Value for Money evaluation of the blocking software element of the TalkBanStop campaign

KPMG report for GamCare

8 December 2022

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In particular, and without limiting the general statement above, since we have prepared this Report for the benefit of the Addressee alone, this Report has not been prepared for the benefit of any other person or organisation who might have an interest in the matters discussed in this Report.

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Executive summary

Overview of the study and the blocking software element of the TalkBanStop campaign

This study has been commissioned by GamCare – a charity that provides information, advice, and support for individuals affected by gambling harms in the UK. In partnership with the gambling blocking software provider Gamban and the self-exclusion service GAMSTOP, GamCare operates the TalkBanStop (TBS) campaign – a programme to help people who struggle with gambling issues and support their recovery.

Through the TBS campaign a free licence for the Gamban blocking software is offered to individuals applying through the National Gambling Helpline. Between December 2020 and July 2022, a total of 9,122 free Gamban licences were given out through the TBS Campaign.

The overall purpose of the study is to assess the value for money delivered through the blocking software element of the TalkBanStop (TBS) campaign, currently provided by Gamban, and also consider the cost effectiveness of it.

In particular, the study has the following core objectives:

1) To assess the societal costs and benefits of the gambling blocking software element of the TBS campaign and estimate the benefit-cost ratio of this element.

2) To assess the cost-effectiveness of gambling blocking software in general, including the cost per user of the software, and the cost per user identified to be a problem gambler.

3) To identify the attributes that users value the most in a gambling blocking software to contribute to the identification of the minimum viable quality requirements.

The study has been undertaken in line with the principles for conducting value for money evaluations and cost-effectiveness assessments as set out in the HM Treasury Green Book[1] and the HM Treasury Magenta Book[2], including applying sensitivity analysis to establish the robustness of the results to changes in key assumptions.

Further details of the details of the TBS campaign and the blocking software provided as part of this, and of the scope of the study are included in Section 1.2.

Summary of the analytical approach

The assessment of value for money focusses on the scope of evaluation questions included in the HM Treasury Magenta Book guidance for value for money evaluations, including assessing the benefits, the costs, whether the benefits outweigh the costs, and the ratio of benefits to costs. From a cost effectiveness perspective, this includes assessing the cost per unit (outcome, participant, etc.) and the costs of delivering the intervention. The focus of the study was on the costs and benefits associated

[1] HM Treasury (2022) The Green Book: Central Government Guidance on Appraisal and Evaluation. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1063330/Green_Book_2022.pdf
[2] HM Treasury (2020) The Magenta Book: Central Government guidance on evaluation. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879438/HMT_Magenta_Book.pdf

with the use of gambling blocking software rather than the wider costs and benefits of gambling overall.

In line with this, to identify the potential benefits associated with the use of gambling blocking software, evidence from existing studies was identified though a literature review. Details of how this literature review was conducted are set out in Section 2.

Due to a lack of existing available UK and international evidence on the effectiveness of gambling blocking software and the impacts of its use, primary research was also required. A survey was developed to gather insights into gambling blocking software users' experience of blocking software, how it impacted their gambling behaviour and their willingness-to-pay for a blocking software. The survey was distributed through a number of channels (for details refer to Section 2.2).

In total the survey received 603 responses, of which 562 respondents currently or have previously gambled online and 466 respondents had used, or currently use, gambling blocking software. Almost three-quarters (74%) of the survey respondents who have used, or currently use, a gambling blocking software[3] use Gamban. It should be noted that care should be taken when interpreting the results of this survey as it is not possible to establish if the respondents are representative of all potential users of blocking software as well as the overall population of problem and at-risk gamblers. Furthermore, similar to many survey results there may be potential issues of bias, including self-selection, self-reporting and recall biases. It should also be noted that all survey responses were anonymous and the responses provided were not verified[4].

The study includes an assessment of the benefits and the costs of blocking software and specifically, the free provision of Gamban through the TBS campaign over a 20-month period from December 2020 to July 2022[5]. Where evidence allowed, costs and benefits were monetised for inclusion within the benefit-cost ratio, with wider impacts assessed qualitatively.

The potential benefits of the use of gambling blocking software were estimated drawing on the limited evidence from the existing literature as well as new evidence gathered through the survey. The benefits were assessed in gross terms as well as in net terms, taking account of additionality – that is the benefits that otherwise may not have been realised if the free Gamban blocking software were not available.

The costs of the provision of free blocking software through Gamban were provided by GamCare.

See Section 2.2 for more detail on the approach to primary research and Section 2.3 for the assumptions adopted as part of the assessment of the societal costs and benefits.

The cost-effectiveness assessment (CEA) primarily focusses on the cost of the provision of free gambling blocking software licences through Gamban, and the total cost per user of such licences. Drawing on the limited information available, the CEA also compares, at a high level based on existing evidence, the use of Gamban as the provider of the blocking software element of the TBS campaign against alternative blocking software providers in terms of specific quality attributes which contribute towards the outputs and impacts of the software. A technical and functional review of different blocking software providers was not within the scope of this study. Detailed data, such as the potential financial cost associated with the provision of blocking software on a like-for-like basis to Gamban (e.g. with the same service levels and number of users) by alternative providers is not available. Nor were alternative providers' costs of blocking software provision on a per user basis available[6]. It was also not possible within the scope of the study to assess whether Gamban as the current provider of blocking software through the TBS campaign would be able to achieve the same outcomes at a lower

[3] Based on those who responded "Yes – I have gambling blocking software currently installed on my device(s)" and "Yes – I have previously used gambling blocking software but no longer have it installed".
[4] This includes not verifying whether respondents had used blocking software and relying on their self-reported declarations of using it.
[5] This is the period for which data on the free TBS Gamban registrations are available.
[6] While data on BetBlocker's costs are available in its published Financial Statements, data on the number of users was not available to include an estimated cost per user figure in the assessment.

cost, other than qualitatively and relying on Gamban's own representations on this. As a result, a full cost-effectiveness analysis cannot be conducted at this point in time.

Key findings: Appraisal of societal benefits of gambling blocking software

Impact of gambling blocking software on gambling levels

It could be expected that by restricting access to remote online gambling sites, blocking software can help those users of it to reduce gambling.

The limited academic literature identified and reviewed as part of this study was found to primarily focus on assessing the impact of other methods of self-exclusion. However, this evidence can provide relevant insights to understand the potential effect of blocking software as they share similar characteristics: both tools are created to reduce access to remote gambling by blocking access to specific websites and, similar to blocking software users, players registered to a self-exclusion programme might still be able to gamble online or gamble on websites not blocked by the scheme. Recent studies by Caillon et al (2019) and Luquiens et al (2019) suggest a positive long-term effect of self-exclusion programmes on the time and money spent gambling.

Additionally, findings from the primary research undertaken as part of this study can provide evidence as to the impact of gambling blocking software on gambling levels. Findings from the survey of UK gambling blocking software users showed that:

— 44% of survey respondents that used gambling blocking software did not gamble at all when having blocking software installed.

— In addition to stopping individuals from gambling completely, it can also support users to reduce the frequency and extent to which they gamble. Evidence from the survey of blocking software users shows that 63% of respondents that had used blocking software stated that installing blocking software made them gamble less frequently.

Impact of gambling blocking software on gambling-related harm

There is evidence from academic literature[7] to suggest that for those who are at-risk gamblers or problem gamblers there is a correlation with a number of disruptive and addictive behaviours which are associated with gambling-related harm. Wardle et al (2018) define gambling-related harms as "the adverse impacts from gambling on the health and wellbeing of individuals, families, communities and society".

As part the analysis, the following main areas of benefit associated with the use of gambling blocking software are assessed:

1) A reduction in the excess costs to government and wider society associated with problem gambling and gambling-related harm

2) A reduction in the financial losses experienced by users of blocking software

3) The value that users place upon gambling blocking software – as measured through their willingness-to-pay (WTP)

[7] For example, Wardle et al (2018) Measuring gambling-related harms: a framework for action. Available at: http://eprints.lse.ac.uk/89248/1/McDaid_Gambling-Related_harms_Published.pdf

A summary of findings in relation to each is included below.

Reduction in excess costs to government and wider society

There is limited availability of empirical evidence that estimates gambling-related harm in the UK, and studies available, including from other countries, have a number of limitations, in particular in relation to availability of data and in understanding causality – in general, the academic literature on gambling-related harm presents correlation results which do not establish the extent to which problem gambling may have caused the impacts identified.

The two main recent studies for the UK[8] on the costs of gambling-related harm are the 2021 Public Health England (PHE) "Gambling-related harms evidence review: the economic and social costs of harms" and the 2016 IPPR report[9], "Cards on the Table: The Cost to Government Associated with People who are Problem Gamblers in Britain". While these studies have limitations, and the findings of the PHE report in particular have been heavily critiqued, in the absence of other UK-specific evidence on the economic cost of gambling-related harm the range of estimates from these studies are used in this assessment, albeit with adjustments to address the most substantive area of concern with the PHE estimates.[10] The results of the analysis and findings of our study should be interpreted with the limitations in mind and they provide a range of indicative estimates only.

In order to understand how blocking software in particular may impact levels of gambling-related harm, the survey conducted as part of this study sought to obtain some evidence from users, in particular linked to their gambling risk levels before and after installing and using blocking software, using the questions of the Problem Gambling Severity Index (PGSI).[11]

Based on survey responses it was found that, on average, users realised a reduction in their PGSI score. Specifically:

- On average, users of blocking software scored 17.5 on the PGSI in the 12 months before installing blocking software. This reduced to an average of 10.1 when considering gambling behaviour in the 12 months after installing blocking software.[12]

- Prior to installing blocking software, 91% of survey respondents would be classified as problem gamblers based on their PGSI score. Following the installation of blocking software, this fell to 54% of respondents who had used blocking software, based on their gambling behaviour in the 12 months after using it.

Table 1: Percentage of respondents who had used a blocking software, split by PGSI category

	Percentage of total respondents who had used a blocking software	
	12 months before	12 months after
Low risk gamblers	1%	19%
At-risk gamblers	1%	7%
Medium risk gamblers	6%	19%
Problem gamblers	91%	54%

Source: KPMG Survey

[8] It should be noted that these studies do also draw on evidence from other countries.
[9] IPPR (2016) Cards on the table: the cost to government associated with people who are problem gamblers in Britain. Available at: Cards-on-the-table_Dec16.pdf (ippr.org)
[10] It is noted that the PHE report in particular has been strongly critiqued for the methodology it uses and it has been suggested that it overestimates the cost of harm attributable to problem gambling. Specifically, issues associated with the approach taken to quantify the costs relating to deaths from suicide, which make up almost half of the total excess costs estimated, has been highlighted in critiques of the PHE report. Whilst there is evidence that problem gambling can contribute to an increased likelihood of suicide, the factors which may drive someone to attempt suicide are complex and multifaceted and the approach taken in the study is likely to be an overestimation.
[11] The PGSI is a standardised measure of at-risk behaviour in problem gambling. It is based on research of the common signs and consequences of problematic gambling. Based on the PGSI score, individuals are split into four categories.
[12] Where current users of blocking software had been using it for less than 12 months they were asked to provide responses in relation to the period since using it.

Based on the reduction in the PGSI score for respondents and the IPPR and PHE estimates of the additional cost to the UK Government and wider society of problem gambling, the value in the reduction in harm associated with the installation and use of free Gamban licences has been estimated.

Noting the limitations to the available evidence to inform the estimates of the cost of gambling-related harm, it is estimated that:

— the blocking software element of the TBS campaign generated a gross impact of between £3.8m to £11.7m in reduced cost to the UK Government and wider society, based on the IPPR estimates of the cost of gambling-related harm, and an estimate of £6.0m using the PHE central cost estimate[13]. This relates to the impact generated through the use of gambling blocking software and other gambling reduction tools.

