester Unit Cost database v2 was used.

5. Cost Benefit Analysis construction

The CBA was constructed on the following basis combining the elements of stages 1-4 detailed above for the following four quantifiable impact areas:

- e) Calculating the cost benefit related to reducing recidivism for assault related ARI Emergency Department attendances within the 12 months following the young person's engagement with YVIP.

The **level of reduction in recidivism** was taken from triangulation of Redthread YVIP services data (SMH YVIP evaluation and Redthread Annual Report 2016-17 data which demonstrated approximately 40% improvement in a 12-month period), and comparable services to Redthread's YVIP from Strong et al's (2016) systematic review (i.e. Aboutanos et al (2011), Gomez et al (2012) and Zun et al (2006)) and Chong et al (2015). These United States studies showed an average of a 2.0 percentage point improvement in the context of improving injury recidivism from around 5% to 3%, and therefore also around a 40% reduction.

The initial SMH YVIP evaluation reported a reduction in repeat attendance at ED from 5% to 3% for incidents related to further violence and a reduction from 17.5% to 11.5% in further attendance at ED for other reasons. However, the more recent data and research by Malik et al (2018) shows an 18.5% level of ARI recidivism for the YVIP-type cohort and have arrived at this level through greater interrogation of the data recording integrity and in a context of a near doubling over three years in the level of violence-related knife injuries presenting to ED/MTC for 16-25 year olds. Even at this higher recidivism figure Malik et al (2020) observing that "...the true degree of recidivism may be higher than that demonstrated in our single-centre study."

Based upon the YVIP evidenced level of ARI-related ED attendance recidivism reduction of 40%, its comparability with studies from the United States, and the more recent and detailed levels of recidivism established by Malik et al (2020), the cost benefit was constructed using a 40% reduction in

the 18.5% recidivism, which rounds to **7-percentage point improvement**. It is not known if the young people engaged with the YVIP present at other hospitals for any subsequent events. However, some of the studies from the United States have attempted to understand the effect in the health system more broadly and the 2-percentage point improvement taken from the systematic review does reflect this to a degree.

When combined with a typical appropriate referral rate of 360 p.a. and YVIP engagement rate of 55%, this indicates for the following two scenarios:

- i. Assuming the impact with the proportion of all those young people who engaged with YVIP **14 re-attendances for ARIs at the Emergency Department from the YVIP cohort will be avoided per annum per YVIP service.**
- ii. Assuming the impact with only the proportion of young people with YVIP follow-up **1.75 re-attendances for ARIs at the Emergency Department from the YVIP cohort will be avoided per annum per YVIP service.**

Heeks et al (2018) produced an economic and social cost for 'violence with injury crime' which gave a total unit cost of £14,050 at 2015/16 costs. Wieshmann et al (2020) used this cost as part of their calculation of the cost in London of violence against the person. The constituent elements were treated as follows in the development of the YVIP CBA:

Table A2: YVIP CBA economic and social cost of 'violence with injury' versus Heeks et al (2018).

Heeks et al Element	Heeks et al cost	Comments	YVIP CBA cost
defensive exp.	£330	Not included as less linkage to YVIP cohort	£0
insurance related	£10	Not included as less linkage to YVIP cohort	£0
Value of property stolen/damaged	£0	Used Heeks et al cost	£0
Physical & emotional harm	£8,240	Used Heeks et al cost	£8,240
Lost output	£2,060	Used Heeks et al cost	£2,060
Health Services	£920	Malik et al median cost of index admission for violence-related knife injuries.	£4,375
Victim Support	£0	Used Heeks et al cost	£0
Police	£1,130	Used Heeks et al cost	£1,130
Other CJS	£1,370	Used Heeks et al cost	£1,370
Total	£14,050	-	£17,175

Though the Malek et al (2020) health services cost for violence-related knife injuries at £4,375 is significantly higher than the Heels et al (2018) figure for violence with injury health services related costs, the latter figure is based up an average across all types of injuries related to violence where, in isolation, violence-related knife injuries incur a higher health services cost . The Malik et al (2020)

figure is based upon the study site's secondary care costs and so is more representative of the health service costs for the YVIP cohort.