— Adjusting the cost reduction figures for additionality[14], the provision of free Gamban licences through the TBS campaign, generated between £1.4m and £3.0m in reduced cost to the UK Government and wider society in net terms based on the IPPR estimates, and an estimate of £1.9m using the PHE central cost estimate.

Reduction in gambling-related financial losses

Evidence from the literature review indicates that there can be financial harm as a result of gambling.[15]

As no existing evidence was available on the extent of financial harm reduced as a result of the use of blocking software, questions were asked to users of blocking survey in the survey to understand how the software's use may have affected this based on their average gambling-related financial losses in the 12 months before and 12 months after installing a gambling blocking software. It was found that:

— Of the respondents who had used gambling blocking software, 64% reported a reduction in gambling-related financial losses after installing a gambling blocking software.

— On average, it was found that survey respondents who had used blocking software reported a £5,843 reduction in annual gambling-related financial losses in the 12 months following the installation of blocking software when compared to the 12 months prior to the installation of blocking software.[16]

When scaled up to all users who installed a free Gamban licence through the TBS campaign it is estimated that across all users £44.6m in total gross gambling-related financial losses was avoided over the appraisal period from December 2020-July 2022 through the installation of Gamban.

When accounting for additionality, it is estimated that the net gambling-related financial losses avoided through the provision of free Gamban licences through the TBS campaign is equivalent to £14.3m over the appraisal period from December 2020-July 2022.

Willingness-to-pay for Gamban licences

Given that through the TBS campaign, people are given access to a Gamban licence for free, in order to understand the value that users place upon gambling blocking software, survey respondents were

[13] Note the central PHE estimates used in this analysis exclude the costs associated with suicide due to the critiques particularly associated with the estimates of these costs.
[14] Additionality considers the benefits that otherwise may not have been realised if the free Gamban blocking software were not available. Additionality has been accounted for in the analysis by isolating the reduction in PGSI attributable to gambling blocking software only. This was done by comparing the reduction in PGSI scores for survey respondents who only used gambling blocking software and survey respondents who used gambling blocking software in conjunction with other tools.
[15] This paragraph is based on findings by Langham, E., Thorne, H., Browne, M., Donaldson, P., Rose, J., & Rockloff, M. (2015). Understanding gambling-related harm: A proposed definition, conceptual framework, and taxonomy of harms. *BMC public health*, *16*(1), 1-23.
[16] It should be noted that the reporting of financial losses is likely to be subject to self-reporting and recall biases.

asked what their willingness-to-pay (WTP) for a gambling blocking software would be.[17] The WTP provides an estimate of the value that users place upon one year of access to Gamban, which can be used as an indicator of the benefit that is derived by users.

It was found that overall, including those who reported a £0 per year WTP, the average WTP for a year of gambling blocking software was £27.59 whilst the median WTP was £17.50.

When applied to the total number of individuals who received a free Gamban licence through the TBS campaign, it is estimated that the total direct benefit, based on the WTP value, was £177,666 over the appraisal period.[18] This estimate may be reflective of gross benefit that users have gained from the use of a free Gamban licence.

Key findings: Cost benefit analysis of the gambling blocking software

The cost to GamCare of providing the gambling blocking software element of the TBS campaign over the period from December 2020 to July 2022 is approximately £1.9m.[19]

In terms of the quantified benefits, as detailed above, these include the estimated reduction in costs to government/ society of gambling-related harm and the benefits to users themselves (in the form of financial loss reductions and wider benefits – as captured through the WTP analysis).[20]

The net benefits, after adjusting for additionality, are those relevant for the estimation of the BCR, in line with HM Treasury Green Book guidance. Relatively conservative additionality adjustments have been applied using the survey evidence, reflecting that a proportion of users of the free Gamban licence would otherwise have paid for this (resulting in "deadweight") and that other users reported that they would have used alternative free blocking software, therefore the benefits from blocking software use may have been generated even if the free Gamban licence was not available.

Overall, it is estimated that the blocking software element of the TBS campaign has generated between £15.9m to £18.0m in net benefits over the appraisal period.[21]

Taking into account the total value of benefits and the cost to GamCare of providing the gambling blocking software element of the TBS campaign, it is estimated that the blocking software element of the TBS campaign generates **a Benefit-Cost Ratio (BCR) of between 8.1:1 and 9.4:1. This means that for every £1 that GamCare spends on blocking software, £8.10 to £9.40 of net benefits is generated.**[22]

However, as detailed further above, given the limitations to the available evidence, in particular the estimates of the costs of gambling-related harm, these results should be considered as indicative only.

[17] WTP measures the maximum theoretical prices that users would pay for blocking software and is assumed to be reflective of, but not exceed, the gross benefit users gain from using the blocking software.
[18] The WTP captures the value that users would be willing to pay for one year of gambling blocking software. It should be noted that through the TBS Campaign, people are able to choose a multi-year licence up to 5 years meaning that the WTP for gambling blocking software could be higher.
[19] It is noted that GamCare's funding for the TBS Campaign is partly provided for through the regulatory settlement process operated by the Gambling Commission.
[20] It should be noted that the estimation of the BCR excludes the direct user benefits estimated through the willingness-to-pay analysis to avoid any double counting with the reduction in financial losses as it is likely that some of the value that users place upon the free Gamban licences will, at least in part, include reduced losses.
[21] Due to limitations in the data available, for the purposes of the analysis it has been assumed that the benefits from gambling blocking software persist for a full year for each user. Whilst there is data available on the length of Gamban licences that are provided through the TBS Campaign, data is not available on the duration over which individuals continue to use the software. As over 70% of those who received a free Gamban licence obtain a licence for 2 years or more this was considered to be a reasonable and potentially conservative assumption for the purposes of the analysis.
[22] The calculation of the BCR excludes the direct user benefits estimated through the willingness-to-pay to avoid any double counting with the reduction in financial losses. It is considered that some of the value that users place upon the free Gamban licences will, at least in part, reflect the amount of money users have saved from using the blocking software. It has therefore not been included in the estimation of total benefits and the BCR.

Table 2: Total indicative benefits and costs of the blocking software element of TBS campaign

	Lower estimate using IPPR	Central estimate using PHE	Upper estimate using IPPR
Total indicative benefits (excluding WTP benefits)	**£15.9m**	**£16.2m**	**£18.0m**
Reduction in gambled related harm	£1.2m	£1.9m	£3.7m
Reduction in financial losses	£14.3m	£14.3m	£14.3m
Total costs	**£1.9m**	**£1.9m**	**£1.9m**
Indicative BCR	**8.1**	**8.4**	**9.4**

Source: KPMG analysis

It should be noted that the BCR excludes a number of wider potential benefits of gambling blocking software and its impact on problem gambling behaviour, where such benefits could not be robustly quantified in the analysis.

Key findings: Assessment of the cost-effectiveness of gambling blocking software

Cost of the provision of gambling blocking software

Regarding the cost of providing gambling blocking software, it was found:

— Based on information provided publicly, it appears that blocking software providers are commonly funded through a combination of B2C and B2B sales. The exception to this is Gamban which receives grant funding from GamCare and Betblocker which is a UK registered charity and is funded through donations made by gambling operators which enables Betblocker to provide a gambling blocking software free of charge.[23]

— A large proportion of the costs associated with gambling blocking software are fixed costs, associated with the development and updating of the software itself and associated staff costs, with limited marginal costs per additional user other than for user support (which at least one blocking software provider indicated was a key driver of its costs).

— Gamban, as the current provider of blocking software through the TBS campaign indicated that investment fixed costs are incurred to provide capacity up to a certain capacity (i.e. number of users). To increase capacity once the user limit is reached would require further investment.

— Gamban also indicated that any measures it could take to reduce its operating costs for the provision of gambling blocking software would likely impact the quality of the product and could result in it falling below the standards for gambling blocking software as set out in a review commissioned by Gamban in 2020. [24]

Quality attributes of gambling blocking software

Evidence from existing studies and industry reports on gambling blocking software highlight the quality attributes that are considered most important and appropriate for gambling blocking software. Based on this, gambling blocking software was assessed in terms of its accessibility, effectiveness, responsiveness.

[23] https://www.betblocker.org/
[24] VITA (2021) Fundamental standards for gambling blocking software: Ensuring quality support for people impacted by difficulties with gambling.

- **Accessibility** refers to the ability of those in need to be able to readily access gambling blocking software, including providers making the installation process as easy as possible for their users and the affordability of it.

    - Industry reports suggest that blocking software is generally easy to install, although some gambling blocking software products have been found to be slightly more difficult with multiple steps involved.

    - Evidence from the survey of blocking software users found that users are most satisfied with the quality attribute of "the ease and speed with which their blocking software can be installed". Of a total of 285 respondents, 65% of current and past users reveal to be extremely satisfied with the installation procedure;

    - Further, 58% of all Gamban user respondents reported being extremely satisfied with the extent to which they were able to install the software for their preferred length of time/period.

    - Findings from the survey of gambling blocking software users found that a key factor determining whether individuals' access gambling blocking software is that it is free to use, with 47% stating that had they not received a free Gamban licence they would have accessed an alternative free blocking software and 32% of the respondents would not have used a gambling blocking software at all.

- **Effectiveness:** Literature suggests that blocking software should be evaluated not only according to the effectiveness of the physical barrier for online gambling but also regarding its ability to alleviate impulses to gamble and its overall impact on the mental health and well-being of its users.

    - Industry evidence[25] suggests that gambling-specific blocking software (such as Gamban, Betblocker, and GamBlock) can block access to 80-90% of gambling blocking sites, with Gamban ranking highest. Generic blocking software, such as Net Nanny, was reported to have a lower rate (50-60%) of blockage of relevant websites.

    - However, evidence suggests none of the existing software is completely effective at blocking gambling with studies finding that approximately half of users find ways to circumvent the blocking software and gamble online[26]. Findings from the survey of gambling blocking software users conducted as part of this study support this evidence with just over a quarter (26%) of current users of blocking software reporting that they had gambled online despite the software, 15% reported having gambled in person, and 7% reported having gambled both online and in person.

    - Our survey findings also suggest that among survey respondents gambling blocking software is their preferred tool for minimising gambling-related harms. The surveyed users of blocking software who reported having used different strategies other than blocking software ranked gambling blocking software as their preferred option.[27] GAMSTOP and talking therapies were reported as the second and third preferred tools, which aligns with the layered approach of the TBS campaign.

- **Responsiveness:** Industry reports suggest that providers of gambling blocking software must respond to user needs. To be responsive, providers need to have systematic ways of

[25] GambleAware (2018). Evaluating online blocking software.
[26] GambleAware (2018). Evaluating online blocking software.; Vita Ca (2020). Gamban's impact: users view and experiences.
[27] It should be noted that this ranking is based on the survey of blocking software users and may not be representative of all people who use gambling reduction tools.

collecting the views and experiences of users and using them to improve and develop their services. [28]

- Users of Gamban are able to contact Gamban via email and via a live chat function. Gamban has stated that it has an average first reply time of less than 1 hour. In contrast, another gambling blocking software provider that was interviewed stated that at present the majority of user support requests receive a response within 24 hours. With additional funding, however, this provider indicated it would prioritise investment in increasing user support agents in order to allow for faster response times.

- According to the survey of gambling blocking software users, blocking software does not rate particularly favourably or unfavourably in terms of user satisfaction with "the quality and responsiveness of consumer service and technical support". The question about this quality attribute had the highest proportion of respondents who are neither satisfied nor dissatisfied (14% of current users and past users).

Cost per user of gambling blocking software

To provide its blocking software free of charge, Gamban receives a grant from GamCare as part of the TBS campaign. The cost to GamCare of this is £2.4m, covering provision over the period from December 2020 to March 2023. **Based upon the value of the grants GamCare pays to Gamban for the blocking software element of the TBS campaign, it is estimated that the total cost per free licence is £210.68[29], whilst the total cost per free licence provided to problem gamblers is £230.71[30].** It should be noted that these figures represent the current total cost of free provision of Gamban licences divided by the number of relevant users over the period and not the incremental cost per additional user.

Information is not available on what the cost per licence would be for another provider to become a partner in the TBS campaign rather than Gamban or what the cost per user of other blocking software is. Therefore, comparisons in terms of cost across providers are not provided within this study.[31]

Producing a fuller CEA and assessment of relative costs of provision of free blocking software through the TBS campaign by alternative providers would require much more detailed information, which could potentially be obtained by GamCare through, for example, a market testing exercise to obtain cost quotes from potential providers based on a range of different specifications for the software, including quality attributes and numbers of users. Such information could be used to determine if a lower cost per user might be achieved for the same level of expected benefits and/or if greater levels of benefits could be achieved for the same cost as currently paid for the intervention.

Notwithstanding the limitations of the CEA included in the study, given the indicative scale of benefits associated with blocking software, the evidence suggests that for the same levels of effectiveness achieved through existing free provision of blocking software the cost per user could be higher while still delivering an overall positive benefit to cost ratio.

[28] VITA CA (2021). Fundamental Standard report for gambling blocking software: ensuring quality support for people impacted by difficulties with gambling.
[29] The cost per free licence is based on the cost to GamCare of providing the blocking element of the TBS campaign from December 2020-July 2022 (see Section 3.3.1 for detail) and the total number of free TBS licences registered during the same period.
[30] The cost per free licence provided to problem gamblers has been estimated is based on the cost to GamCare of providing the blocking element of the TBS campaign from December 2020-July 2022 (see Section 3.3.1 for detail) and the estimated number of problem gamblers receiving a free Gamban licence. The number of problem gamblers has been estimated based on the total number of free TBS licences registered from December 2020-July 2022 and survey data on the proportion of blocking software users who are problem gamblers (as defined by having a PGSI score >8)
[31] It is noted that another provider of blocking software interviewed as part of the project indicated that it considers it has the best product available from a technical standpoint and due to its operating model considers it delivers the lowest cost structure for delivering this service. However, this was not tested through this study - while cost information is available for this provider, data on the number of users is not available to estimate the average cost per user, nor was it within the scope of the study to conduct a detailed comparative assessment of different software from a technical and functionality perspective.

1 Introduction

1.1 Scope of study

This study has been commissioned by GamCare – a charity that provides information, advice, and support for individuals affected by gambling harms in the UK. GamCare operates the National Gambling Helpline, provides treatment for individuals harmed by gambling, generates awareness about safer gambling and treatment and seeks to encourage an effective approach to safer gambling within the gambling industry.

The overall purpose of the study is to assess the value for money delivered through the blocking software element of the TalkBanStop (TBS) campaign and consider the cost effectiveness of Gamban (as the current selected provider of blocking software as part of the Campaign), based on an assessment including the attributes of the software which users value most. The focus of the study was on the costs and benefits associated with the use of gambling blocking software rather than the wider costs and benefits of gambling overall.

In summary, the TBS campaign is a collaborative partnership between three organisations - GamCare, Gamban – a provider of gambling blocking software and GAMSTOP – a gambling self-exclusion scheme run by The National Online Self-Exclusion Scheme Limited. The TBS campaign aims to help people who struggle with gambling issues and support their recovery. It does this through encouraging the integrated use of three tools:

- a blocking software provided by Gamban;
- a self-exclusion scheme offered by GAMSTOP;
- an emotional support service offered by GamCare via the National Gambling Helpline (NGH).

Details of the TBS Campaign and the blocking software provided as part of this are included in Section 1.2.

This study relates only to the blocking software provision as part of the Campaign and has the following core objectives:

1) To assess the societal costs and benefits of the gambling blocking software element of the TBS campaign and estimate the benefit-cost ratio of this element.
2) To assess the cost-effectiveness of gambling blocking software in general, including the cost per user of the software, and the cost per user identified to be a problem gambler.
3) To identify the attributes that users value the most in a gambling blocking software to contribute to the identification of the minimum viable quality requirements.

The study has been undertaken in line with the principles for conducting value for money evaluations and cost-effectiveness assessments as set out in the HM Treasury Green Book[32] and the HM

[32] HM Treasury (2022) The Green Book: Central Government Guidance on Appraisal and Evaluation. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1063330/Green_Book_2022.pdf

Treasury Magenta Book[33], including applying sensitivity analysis to establish the robustness of the results to changes in key assumptions.

1.2 Overview of the TalkBanStop campaign and Gamban's gambling blocking software

As explained further above, GamCare is a charity operating in the UK with the purpose to providing information, advice, and support to those who are affected by gambling harms. GamCare, along with the blocking software provider Gamban and the self-exclusion service GAMSTOP are involved in the TBS campaign – a programme to help people who struggle with gambling issues and support their recovery.

The TBS campaign encourages the integrated use of three tools:

- a blocking software currently provided by Gamban, which directly blocks individual electronic devices, such as a mobile phones, laptops, and tablets, from entering most gambling sites worldwide

- a self-exclusion scheme offered by GAMSTOP, which stops registered users from accessing online operators licensed by the Gambling Commission and it requires gambling companies to check if their consumers are self-excluded; and

- an emotional support service offered by GamCare via the National Gambling Helpline (NGH), which provides information, advice, and support to individuals affected by gambling-related harm.

A pilot of the programme was launched in December 2020, and, in 2021, the TBS campaign received additional funding to continue its delivery to the end of March 2023.

Before the partnership was formed to deliver the TBS campaign, all three partners provided their own individual service - each of which was expected to support those affected by gambling harm but the tools were not integrated. Now, instead, all partners are committed to a layered approach by promoting and facilitating access to one another's services. The combination of Gamban's blocking software and the GAMSTOP self-exclusion scheme, supports users in being able to exclude themselves from being able to gamble and can help maximise protection from online gambling.[34] To supplement these, the NGH provides support to at-risk individuals by connecting them with a trained adviser.

Each element of the TBS campaign is available to users free at the point of use if accessed via the campaign.

Through the TBS campaign a free licence for the Gamban blocking software is offered to individuals who apply through the National Gambling Helpline. Individuals are able to choose the length of licence they would like for free, with an option to access Gamban for up to 5 years. This access mechanism not only promotes a layered approach to address gambling-related harms but also removes financial barriers to blocking software for at-risk and problem gamblers who are often in severe financial difficulties and may not be able to afford the licence otherwise.

Between December 2020 and July 2022, a total of 9,122 free Gamban registrations were given out through the TBS Campaign.

[33] HM Treasury (2020) The Magenta Book: Central Government guidance on evaluation. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879438/HMT_Magenta_Book.pdf
[34] What is the difference between GAMSTOP and Gamban? – GAMSTOP

For those who do not access the blocking software through TBS, Gamban is available to download from the company website for £24.99 per year or £2.49 per month.

1.3 Overview of gambling blocking software

Gambling blocking software is one of the self-exclusion tools to support consumers in limiting their ability to participate in remote online gambling. Blocking software can be downloaded onto a users' device and limits access to websites or other services available over the internet. Blocking software can be gambling specific which is designed to block gambling sites and gambling-related sites or a general blocking software which is designed to block a range of websites and can be used to set permissions or controls.

Gambling blocking software typically works by installing a Virtual Private Network (VPN) which will then block access to specific URLs and/or websites with specific words or phrases in the title or address. However, it should be noted that not all gambling blocking software work in this way and may vary in their technical applications and approaches to blocking access to gambling.

There are a range of gambling blocking software products available in the UK. As of October 2022, GambleAware identified the following gambling blocking software products available in the UK:[35]

- Gamban
- Gamblock
- Betfilter
- Betblocker
- Net Nanny (a general blocking software which includes gambling blocking)

The concept behind blocking software is that by restricting access to remote online gambling sites it will help people to reduce gambling and therefore reduce gambling-related harm.

Other tools include online self-exclusion schemes like GAMSTOP and bank transaction blocking.

1.4 Structure of the report

The report is set out as follows:

- Section 2 provides an overview of the methodology and approach taken to assess the benefits and costs of the blocking software element of the TBS campaign and the key assumptions made in the analysis.
- Section 3 assesses the benefits associated with blocking software, including the impact on reducing gambling and the reduction in gambling-related harm.
- Section 3.3 assesses the overall costs and benefits of GamCare providing the blocking software element of the TBS Campaign, including an estimation of the benefit-cost ratio (BCR).

[35] https://www.begambleaware.org/gambling-blocking-software

— Section 4 considers the cost effectiveness of the providing the blocking software element of the TBS Campaign – assessing the cost of providing the blocking software and analysing the quality attributes of gambling blocking software.

— Appendix 1 provides a summary of the external literature and academic studies that have been reviewed as part of this study.

— Appendix 2 sets out in detail the methodological approach taken to quantifying the costs and benefits of the blocking software element of the TBS campaign.

2 Methodology

2.1 Analytical approach

The overall purpose of the study is to assess the value for money delivered through the blocking software element of the TBS campaign and consider the cost effectiveness of Gamban (as the selected provider of blocking software as part of the TBS campaign), based on an assessment including the attributes of the software which users value most.

The assessment of value for money focusses on the scope of evaluation questions included in the HM Treasury Magenta Book guidance for value for money evaluations,[36] specifically:

- What are the benefits?
- What are the costs?
- Do the benefits outweigh the costs?
- What is the ratio of benefits to costs?

In order to address each of these areas and to inform the approach and methodology that could be used to assess these value for money questions, a literature review was undertaken to understand how gambling treatments have been evaluated previously. The literature review was a desk-based exercise focussing on studies identified both by GamCare, industry experts who were able to point to relevant literature, and an online search. While the literature review was not fully comprehensive, the key findings were informative in terms of the approaches that have previously been undertaken in relation to gambling-related costs and benefits of interventions and provided insights on the breadth of relevant existing evidence available to inform the assessment.

Findings from the literature review relevant to the assessment of benefits are included in Section 4 and Appendix 1. The key conclusions from our review in relation to the approach to evaluating the impact of gambling software, as well as wider considerations based on HM Treasury Magenta Book evaluation guidance, are summarised below:

- Relevant literature in relation to the impact of gambling blocking software, from the UK and other countries, was lacking. While some studies were available relating to the TBS campaign more broadly, as well as on standards for blocking software and user views and experiences, quantitative evidence on the societal impacts of blocking software was unavailable.
- Due to this lack of existing impact evidence, the nature of Gamban (i.e., not administered through individual gambling operator sites), and the lack of national level datasets on the prevalence of gambling problems, such as those held in Sweden, it was determined that an approach that obtains data directly from users would be required.
- In the absence of any evidence from a longitudinal study to follow users over time, either from existing studies or an ability to obtain longitudinal evidence as part of this study, the primary data gathering would also need to collect information in relation to when users installed the software and rely on self-reported recall of how gambling behaviour changed and for how long any such change in gambling behaviour persists.

[36] For more information, please visit The Magenta Book - GOV.UK (www.gov.uk).

— It is important to identify the counterfactual, i.e., what would have occurred in the absence of the provision of gambling blocking software, specifically the free Gamban licence available as part of the TBS campaign. The counterfactual used in the analysis is of Gamban not being available free via TBS (but still available paid-for) and the ongoing availability of other forms of gambling blocking software and other support tools.

Considering these factors, a methodology for the evaluation and cost-effectiveness was developed. The following steps were undertaken:

— Firstly, in order to identify the potential benefits associated with the use of gambling blocking software, evidence from existing studies was identified though a literature review. Details of how this literature review was conducted are set out above.

— Based on the evidence identified through the literature, as well as wider information provided by Gamban and GamCare on the objectives of the provision of free gambling software is expected to deliver, a 'theory of change' for the blocking software element of the TBS campaign was developed. The theory of change was developed in consultation with GamCare. The theory of change was used to identify the potential benefits generated through the provision of free blocking software licences. The theory of change is presented in Figure 1 below.