It might be anticipated that other physical and emotional harm costs are higher for the YVIP cohort versus the Heeks et al average, as per the health services costs, and this would align with Herbert et al (2017) findings regarding adolescence hospitalisation for ARIs. Their findings show that adolescences who experienced an emergency hospital admission with an ARI have a risk of death in the decade after discharge twice as high compared to adolescents hospitalised for accident related injury. However, there is insufficient granularity of the YVIP data at present to consider such refinement of the physical and emotional harm unit costs.

Air Ambulance was used for some of the YVIP cases and a reduction in recidivism would theoretically lead to a reduced call on such a service. However, this was for only 1-2% of the cases and so would only provide a very margin cost impact and so has been excluded from the analysis.

Further Criminal Justice System costs:

The Heeks et al (2018) economic and social cost for 'violence with injury crime' includes a cost for 'other CJS costs'. The elements include: Magistrates court; Crown Court; Legal Aid; Probation Service; Prison Service; National Offender Management Service (NOMS) headquarters and Youth Justice Board. After investigation and comparison with ONS and MoJ offence and sentencing data the Heeks et al (2018) 'other CJS costs' were determined to be suitable, even when taking into account the higher proportion of custody sentencing for knife related violence. The Ministry of Justice 'Knife and Offensive Weapon Sentencing Statistics, England and Wales – Year ending September 2019' published 19th January 2020 shows the percentage of sentences for knife and offensive weapon offences resulted in an immediate custodial sentence as 38% of cases for 18+ year olds.

The overall **cost saving/avoidance for reduced recidivism for assault related ARI Emergency Department attendances** within the 12 months following a young person's engagement with YVIP is summarised in the following tables:

Table A3i: Overall YVIP economic and social cost avoided for improved recidivism for assault related ARI Emergency Department attendances - 14 avoided re-attendances.

IMPACT				
a) Additional YP not attending A&E for assault related ARI in 12 months after start of engagement	7.0%	13.86	£17,175	£238,046
<i>Related cost avoidance:</i>				
QALY - violence with injury [Heeks et al (2018)]			£8,240	£114,206
Lost output - violence with injury [Heeks et al (2018)]			£2,060	£28,552
Health Services - violence with injury - Knife related [Malik et al (2018)]			£4,375	£60,638
Victim Support - violence with injury [Heeks et al (2018)]			£0	£0
Police costs in response to crime [Heeks et al (2018)]			£1,130	£15,662
Other CJS costs in response to crime [Heeks et al (2018)]			£1,370	£18,988

Table A3ii: Overall YVIP economic and social cost avoided for improved recidivism for assault related ARI Emergency Department attendances – 1.75 avoided re-attendances.

IMPACT				
a) Additional YP not attending A&E for assault related ARI in 12 months after start of engagement	7.0%	1.76	£17,175	£30,297
<i>Related cost avoidance:</i>				
QALY - violence with injury [Heeks et al (2018)]			£8,240	£14,535
Lost output - violence with injury [Heeks et al (2018)]			£2,060	£3,634
Health Services - violence with injury - Knife related [Malik et al (2018)]			£4,375	£7,718
Victim Support - violence with injury [Heeks et al (2018)]			£0	£0
Police costs in response to crime [Heeks et al (2018)]			£1,130	£1,993
Other CJS costs in response to crime [Heeks et al (2018)]			£1,370	£2,417

- f) Calculating the cost benefit related to reduced violence without injury recidivism at 6/12 month following the young person's engagement with YVIP.

The level of reduction in violence recidivism was taken from the NPC Associates (2018) evaluation of the St Mary's Hospital YVIP service, which showed a **40% reduction in the young people's involvement with violence up to 12 months following engagement with YVIP**. Violence with injury incidents will tend to manifest as re-attendances at the hospital Emergency Department and so it has been assumed that these reductions are related to incidents of violence without injury.

For the two scenarios indicates:

- i. Assuming the impact with the proportion of all those young people who engaged with YVIP **79 violence without injury incidents will be avoided per annum per YVIP service**.
- ii. Assuming the impact with only the proportion of young people with YVIP follow-up **10 violence without injury incidents will be avoided per annum per YVIP service**.

Heeks et al (2018) produced an economic and social cost for 'violence without injury' crime type which gave a total unit cost of £5,930 at 2015/16 costs. Wieshmann et al (2020) used this cost as part of their calculation of the cost in London of violence against the person. The constituent elements were treated as follows in the development of the YVIP CBA:

Table A4: YVIP CBA economic and social cost of 'violence without injury' versus Heeks et al (2018).