— Having identified potential benefits of gambling blocking software, the scale and scope of these benefits were assessed drawing on evidence from the existing literature as well as new evidence gathered through primary research conducted as part of this study. Using this evidence (see below for detail on the data sources used), where possible, this study seeks to monetise the benefits of the gambling blocking software element of the TBS campaign. Whilst steps have been taken to monetise benefits where evidence allows, there are a number of benefits that is it has not been possible to monetise due to a lack of robust evidence on which to base a quantification. These benefits have, therefore, been assessed qualitatively.

— The study seeks to assess the specific benefits and value for money associated with the blocking software element of the TBS campaign. However, due to the layering approach of the TBS with other gambling reduction tools and support, it is difficult to separate the impact that can be attributed to the usage of gambling blocking software versus other gambling support tools. Assumptions on the level of additionality, i.e. the proportion of impact that is a direct result of the use of gambling blocking software as opposed to other tools or factors, have been applied to the estimates of the impact of gambling blocking based on findings from the primary research conducted as part of this study (see Section 2.2 for more detail on the approach to primary research and Section 2.3 for the assumptions adopted as part of this study).

— An assessment of the value for money of the gambling blocking software element of the TBS campaign has been undertaken based on the value of benefits generated and the cost to GamCare of providing the free blocking software. A benefit-cost ratio (BCR) has been estimated and sensitivity tests have been undertaken to understand how robust the BCR is to key assumptions made in the analysis.

— A cost-effectiveness assessment (CEA) has also been undertaken, primarily focussing on the cost of the provision of free gambling blocking software licences through Gamban, and the cost per user of such licences. Drawing on the limited information available, the CEA also compares, at a high level based on existing evidence, the use of Gamban as the provider of the blocking software element of the TBS campaign against alternative blocking software providers in terms of specific quality attributes which contribute towards the outputs and impacts of the software. Detailed data, such as the potential financial cost associated with the provision of blocking software on a like-for-like basis to Gamban by alternative providers is not available. Nor were alternative providers costs of blocking software provision on a per user basis available. It was also not possible within the scope of the study to assess whether Gamban as the current provider of blocking software through the TBS campaign would be

able to achieve the same outcomes at a lower cost, other than qualitatively and relying on Gamban's own representations on this. As a result, a full cost-effectiveness analysis cannot be conducted at this point in time.

2.2 Data sources and research methods

Overview of sources

The study draws on a number of sources of data, including:

- Programme documentation relating to the TBS campaign provided by GamCare, including the evaluation of the TBS pilot conducted by Ipsos[37]
- Monitoring data on the number of free blocking software licences provided by Gamban through the TBS campaign over the period December 2020 – July 2022
- Secondary data and research on the impact of gambling blocking software and the cost of gambling-related harms
- Primary research in the form of a survey of users of gambling blocking software (see below for details)
- Information on the technical, quality and cost attributes of gambling blocking software provided by Gamban and a selection of other blocking software providers as well as available publicly, for example through existing research.

As noted further above, a literature review was conducted to obtain relevant secondary data and research. This review was undertaken to gather insights to inform both the evaluation methodology as well as the qualitative and quantitative assessment of the impact of gambling blocking software. A list of all studies reviewed, and a summary of the key findings is set out in Appendix 1 and where findings from external literature have been used in our assessment of economic and social benefits they are referenced within the study.

It should be noted that the literature review undertaken was not a comprehensive, systematic search. In order to have a broad search and understanding of the impact of problem gambling and the potential benefits of gambling blocking software, the literature review looked at evidence from other countries as well as the UK. It is recognised that there are numerous factors, whether cultural, economic, or regulatory, that will drive differences in problem gambling behaviours and impacts in different countries and, as a result, may mean that the evidence from other countries is not directly applicable to the UK.

In the course of conducting the literature review, it was found that there is limited data and information on the effectiveness of gambling blocking software and the impacts of its use, both overall and specific to the UK. As a result, it was determined that primary research would be required in order to provide evidence to inform as assessment of the value for money delivered through the blocking software element of TBS and the cost effectiveness of blocking software.

Details of primary research conducted

A survey was developed to gather insights into gambling blocking software users' experience of blocking software, how it impacted their gambling behaviour and their willingness-to-pay for a blocking software.

[37] Ipsos (2022) Final Evaluation of the TalkBanStop Pilot.

The survey was distributed through a number of channels, including:

- The GamCare Online Forum: A forum of people who have been harmed by gambling issues, including gamblers and affected others. The forum has approximately 2,000 active users.
- The GamCare Lived Experience Forum: A forum of over 50 people who have either used GamCare services or are interested in contributing to GamCare's activities. Most of the members of the forum are or were gamblers.
- The GamCare Helpline: the survey was distributed to those who contacted the GamCare Helpline and agreed to receive further communications.
- Gamban users: The survey was emailed to all Gamban users for whom email contact details were held.
- Social media platforms: The link to the survey was posted on various social media platforms by GamCare and another blocking software provider.

The survey was open for 12 days between 6 October 2022 and 18 October 2022.

In total the survey received 603 responses, of which 562 respondents currently or have previously gambled online. Given that the survey link was issued through a range of channels, including on social media platforms, the total reach of the survey is unknown. As a result, it is not possible to estimate the response rate for the survey.

Using Gambling Commission estimates of the total number of people in the UK that are classed as medium-risk or problem gamblers[38], it is estimated that the of the survey respondents who were problem gamblers (based on PGSI score[39]) accounted for 0.3% of the total population of those experiencing gambling-related harm.

It should be noted that there is no data on which to assess how representative the characteristics of the group surveyed are compared to the wider population of problem gamblers or of all users of gambling blocker software. Further all survey responses were anonymous and the responses provided were not verified[40]. The results should therefore be treated as indicative only and not necessarily representative of the wider relevant population.

Furthermore, the survey results will be subject to self-selection and self-reporting bias, which may mean that the results are not accurate. Additionally, as the survey asks gambling blocking survey to report their gambling behaviour and financial losses in the 12 months before and after installing blocking survey, there may also be recall bias with survey respondents finding it challenging to recall this for previous time periods.

Of the survey respondents who reported that they currently or had previously gambled online, 88% are currently using or have previously used a gambling blocking software.

[38] For additional information, see Gambling-related harms: evidence review - GOV.UK (www.gov.uk)
[39] Based on the self-reported responses to the PGSI questions covering the 12 months before installing gambling blocking software.
[40] This includes not verifying whether respondents had used blocking software and relying on their self-reported declarations of using it.

Table 3: Responses to "Have you ever used a gambling blocking software?"[41]

	Number of responses	Percentage of responses
Yes – I have gambling blocking software currently installed on my device(s)	310	58%
Yes – I have previously used gambling blocking software but no longer have it installed	156	29%
No – I have never used gambling blocking software	64	12%
Total responses	**530**	

Source: KPMG Survey

Almost three-quarters (74%) of survey respondents who have used a gambling blocking software[42] used Gamban, which is likely to be a function of the channels through with the survey was issued, including specifically to Gamban users and those engaged with GamCare.

Table 4 below sets out the survey responses split by the gambling blocking software used. It should be noted that some respondents reported having used more than one blocking software.

Table 4: Responses to "Which gambling blocking software(s) have you used? *Please select all that apply*"

	Number of responses	Percentage of responses
Gamban	354	74%
Betblocker	29	6%
Gamblock	47	10%
Betfilter	12	3%
Net Nanny	7	1%
Don't know	10	2%
Other - please state[43]	17	4%
Total responses	**476**	

Source: KPMG Survey

Monitoring data on Gamban provision of free licences

Gamban provided data on the number of free registrations from the TBS campaign. The data is available on a monthly basis over the whole appraisal period and provides the split of registrations by the length of licence registered.

From December 2020 to July 2022, 9,122 free Gamban registrations were given out through the TBS campaign. Of the total registrations, 65% were for the maximum licence duration of 5 years.

[41] The question was asked to 562 people, of which 530 answered and 32 did not answer.
[42] Based on those who replied "Yes – I have gambling blocking software currently installed on my device(s)" and "Yes – I have previously used gambling blocking software but no longer have it installed" in Table 3.
[43] Amongst those who chose the response 'Other – please state' the most commonly mentioned gambling blocking software was K9 Web protection. Other gambling blocking softwares mentioned were Blocksite, Freedom app and Goodbye Gambling.

Table 5: Percentage of free TBS licences, split by licence length – December 2020-July 2022

Length of Gamban licence	Number of registrations	Percentage of free TBS licences
6 months	809	9%
1 year	1,776	19%
2 years	361	4%
3 years	185	2%
4 years	39	0%
5 years	5,952	65%

Source: Gamban data

2.3 Key assumptions

In the quantitative analysis, a number of assumptions have been applied in the estimation of the monetised costs and benefits of the gambling blocking software element of the TBS campaign. The overarching assumptions are set out below while Appendix 2 provides a detailed explanation of all of the assumptions employed in the analysis.

Appraisal period

The costs and benefits of the blocking software element of the TBS has been assessed over a 20 month period from December 2020 to July 2022 – the period for which data on the free TBS Gamban registrations are available.

The cost of providing the blocking software element of the TBS campaign has been provided by GamCare for the period covering December 2020 to March 2023. Given that the assessment focuses on the impacts (benefits) delivered to date though the Campaign rather than estimates of future potential benefits, the costs have been estimated to July 2022 to align to the time period over which benefits are assessed. The scaling of costs assumes an equal monthly distribution of cost across the full funding period.

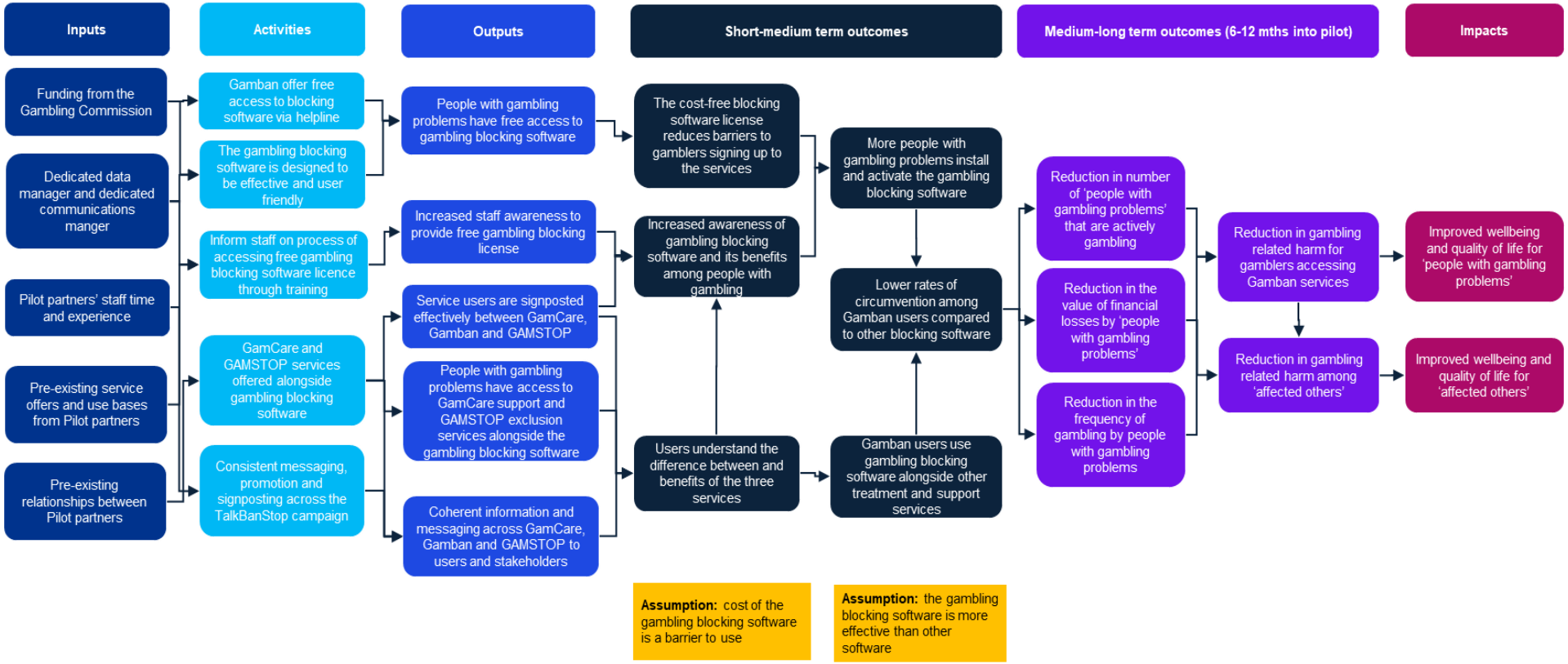
3 Appraisal of the socio-economic benefits of the blocking software element of TalkBanStop

3.1 Impact mapping of the gambling blocking software element of the TalkBanStop campaign

The first step in appraising the socio-economic benefits of blocking software was to determine the theory of change associated with the provision of free blocking software through the TBS campaign. The theory of change maps the pathway to impact from the inputs and activities associated with the provision and use of gambling blocking software through to the end outcomes and impacts associated with it. It helps to identify the routes through which different types of social and economic impacts are generated and the assumptions and dependencies along the path.

Drawing on the evidence sources summarised in Section 2 and the insights that GamCare and other gambling blocking software stakeholders shared with us during interviews and workshops, theory of change was mapped. This is presented in Figure 1 below in the form of a logic model.

Figure 1: Theory of change logic model for the blocking software element of the TBS campaign



3.2 Appraisal of the societal benefits of blocking software

As summarised in the theory of change set out in Section 3.1 above, it has been identified that blocking software could lead to the following benefits:

- A reduction in gambling for users of blocking software
- A reduction in gambling-related harm for users of gambling blocking software, including a reduction in financial harms for the individuals and wider reduction in public costs associated with supporting those experiencing gambling-related harm.
- Improved wellbeing for others affected by gambling-related harm, this includes the family and friends of those experiencing gambling-related harm.

Each of these benefits are assessed qualitatively in turn in the Sections 3.2.1 to 3.2.4 below. Where relevant, the findings from the survey of blocking software users have been drawn upon and where there is sufficient evidence to robustly estimate benefits, the societal benefits have been quantified.

3.2.1 Impact of gambling blocking software on gambling levels

As of September 2022, the Gambling Commission estimates that the overall participation rate in any gambling activity (in the last four weeks) was 44% for the UK.[44] The participation rate for in-person and online gambling in the same period was 27%. Despite currently having the same participation rate, the trends for in-person and online gambling are moving in opposite directions. The in-person gambling participation rate remains below the pre-pandemic level. In contrast, online gambling participation rates have been increasing steadily since 2018.

The Gambling Commission estimates that, as of September 2022, the problem gambling rate (as measured by the short form Problem Gambling Severity Index (PGSI) is 0.3%. This is statistically stable compared to the year to September 2021.

In general, data shows that men and those that are socially and economically disadvantaged tend to have higher prevalence rates for gambling. This suggests that problem gambling is at least in part related to socio-economic and health inequalities and evidence has found that people classified as at-risk and problem gamblers usually correlates with them being unemployment or in younger age groups and from deprived areas.[45]

It could be expected that by restricting access to remote online gambling sites, blocking software can help those users of it to reduce gambling and therefore reduce gambling-related harm. However, there is limited existing quantitative evidence of this, particularly covering the UK.

The limited academic literature identified and reviewed as part of this study was found to primarily focus on assessing the impact of other methods of self-exclusion. There is no specific empirical evidence on the causal impact of online blocking software on gambling behaviours as it is difficult to discern the effect of a single blocking software with traditional statistical methodologies as users often combine various blocking methods simultaneously. However, the evidence on self-exclusion methods can provide relevant insights to understand the potential effect of blocking software as they share similar characteristics: both tools are created to reduce access to remote gambling by blocking access to specific websites and, similar to blocking software users, players registered to a self-exclusion programme might still be able to gamble online or gamble on websites not blocked by the scheme.

[44] Gambling Commission (2022) Statistics on participation and problem gambling for the year to Sept 2022. Available at: Statistics on participation and problem gambling for the year to Sept 2022 - Gambling Commission
[45] Gambling Commission (2021) Gambling-related harms: evidence review. Available at: Gambling-related harms: evidence review - GOV.UK (www.gov.uk)

Recent research on the causal impact of self-exclusion schemes on gambling behaviour has mainly been conducted in France, where since 2010 regulations have been imposed on online gambling operators to provide self-exclusion services. The studies by Caillon et al. (2019) and Luquiens et al. (2019) suggest a positive long-term effect of self-exclusion programmes on the time and money spent gambling. However, the findings from these studies show that the impact of self-exclusion schemes may differ for people with different gambling intensities, with Luquiens et al. (2019) finding that self-exclusion tools are ineffective in reducing money spent for the gamblers that were considered to be the "most heavily involved" in financial terms.[46]

As noted previously, given the lack of existing empirical evidence, a survey of UK gambling blocking software users was conducted as part of this study. Responses from this show that use of the software did reduce gambling activity of a proportion of users - 44% of survey respondents that used gambling blocking software did not gamble at all when having blocking software installed. The survey results show that those who had currently had a blocking software installed ("current users") were less likely to report that they had gambled with just over half of respondents (52%) stating that they had not gambled whilst having a blocking software installed. In contrast, only 28% of respondents who had previously used a blocking software but no longer had it installed ("past users") did not gamble whilst the software was installed.

Table 6: Responses to "Did you gamble at all whilst having blocking software installed?"[47]

	Percentage of current users of blocking software	Percentage of past users of blocking software	Percentage of all respondents that used blocking software
Yes, online only	26%	49%	33%
Yes, in person only	15%	3%	11%
Yes, in person and online	7%	21%	11%
No	52%	28%	44%

Source: KPMG Survey

In addition to stopping individuals from gambling completely, it can also support users to reduce the frequency and extent to which they gamble. Evidence from the survey of blocking software users shows that 63% of respondents that had used blocking software stated that installing blocking software made them gamble less frequently. However, 4% of respondents reported that they gambled more frequently and the remaining 26% gambled the same amount.

Table 7: Responses to "Has installing blocking software made a difference to the frequency with which you gamble (compared to without any blocking software installed)?"

	Percentage of current users of blocking software	Percentage of past users of blocking software	Percentage of all respondents that used blocking software
Yes – I gambled less frequently	70%	51%	63%
Yes – I gambled more frequently	5%	2%	4%
No – I gambled the same amount	20%	36%	26%
Don't know	5%	11%	7%

Source: KPMG Survey

[46] Luquiens et al defined the most heavily involved gamblers as those from the highest quartile for amounts of money spent in the last four weeks.
[47] Due to unrepresentative sample sizes, it was not possible to compare Gamban and other blocking software products in terms of the proportion of survey respondents who reported gambling whilst having blocking software installed.

3.2.2 Impact of gambling blocking software on gambling-related harm

There is evidence from academic literature to suggest that for those who are at-risk gamblers or problem gamblers there is a correlation with a number of disruptive and addictive behaviours which are associated with gambling-related harm. Evidence suggests that gambling-related harm also does not only affect the individual who gambles but can also extend to an individual's family and friends and escalate to their wider community.

Wardle et al (2018) define gambling-related harms as "the adverse impacts from gambling on the health and wellbeing of individuals, families, communities and society".[48] Three key areas of gambling-related harms have been identified; these are as follows:

1) Resources, including work and employment, money and debt and crime

2) Health, such as physical health, psychological distress and mental health

3) Relationships, including those of partners, families and friends and community

Whilst three distinct areas of harm have been identified, it should be noted that there will be considerable overlap between the areas. For example, financial concerns can impact familial relationships. The experience of harms in each area are therefore not mutually exclusive but instead dynamic.

These gambling-related harms are examined in a number of studies considered as part of the literature review conducted as part of the study. The findings from the literature review are summarised in Appendix 1, with the findings from the studies where the costs of gambling-relating harm are quantified set out in the sub-section below.

3.2.2.1 Evidence of gambling-related harm

There are a number of difficulties in estimating gambling-related harm. One of the main issues is in relation to understanding causality – in general, the academic literature on gambling-related harm presents correlation results which do not establish the extent to which problem gambling may have caused the impacts identified. Secondly, the quality of data available to measure different types of impact and harm varies significantly making it difficult to compare impact across different areas of harm.

A summary of the literature reviewed as part of this study is included in Appendix 1. It should be noted that in addition to the issues noted above, a number of these studies are from other countries, therefore the findings may not be fully relevant to the UK.

The two main recent studies for the UK[49] on the costs of gambling-related harm are the 2021 Public Health England (PHE)[50] "Gambling-related harms evidence review: the economic and social costs of harms" and the 2016 IPPR report[51], "Cards on the Table: The Cost to Government Associated with People who are Problem Gamblers in Britain". In the absence of additional UK-specific evidence on the economic cost of gambling-related harm the results from these studies are used in this assessment.

The PHE report, using a methodology to estimate the excess direct economic impact of gambling-related harms in terms of financial, health, employment and criminal activity harms, estimates that

[48] Wardle et al (201*) Measuring gambling-related harms: a framework for action. Available at: http://eprints.lse.ac.uk/89248/1/McDaid_Gambling-Related_harms_Published.pdf

49 It should be noted that these studies do also draw on evidence from other countries.

[50] Public Health England (2021) Gambling-related harms evidence review: the economic and social cost of harms. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1022208/Gambling-evidence-review_economic-costs.pdf

[51] IPPR (2016) Cards on the table: the cost to government associated with people who are problem gamblers in Britain. Available at: Cards-on-the-table_Dec16.pdf (ippr.org)

annually gambling-related harm generates excess costs for the UK Government of £647.0 million and for wider society of £619.2 million, resulting in a total impact of £1.27 billion.[52] This includes costs related to homelessness, harm to health, increased social security expenditure and costs related to criminal activity. The PHE estimates of the excess costs generated by gambling-related harm are focused on the costs associated with problem gamblers only and some harms have only been accounted for partially whilst other costs, such as relationship breakdown have not been quantified.

It is noted that the PHE report in particular has been strongly critiqued for the methodology it uses and it has been suggested that it overestimates the cost of harm attributable to problem gambling. Specifically, issues associated with the approach taken to quantify the costs relating to deaths from suicide, which make up almost half of the total excess costs estimated, has been highlighted in critiques of the PHE report. Whilst there is evidence that problem gambling can contribute to an increased likelihood of suicide, the factors which may drive someone to attempt suicide are complex and multifaceted and the approach taken in the study is likely to be an overestimation.

The IPPR report also uses a methodology to estimate costs to government associated with problem gambling. It assesses the impact of problem gambling on four areas of harm:

- Health: including costs relating to primary care (mental health) services; secondary mental health services; and hospital inpatient services.
- Welfare and employment: including Job Seekers Allowance (JSA) claimant costs and lost labour tax receipts.
- Housing: including the cost of statutory homelessness applications.
- Criminal activity: including the cost of incarcerations.

The report finds that summing the costs across different interactions gives a total excess fiscal cost of between £260 million and £1.16 billion per year for Great Britain as a whole. It is acknowledged in the report, however, that limitations in the available data mean the findings should not be taken as the excess fiscal cost caused by problem gambling but are “an illustrative estimate for the excess fiscal costs incurred by people who are problem gamblers, beyond those that are incurred by otherwise similar members of the population”.

Notwithstanding the important points noted above in relation to the studies,

[52] For a detailed description of the methodology, visit Gambling-related harms: evidence review - GOV.UK (www.gov.uk).