Heeks et al Element	Heeks et al cost	Comments	YVIP CBA cost
defensive exp.	£110	Not included as less linkage to YVIP cohort	£0
insurance related	£10	Not included as less linkage to YVIP cohort	£0
Value of property stolen/damaged	£0	Used Heeks et al cost	£0
Physical & emotional harm	£2,810	Used Heeks et al cost	£2,810
Lost output	£670	Used Heeks et al cost	£670
Health Services	£270	Used Heeks et al cost	£270
Victim Support	£10	Used Heeks et al cost	£10
Police	£810	Used Heeks et al cost	£810
Other CJS	£1,250	Used Heeks et al cost	£1,250
Total	£5,940	-	£5,820

The overall **cost saving/avoidance for reduced recidivism for involvement in violence without injury** within the 12 months following a young person's engagement with YVIP is summarised in the following tables:

Table A5i: Overall YVIP economic and social cost avoided for improved recidivism for involvement in violence without injury - 79 violence without injury incidents.

IMPACT				
b) YP showing reduction in violence at 6/12 month follow-up	40%	79.2	£5,820	£460,944
<i>Related cost avoidance:</i>				
QALY - violence without injury [Heeks et al (2018)]			£2,810	£222,552
Lost output - violence without injury [Heeks et al (2018)]			£670	£53,064
Health Services - violence without injury [Heeks et al (2018)]			£270	£21,384
Victim Support - violence without injury [Heeks et al (2018)]			£10	£792
Police costs in response to the violence [Heeks et al (2018)]			£810	£64,152
Other CJS costs in response to the violence [Heeks et al (2018)]			£1,250	£99,000

Table A5ii: Overall YVIP economic and social cost avoided for improved recidivism for involvement in violence without injury - 10 violence without injury incidents.

IMPACT				
b) YP showing reduction in violence at 6/12 month follow-up	40%	10.1	£5,820	£58,666
<i>Related cost avoidance:</i>				
QALY - violence without injury [Heeks et al (2018)]			£2,810	£28,325
Lost output - violence without injury [Heeks et al (2018)]			£670	£6,754
Health Services - violence without injury [Heeks et al (2018)]			£270	£2,722
Victim Support - violence without injury [Heeks et al (2018)]			£10	£101
Police costs in response to the violence [Heeks et al (2018)]			£810	£8,165
Other CJS costs in response to the violence [Heeks et al (2018)]			£1,250	£12,600

- g) Calculating the cost benefit related to reduced crime recidivism at 6/12 month following the young person's engagement with YVIP.

The level of reduction in recidivism was taken from the NPC Associates (2018) evaluation of the St Mary's Hospital YVIP service, which showed a **34% reduction in the young people's involvement with crime up to 12 months following engagement with YVIP.**

For the two scenarios this indicates:

- Assuming the impact with the proportion of all those young people who engaged with YVIP **67 crime incidents will be avoided per annum per YVIP service.**
- Assuming the impact with only the proportion of young people with YVIP follow-up **9 crime incidents will be avoided per annum per YVIP service.**

Heeks et al (2018) produced a range of economic and social costs for crime which we not specifically violence related which could be used for calculating the cost avoidance of reduced crime recidivism amongst the YVIP cohort. These range from a lower cost crime type such as 'theft from person' to a higher cost crime type such as 'robbery'. The Wiesmann et al (2020) report 'Violence in London: what we now and how to respond' for the Mayor of London's Violence Reduction Unit uses the higher Heeks et al (2018) crime type of 'robbery' in estimating the total cost of violence in London. It is not known what the crime type breakdown is for the specific YVIP cohort so the lower and upper levels have been considered in the detail analysis and an anticipated 'typical' unit cost calculated using a weighted average of the crime costs using Heeks et al (2018) individual crime type unit costs and estimated total number of crimes by type. This is shown in the table below:

Table A6: Weighted average economic and social unit cost of crime based on Heeks et al (2018).

Crime type	Unit Cost	Total Crimes	Total Cost
Other sexual offences	£6,520	1137320	£7,415,326,400
Robbery	£11,320	193470	£2,190,080,400
Domestic burglary	£6,930	695000	£4,816,350,000
Theft of vehicle	£10,290	68000	£699,720,000
Theft from vehicle	£870	574110	£499,475,700
Theft from person	£1,380	459240	£633,751,200
Criminal damage - arson	£8,420	22620	£190,460,400
Criminal damage - other	£1,350	1007160	£1,359,666,000
Weighted average =	£4,283	4,156,920	£17,804,830,100

The overall **cost saving/avoidance for reduced recidivism for involvement in crime** within the 12 months following a young person's engagement with YVIP is summarised in the following tables:

Table A7i: Overall YVIP economic and social cost avoided for improved recidivism for involvement in crime – 67 crime incidents.