Table 8 below sets out the PHE and IPPR excess cost estimates by type of harm. As can be seen from the figures in the table, the central PHE estimates are generally within the range of the IPPR estimates presented with the exception of excess costs related to health impacts. This is mostly driven by the inclusion of the excess costs related to deaths from suicide which are make up a significant proportion of the PHE estimates for the excess costs related to health impacts but is not included in the IPPR estimates.

Table 8: PHE and IPPR estimates of excess costs relating to problem gambling, £m per year

Type of harm	PHE estimates (£m)			IPPR estimates (£m)	
	Central	Lower	Upper	Lower	Upper
Financial	**62.8**	**41.0**	**84.6**	**10**	**30**
Statutory homelessness	*62.8*	*41.0*	*84.6*	*10*	*30*
Health	**961.3**	**275.0**	**648.7**	**140**	**360**
Death from suicide	619.2	221.7	529.6	-	-
Depression	335.5	3.6	5.7	-	-
Alcohol dependence	4.7	1.4	2.7	-	-
Illicit drug use	2.0	48.3	110.7	-	-
Primary care (mental health) services	-	-	-	*10*	*20*
Secondary mental health services	-	-	-	*20*	*50*
Hospital inpatient services	-	-	-	*110*	*290*
Employment	**79.5**	**158.4**	**327.2**	**30**	**80**
Unemployment benefit	*79.5*	*158.4*	*327.2*	*30*	*80*
Criminal activity	**162.5**	**336.6**	**1,062.8**	**30**	**90**
Incarcerations	*162.5*	*336.6*	*1,062.8*	*30*	*90*
Total	**1,266.1**	**811.0**	**2,123.3**	**210**	**560**

Source: Public Health England (2021) Gambling-related harms evidence review: the economic and social cost of harms. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1022208/Gambling-evidence-review_economic-costs.pdf and IPPR (2016) Cards on the table: the cost to government associated with people who are problem gamblers in Britain. Available at: Cards-on-the-table_Dec16.pdf (ippr.org)

3.2.2.2 Evidence of reduction in gambling-related harm from the survey of blocking software users

In the absence of sufficient existing evidence on how blocking software can reduce gambling-related harm, the survey conducted as part of this study sought to obtain some evidence in relation to this. The findings from this survey add to the evidence of the impact of blocking software.

As part of the survey respondents were asked to provide responses to the questions of the Problem Gambling Severity Index (PGSI) [53]. The PGSI is a standardised measure of at-risk behaviour in problem gambling. It is based on research of the common signs and consequences of problematic gambling. Based on the PGSI score, individuals are split into four categories:

- Low risk gambler – Score: 0. Low risk gamblers gamble with no negative consequences.
- At-risk gambler – Score 1-2. At-risk gamblers experience a low level of problems with few or no identified negative consequences.
- Medium risk gambler – Score: 3-7. Medium risk gamblers experience a moderate level of problems leading to some negative consequences, such as sometimes pending more than they can afford.
- Problem gambler – Score 8 or above. Problem gamblers are defined as those who gamble with negative consequences and a possible loss of control.

[53] The reporting of past PGSI scores may be subject to recall error. This issue may be more acute for those who started using a gambling blocking software a longer time ago compared to those who used it more recently. 39% of survey respondents had installed their most recent blocking software over 1 year ago.

Using the PGSI questions, survey respondents were asked about their gambling behaviour in the 12 months before using a gambling blocking software and then the same questions again in relation to the 12-month period after installing it (or for the period after which they have installed it if less than 12 months). [54]

Based on survey responses it was found that, on average, users reported changes in gambling behaviour in line with a reduction in their PGSI score. Specifically:

— On average, current users of blocking software scored 18.1 on the PGSI in the 12 months before installing blocking software. This reduced to an average of 9.1 when considering gambling behaviour after installing blocking software. This represents a 9.0 reduction in the PGSI score for current users of blocking software.

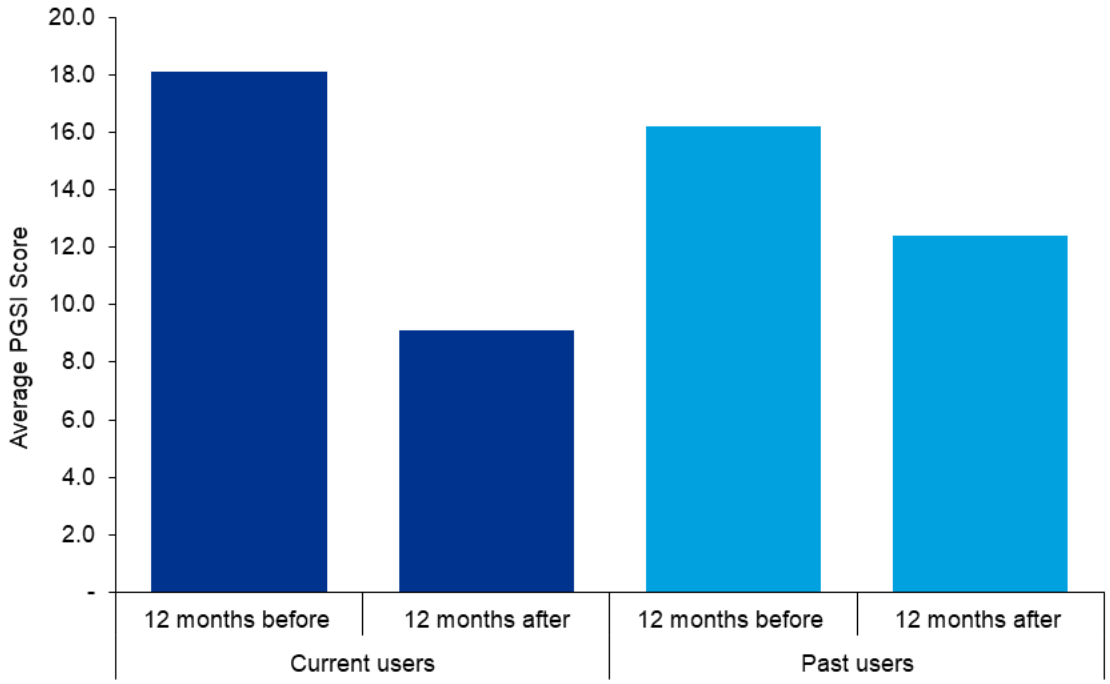
— Prior to installing blocking software, 92% of current users of blocking software would be classified as problem gamblers based on their PGSI score. Following the installation of blocking software and gambling behaviour in the 12 months after this, this fell to 48% of respondents who are current users of the software.

— On average, past users of blocking software scored 16.2 on the PGSI in the 12 months before installing blocking software which reduced to 12.4 in the 12 months after installing blocking software. This represents a 3.8 reduction in the PGSI score for past users.

— For past users of blocking software, there was a 22 percentage point reduction in the number of respondents being classified as problem gamblers using the PGSI based on their gambling behaviour in the 12 months before and after installing blocking software.

[54] 61% of survey respondents who are current users of blocking software had installed blocking software less than 12 months ago so did not have a full 12 months of comparison. These survey respondents were asked to report the change in PGSI score for the period since they had installed blocking software.

Figure 2: Average PGSI score of the respondents 12 months before and after installing gambling blocking software[55]



Source: KPMG Survey

Table 9: Percentage of respondents who had used a blocking software, split by PGSI category[56]

	Percentage of current users of blocking software		Percentage of past users of blocking software		Percentage of total respondents who had used a blocking software	
	12 months before	12 months after	12 months before	12 months after	12 months before	12 months after
Low risk gamblers	2%	23%	1%	11%	1%	19%
At-risk gamblers	2%	8%	1%	6%	1%	7%
Medium risk gamblers	5%	21%	9%	17%	6%	19%
Problem gamblers	92%	48%	89%	67%	91%	54%

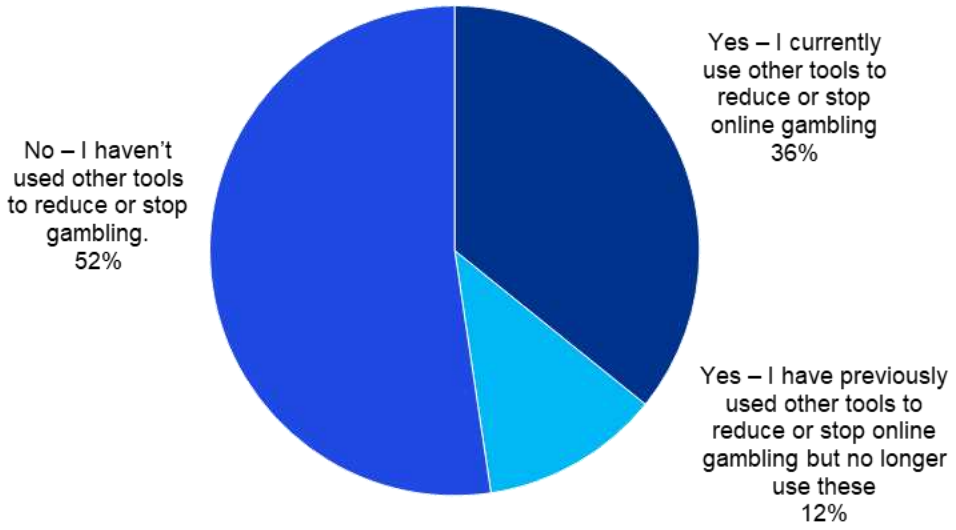
Source: KPMG Survey

The findings above relate to the changes in gambling behaviour from all survey respondents who have used blocking software. The survey also asked respondents if they used other tools or forms of support to aim to reduce their gambling or to address gambling-related harm.

[55] The reporting of past PGSI scores may be subject to recall error. This issue may be more acute for those who started using a gambling blocking software a longer time ago compared to those who used it more recently. 39% of survey respondents had installed their most recent blocking software over 1 year ago.
[56] The reporting of past PGSI scores may be subject to recall error. This issue may be more acute for those who started using a gambling blocking software a longer time ago compared to those who used it more recently. 39% of survey respondents had installed their most recent blocking software over 1 year ago.

Just over half (52%) of survey respondents who had gambled stated that they had not used other tools to reduce or stop online gambling compared to 48% who had. Of those who had used other tools, 36% were currently using other tools to reduce or stop online gambling.

Figure 3: Percentage of survey respondents who had gambled using other gambling reduction tools[57]



Source: KPMG Survey

A number of studies of gambling support programmes have found evidence of the benefits of layering different forms of support. For example, the Ipsos MORI evaluation of the TBS campaign pilot found that a layered approach to the TBS pilot had been effective in driving behaviour change, in particular among the individuals using a three-tool layered approach (i.e. Gamban, GAMSTOP and the NGH helpline).[58]

The findings from the survey of gambling software users supports this, with the results indicating that those users of blocking software who used it alongside other forms of support reported a greater reduction in their PGSI score compared to those users who reported only using gambling blocking software.

For those survey respondents that used blocking software alongside other tools, the reduction in PGSI score from 12 months before and after installing blocking software was 19% greater than those survey respondents who only used blocking software.

Considering only those survey respondents who reported using Gamban rather than other gambling blocking softwares, a greater reduction in PGSI score was also found, whereby the reduction in PGSI score was 35% greater for those who used Gamban alongside other gambling reduction tools, compared to those who only used Gamban.

[57] The question was asked to 562 people, of which 338 answered and 224 did not answer.
[58] Ipsos MORI (2022) Final Evaluation of the TalkBanStop Pilot.

Table 10: Changes in PGSI score for the survey respondents who used blocking software only compared to those who used blocking software and other gambling reduction tools

	PGSI score 12 months prior to installing blocking software	PGSI score 12 months after installing blocking software	Change in PGSI score	Difference in reduction in PGSI score for those who used other gambling tools
Gamban only	17.10	8.13	8.97	-
Gamban and other tools	21.04	8.96	12.09	35%
Blocking software only	16.74	8.33	8.41	-
Blocking software and other tools	20.52	10.51	10.01	19%

Source: KPMG Survey

3.2.2.3 Estimate of the benefits from reduction in gambling-related harm from the use of blocking software

For the purposes of estimating the benefits to government/ society in terms of reduced gambling-related harm in this study, in the absence of better quantitative data for England, the results from the PHE and IPPR studies are used. The PHE central estimates and the IPPR lower and upper estimates have been used (see

Table 8).

As explained in Section 3.2.2.1 above, there are a number of limitations to these studies and, in the case of the PHE report in particular, concerns have been raised around some of the estimated cost figures.

While it was not possible as part of this study to address these issues to produce fully revised cost estimates, to address at least one of the main critiques of the PHE report, the cost of deaths from suicide have been excluded from the PHE central estimates used in our analysis. It is noted, however, that in doing so it is likely to mean – all else equal – that the results are somewhat conservative given that there is some evidence of a correlation between gambling and suicide rates. For example, Gambling with Lives, a UK charity set up in 2018, estimated that deaths related to gambling disorder are between 250 and 650 every year, representing between 4% to 11% of total suicides.[59] Wardle et al (2018) also analysed the relationship between gambling and suicides in the UK in more detail and found that 1 in 20 problem gamblers had made a suicide attempt in the past year and that problem gamblers were significantly associated with a higher probability of attempting suicide compared to non-gamblers.[60]

Even with this adjustment, the results of the analysis and findings of our study should be interpreted with the limitations of the available evidence in mind and they provide a range of indicative estimates only.

Based on the reduction in the PGSI score reported by survey respondents following their use of gambling blocking software and the PHE and IPPR estimates of the additional cost to the Government and wider society of gambling-related harm, the value in the reduction in harm associated with the installation and use of free Gamban licences has been estimated.

The following approach was taken to estimate the impact:

- The cost figures from the PHE and IPPR reports were divided by the estimated number of problem and at-risk gamblers presented in these reports in order to estimate a cost to the government and the wider society per problem gambler and at-risk gamblers. As noted above due to the concerns over the robustness of the PHE cost estimates relating to suicide, these have been excluded from the analysis.[61]

- To estimate the cost reduction per user of blocking software, the PHE and IPPR costs per gambler were multiplied by the reduction in the number problem gamblers and at-risk gambler associated with the use blocking software from the survey. To capture only the cost reduction associated with blocking software, data on respondents who were using blocking software but no other tool to prevent gambling-related harm were selected.[62]

It should be noted that the analysis captures the impact relating only to the reduction in PGSI scores for those who are already problem or at-risk gamblers when installing gambling blocking software. The analysis does not capture any benefits associated with how users' installation of gambling blocking software may be used by them as a preventative measure to stop gambling behaviour escalating before they become a problem gambler with a correspondingly high PGSI score.[63]

Notwithstanding the limitations to the analysis, driven by both the caveats to the PHE and IPPR reports and to the survey conducted, **it is estimated that on a per user of gambling blocking**

[59] Please visit the Gambling with Lives reports here: Research - gamblingwithlives.org.
[60] Wardle H, Dymond S, John A, McManus S. Problem gambling and suicidal thoughts, suicide attempts and non-suicidal self-harm in England: evidence from the Adult Psychiatric Morbidity Survey 2007. 2019
[61] The PHE report shows cost estimates for both problem and at-risk gamblers, while the IPPR report only report cost estimated for problem gamblers.
[62] It has been assumed that the survey respondents are representative of all users of Gamban blocking software.
[63] See Appendix 2 for more detail.

software basis, the reduced costs to the UK Government and wider society from a reduction in gambling-related harm are between £1,042 and £8,924.

The data shows there have been 9,122 free licences for Gamban blocking software provided to users as part of the TBS campaign up to July 2022. When these benefits (reduced costs) are scaled across all these users**, it is estimated that the provision of free gambling blocking software through the TBS campaign may have generated between £3.8m and £11.7m in reduced costs (in gross terms) to the UK Government and wider society from a reduction in gambling-related harm, using to IPPR cost figures, with a central estimate of £6m, using to PHE cost figures.**

In Section 3.3.3, sensitivity analysis has also been performed using the lower and upper PHE cost estimates.

When assessing the benefits associated with the free provision of the software through the campaign it is important, however, to adjust for additionality, that is the benefits realised over and above the benefits that may have arisen in the absence of the public sector intervention. In this case that is the benefits from the provision of free licences for the Gamban blocking software that would not have been generated if these licences were not provided. Adjusting for this provides an estimate of the net benefits. These results are included in Section 3.3.

3.2.3 Reduction in individual gambling-related financial losses from the use of gambling blocking software

Evidence from the literature review indicates that there can be financial harm as a result of gambling.[64] For example, a study by Badji et al (2020) found that increasing the number of electronic gaming venues in a local area is correlated to an increase in the number of personal bankruptcies in that region[65].

However, as no existing evidence was available on the extent to which the use of blocking software may reduce financial harm from gambling, questions were asked to users of blocking survey in the survey to understand how the software's use may have affected this. Survey respondents were asked to report their average gambling-related financial losses in the 12 months before and 12 months after installing a gambling blocking software.

Of the respondents who had used gambling blocking software, 64% reported a reduction in gambling-related financial losses after installing a gambling blocking software, while others reported that their financial losses were actually higher.

It was found:

— On average, it was found that survey respondents who are users of blocking software reported a £5,901 reduction in annual gambling-related financial losses in the 12 months following the installation of blocking software when compared to the 12 months prior to the installation of blocking software.

— The range of changes in annual gambling-related financial losses by current users of blocking software ranged from a minimum value of -£210,000 (i.e., financial losses increased) to £500,000.

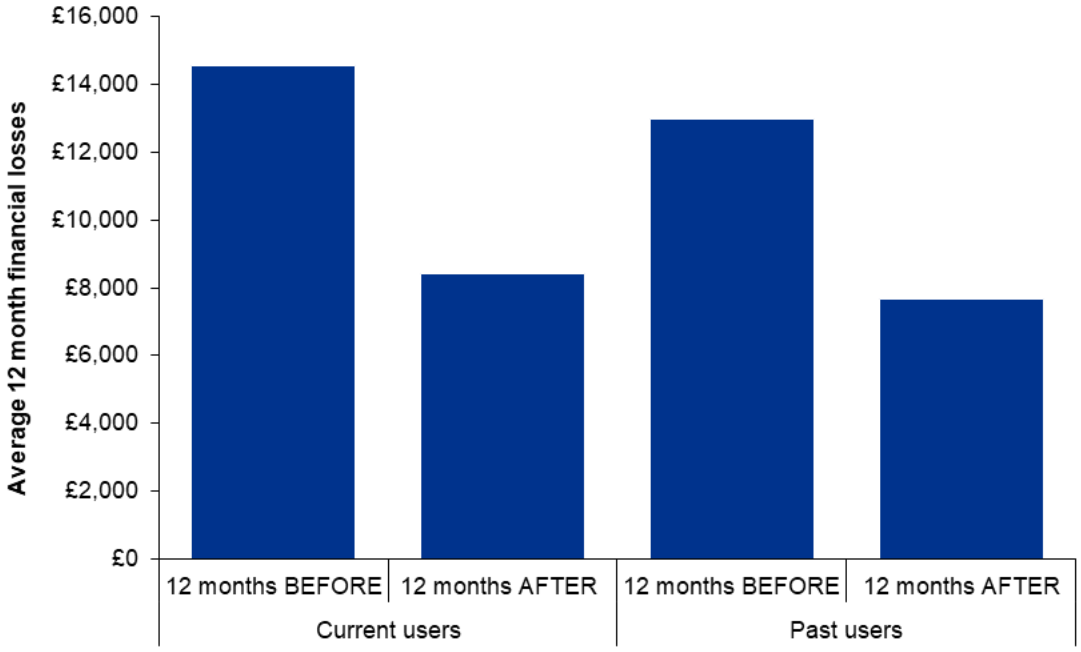
— On average, users who were using blocking software only, without the help of any other additional tools to prevent gambling-related harm, reported a £4,888 reduction in annual

[64] This paragraph is based on findings by Langham, E., Thorne, H., Browne, M., Donaldson, P., Rose, J., & Rockloff, M. (2015). Understanding gambling-related harm: A proposed definition, conceptual framework, and taxonomy of harms. *BMC public health*, *16*(1), 1-23.
[65] It is noted that this study was conducted in Australia, so its results might not be fully applicable to the UK

gambling-related financial losses in the 12 months following the installation of blocking software when compared to the 12 months prior to the installation of blocking software.

The study did not assess how any avoided gambling-related financial losses were used by individuals, and any costs and benefits associated with that.

Figure 4: Average gambling-related financial losses 12 months before and after installing blocking software



Source: KPMG Survey

When scaled up to all of those who have installed a free Gamban licence through the TBS campaign, it is estimated that across all users £44.6m total gross gambling-related financial losses was avoided over the appraisal period from December 2020-July 2022 through the installation of Gamban.

When assessing the benefits associated with the free provision of the software through the campaign it is important, however, to adjust for additionality, that is the benefits realised over and above the benefits that may have arisen in the absence of the public sector intervention. In this case that is the benefits from the provision of free licences for the Gamban blocking software that would not have been generated if these licences were not provided. Adjusting for this provides an estimate of the net benefits. These results are included in Section 3.3.

3.2.4 Wider impacts of the use of gambling blocking software

Benefits based on the willingness-to-pay for blocking software

Given that through the TBS campaign, people are given access to a Gamban licence for free, in order to understand the value that users place upon this gambling blocking software, survey respondents were asked what their willingness-to-pay (WTP) for a year of gambling blocking software would be.

WTP measures the maximum theoretical prices that users would pay for blocking software and is assumed to be reflective of, but not exceed, the gross benefit users gain from using the blocking

software. As through the TBS campaign, people are given access to a Gamban licence for free, the WTP provides an estimate of the value that users place upon one year of access to Gamban. An estimate of the direct monetary value placed upon Gamban by users, in the form of WTP, can be used as an indicator of the benefit that is derived from Gamban.

Over a quarter of people surveyed who had used a gambling blocking software (27%) stated that they would not be willing to pay anything for a gambling blocking software. This may be a function, however, of being able to access software free of charge rather than indicating that they derived no value from it.

Excluding those who reported they would not be willing pay anything for a gambling blocking software, £5 per year was the minimum value survey respondents would be willing to pay whilst the maximum value reported was £150 per year. Overall, including those who reported a £0 per year willingness to pay, the average WTP among survey respondents for a year of gambling blocking software was £27.59. The median WTP among survey respondents for a year of gambling blocking software was £17.50. This provides an indication of the value that the average user of blocking software places upon the service. The average WTP among for survey respondents who received a free licence was £19.48. This provides an indication of the value that the average user of blocking software who receive the licence for free places upon the service.

Based on these reported WTP figures, if they are reflective of the benefit users gain from using the blocking software, it suggests that the user benefits across all users of a free Gamban licence through the TBS campaign may be over £251,676 considering the average WTP among all survey respondents and £177,666 considering the average willingness to pay of who received the licence for free over the appraisal period.[66]

Wider benefits from reducing problem gambling

Evidence from the literature suggests that gambling-related harm also does not only affect the individual who gambles but can also extend to an individual's family and friends and escalate to their wider community. As previously noted, Wardle et al (2018)[67] identified impacts on relationships, including those of partners, families and friends and community, as one of the areas of gambling-related harm.

Little descriptive evidence exists on the association between gambling and relationship disruption across the UK. However, according to the Langham et al. (2015) study, which combines evidence from medical research and interviews with different medical and non-medical professional involved in the provision of problem gambling treatment, relationship harms are usually caused by the gambler's loss of available time, breach of trust, and distortion of their relationship role. For example, in the presence of a parent gambler, a child could have to take care of the household tasks or younger children or stay home from school.[68] Relationship and family breakdowns can also have ripple effects such as social isolation, emotional or psychological distress, and intergenerational harms.