IMPACT				
c) YP showing reduction in crime at 6/12 month follow-up - Weighted average	34%	67.3	£4,283	£288,332
<i>Related cost avoidance:</i>				
Cost of Crime - weighted average [Heeks et al (2018)]			£4,283	£288,332

Table A7ii: Overall YVIP economic and social cost avoided for improved recidivism for involvement in crime – 9 crime incidents.

IMPACT				
c) YP showing reduction in crime at 6/12 month follow-up - Weighted average	34%	8.6	£4,283	£36,697
<i>Related cost avoidance:</i>				
Cost of Crime - weighted average [Heeks et al (2018)]			£4,283	£36,697

- h) Calculating the cost benefit related to increased stable Education, Employment or Training involvement at 6/12 month following the young person's engagement with YVIP.

The increased proportion of stable Education, Employment or Training placements was taken from the evaluation of the St Mary's Hospital YVIP service, which showed an 8% improvement in the young people's stable involvement in an EET placement up to 12 months following engagement with YVIP.

For the two scenarios this indicates:

- Assuming the impact with the proportion of all those young people who engaged with YVIP **16 young people per annum will avoid being NEET per annum per YVIP service.**
- Assuming the impact with only the proportion of young people with YVIP follow-up **2 young people per annum will avoid being NEET per annum per YVIP service.**

The NEM Unit Cost Database provided costs for both the fiscal and economic values of 18-24 year olds being NEET (E&E9.0), which are £4,952 and £10,466 respectively, and provide a cost for fiscal value of 16-17 year olds being NEET (E&E9.0.1) of £3,743.

When the numbers of young people avoiding NEET were calculated with the NEM unit costs the overall **cost saving/avoidance for increased stable involvement in Education, Employment or Training** within the 12 months following a young person's engagement with YVIP is seen in the following table:

Table A8i: Overall YVIP economic and fiscal cost avoided for improved EET – 16 EET incidents.

IMPACT	Factor	Young People	Index Cost	Cost Benefit
d) Additional YP showing stable EET involvement	8%	15.8	£10,631	£168,396
<i>Related cost avoidance:</i>				
Average cost of 18-24 NEET [NEM Unit Cost Database E&E9.0 Fiscal]	59.0%	9.3	£4,952	£46,275
Average cost of 18-24 NEET [NEM Unit Cost Database E&E9.0 Economic]	59.0%	9.3	£10,466	£97,812
Average cost of 16-17 NEET [NEM Unit Cost Database E&E9.0.1 Fiscal]	41.0%	6.5	£3,743	£24,309

Table A8ii: Overall YVIP economic and fiscal cost avoided for improved EET – 2 EET incidents.

IMPACT	Factor	Young People	Index Cost	Cost Benefit
d) Additional YP showing stable EET involvement	8%	2.0	£10,631	£21,432
<i>Related cost avoidance:</i>				
Average cost of 18-24 NEET [NEM Unit Cost Database E&E9.0 Fiscal]	59.0%	1.2	£4,952	£5,890
Average cost of 18-24 NEET [NEM Unit Cost Database E&E9.0 Economic]	59.0%	1.2	£10,466	£12,449
Average cost of 16-17 NEET [NEM Unit Cost Database E&E9.0.1 Fiscal]	41.0%	0.8	£3,743	£3,094

6. Overall Cost Benefit Analysis

The four evidenced outcomes' cost benefit/avoidance detailed above were largely based upon 2015/16 costs and were therefore escalated using published HM Treasury deflators to a 2018/19 cost basis. For the two scenarios considered the cost benefit analysis compare as follows:

i. Based upon total proportion of young people engaged with YVIP

Total annual cost avoidance based upon 2018-19 costs = **£1,226,648** , giving an Economic and social cost benefit per **£1 spent on YVIP = £4.90 benefit**.

ii. Only the proportion of young people for whom there is 6/12 month follow-up data:

Total annual cost avoidance based upon 2018-19 costs = **£156,119** , giving an Economic and social cost benefit per **£1 spent on YVIP = £0.62 benefit**.