While there is no empirical evidence of how the use of blocking software is associated with changes in relationships, to the extent to which the use of gambling blocking software reduces problem gambling and harms related to this, it would be expected that there would be benefits from its use in terms of reduced harm to relationships. It has not been possible to quantify this as part of the study.

[66] The WTP captures the value that users would be willing to pay for one year of gambling blocking software. It should be noted that through the TBS Campaign, people are able to choose a multi-year licence up to 5 years meaning that the WTP for gambling blocking software could be higher.
[67] Wardle et al (201*) Measuring gambling-related harms: a framework for action. Available at: http://eprints.lse.ac.uk/89248/1/McDaid_Gambling-Related_harms_Published.pdf
[68] Langham, E., Thorne, H., Browne, M., Donaldson, P., Rose, J., & Rockloff, M. (2015). Understanding gambling-related harm: A proposed definition, conceptual framework, and taxonomy of harms. *BMC public health*, *16*(1), 1-23.

3.3 Cost benefit analysis of the gambling blocking software

3.3.1 The cost of providing gambling blocking software through the TalkBanStop campaign

The cost to GamCare of providing the gambling blocking software element of the TBS campaign is £2.4m from December 2020 to March 2023.

The cost of the gambling blocking software is paid for by GamCare in the form of two grant payments made to Gamban, the first covering the period December 2020 – December 2021 and the second covering the period April 2022 – March 2023. It should be noted that Gamban had excess budget which was used to continue to provide blocking software to the TBS campaign between December 2021 – March 2022. The cost model for providing the blocking software element has changed to a cost per user model for the second grant payment which has substantially reduced the cost to GamCare.

3.3.2 Benefit to cost ratio for gambling blocking software element of the TalkBanStop campaign

Based on the analysis set out in Section 3.2 above and noting its limitations due to available evidence, it is estimated that the blocking software element of the TBS campaign has generated between £48.6m to £56.4m in gross benefits, based on IPPR cost figures, with a central estimate of £50.7m over the appraisal period based on PHE cost figures. This includes the impact on the reduction in the public costs associated with gambling-related harm, the reduction in financial harms and the additional willingness to pay by gambling blocking software users.

However, in order to estimate the impact that is a direct result of the use of gambling blocking software, as opposed to what would have occurred under the counterfactual scenario (where Gamban does not provide licences free of charge to users), adjustments need to be made for additionality to derive net benefits. The net benefits are those relevant for the estimation of the BCR, in line with HM Treasury Green Book guidance.

In order to estimate the level of additionality, findings from the survey of gambling blocking software users were used. Survey respondents who had received a free Gamban licence through the TBS campaign were asked what they would have done if Gamban were not available for free.

- For the proportion of respondents who would have paid for Gamban licence, it was assumed that any benefits from use of the free licence would have occurred without the provision of a free Gamban licence and so there are no additional benefits for this subset of users.

- For the proportion of respondents who reported they would have used another free gambling blocking software either with or without other gambling reduction tools, it was assumed that there would be no additional benefits for this subset of users as they would have accessed an alternative blocking software. It should be noted that this may be a conservative assumption as the survey results indicated that the reduction in PGSI scores for users of Gamban compared to other blocking softwares was higher. However, due to the limited number of responses from other users of blocking software it was considered that the results would not be robust enough to use as part of the additionality assessment.

- For the proportion of respondents who reported they would not have used any other gambling blocking software or other tools to reduce gambling, 100% additionality was assumed, i.e., all the benefits from the use of the gambling software would not have occurred without the provision of the free Gamban licence.

Using data from the survey of gambling blocking software users, it is estimated that 32% of Gamban users would have not paid for a licence or used any other additional tool to reduce gambling if they could not have received a free Gamban licence. Based on this finding it was assumed that only 32% of those who received a free Gamban licence through the TBS campaign would gain any additional benefit over and above the counterfactual scenario.

On this basis, and notwithstanding the limitations to the analysis, driven by both the caveats to the PHE and IPPR reports and to the survey conducted, it is estimated that:

- **The net reduction in financial losses is approximately £14.2m.**
- **The net reduction in gambling-related harm over the appraisal period is between £1.2m to £3.7m, using the IPPR cost figures, with a central estimate of £1m, using the PHE cost figures.**
- **Overall, it is estimated that the blocking software element of the TBS campaign has generated between £15.9m and £18.0m in net benefits (excluding WTP benefits), with a central estimate of £16.2m over the appraisal period.[69]**

Taking into account the total value of net benefits and the cost to GamCare of providing the gambling blocking software element of the TBS campaign, it is estimated that the blocking software element of the TBS campaign generates a **Benefit-Cost Ratio (BCR) of between 8.1:1 and 9.4:1.** This means that for every £1 that GamCare spends on blocking software, £8.10 to £9.40 of benefit is generated.

However, as detailed further above, given the limitations to the available evidence, in particular the estimates of the costs of gambling-related harm, these results should be considered as indicative only.

[69] Due to limitations in the data available, for the purposes of the analysis it has been assumed that the benefits from gambling blocking software persist for a full year for each user. Whilst there is data available on the length of Gamban licences that are provided through the TBS Campaign, data is not available on the duration over which individuals continue to use the software. As over 70% of those who received a free Gamban licence obtain a licence for 2 years or more this was considered to be a reasonable and potentially conservative assumption for the purposes of the analysis.

Table 11: Indicative net benefits and costs of the blocking software element of TBS campaign

	Lower estimate	Central estimate	Upper estimate
Indicative net benefits	£15.9m	£16.2m	£18.0m
Reduction in gambled related harm	£1.2m	£1.9m	£3.7m
Reduction in financial losses	£14.3m	£14.3m	£14.3m
Total costs	£1.9m	£1.9m	£1.9m
Indicative BCR	8.1	8.4	9.4

Source: KPMG analysis

It should be noted that the estimation of the BCR excludes the direct user benefits estimated through the willingness-to-pay analysis to avoid any double counting with the reduction in financial losses. It is considered that some of the value that users place upon the free Gamban licences will, at least in part, reflect the amount of money users have saved from using the blocking software. It has therefore not been included in the estimation of total benefits and the BCR.

It should also be noted that the BCR excludes a number of wider potential benefits of gambling blocking software and its impact on problem gambling behaviour, where such benefits could not be robustly quantified in the analysis. For example, it does not capture any benefits associated with any reduction in relationship disruption and the impact of problem gambling on 'affected others'. Additionally, for reasons explained further above, any benefits from reduced levels of suicide are excluded for the gambling-related harm costs used in the assessment.

3.3.3 Sensitivity analysis

To aid the evaluation of the blocking software element of the TBS campaign, sensitivity analysis has been conducted to look at how the central estimate of the BCR based on PHE cost figures is sensitive to variations in the estimated benefits.

In particular, sensitivity analysis aims to test the degree to which the BCR is sensitive to changes in the approach to compute the reduction in gambling-related harm. As mentioned in Section 3.2.2 and given the limitations in the availability of data for the UK and absence of evidence which establishes causation, there is uncertainty around the PHE cost figures associated with at-risk and problem gambling which has been used in the analysis.

To establish the robustness of our central PHE based estimate of the BCR ratio, we tested its sensitivity when computing reduction in cost per blocking software user using the lower and the upper limits of the 95% confidence intervals of the overall costs presented in the PHE report.[70]

[70] For additional details on the sensitivity analysis conducted by PHE, please visit: The economic and social cost of harms associated with gambling in England, 2019 to 2020 (publishing.service.gov.uk)

Table 12: BCR sensitivity analysis[71]

	Lower estimate	Central estimate	Upper estimate
Indicative net benefits (excluding WTP benefits)	£15.9m	£16.2m	£17.6m
Reduction in gambled related harm	£1.4m	£1.9m	£3.0m
Reduction in financial losses	£14.3m	£14.3m	£14.3m
Total costs	£1.9m	£1.9m	£1.9m
Indicative BCR	8.2:1	8.4:1	9.0:1

Source: KPMG analysis

As shown in Table 12, the overall reduction in gambling-related harms associated with the blocking software ranges from £1.4m to £3.0m. All else equal, the BCR ratio ranges from 8.2 and 9.0. This means that for every £1 that GamCare spends on blocking software, benefits of between £8.20 and £9 are generated. The lower and upper bound estimates are still within the range of the BCR estimated using IPPR cost figures (see Table 11 in Section 3.3.2).

[71] Due to limitations in the data available, for the purposes of the analysis it has been assumed that the benefits from gambling blocking software persist for a full year for each user. Whilst there is data available on the length of Gamban licences that are provided through the TBS Campaign, data is not available on the duration over which individuals continue to use the software. As over 70% of those who received a free Gamban licence obtain a licence for 2 years or more this was considered to be a reasonable and potentially conservative assumption for the purposes of the analysis.

4 Assessment of the cost-effectiveness of gambling blocking software

Cost-Effectiveness Analysis (CEA) is a variant of CBA which compares the costs of alternative ways of producing the same or similar output.[72]

When assessing cost effectiveness as part of a value for money evaluation, the HM Treasury Magenta Book guidance[73] suggests considering the following factors:

- Cost per unit (outcome, participant, etc.);
- Costs of delivering the intervention;
- Whether the intervention been cost-effective (compared to alternatives and compared to doing nothing);
- What the most cost-effective option is.

A full CEA, addressing each of these areas has not been conducted as part of this study due to a lack of available detailed data on alternative options to Gamban for blocking software. As a result the assessment primarily focuses on the cost effectiveness of the current provision of blocking software by Gamban as the incumbent provider through the TBS Campaign. The total cost per user of the Gamban blocking software provided free of charge through the TBS campaign, and the overall cost of delivering the intervention have been assessed. It should be noted, however, that it was not possible within the scope of the study to assess whether Gamban as the current provider of blocking software through the TBS campaign would be able to achieve the same outcomes at a lower cost, other than qualitatively and relying on Gamban's own representations on this.

To the extent to which existing data allows, the CEA compares the use of Gamban as the provider of the blocking software element of the TBS campaign against alternative blocking software providers, based on available information on the cost and in terms of specific quality attributes which contribute towards the outcome of the end product on users' gambling behaviour. It should be noted, however, that this relies upon the limited data and information that is publicly available or was possible to collect through interviews with blocking software providers and the survey of users of blocking software. A technical and functional review of different blocking software providers was not within the scope of this study. Detailed data, such as the potential financial cost associated with the provision of blocking software on a like-for-like basis to Gamban (e.g. with the same service levels and number of users) by alternative providers is not available. Nor were alternative providers' costs of blocking software provision on a per user basis available[74].

As a result of these limitations, a full cost-effectiveness analysis cannot be conducted at this point in time.

[72] HM Treasury (2022) The Green Book: Central Government Guidance on Appraisal and Evaluation. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1063330/Green_Book_2022.pdf
[73] For more information, please visit The Magenta Book - GOV.UK (www.gov.uk).
[74] While data on BetBlocker's costs are available in its published Financial Statements, data on the number of users was not available to include an estimated cost per user figure in the assessment.

4.1 Evidence of the cost of gambling blocking software

4.1.1 Cost of the provision of gambling software

As part of this study, Gamban and one other large UK blocking software provider were interviewed to provide information to enable us to better understand the cost of providing gambling blocking software, the business model for the provision of the software and any planned investments or changes that may impact the effectiveness and features of the gambling blocking software.

In order to provide its blocking software free of charge, Gamban receives a grant from GamCare as part of the TBS campaign.

As detailed in Section 3.3.1, the cost to GamCare of providing the gambling blocking software element of the TBS campaign is £2.4m covering provision over the period from December 2020 to March 2023. This is paid in the form of two grant payments with the second payment based on a cost per user model which we understand has substantially reduced the cost to GamCare.

For Gamban, the grant payments from the TBS campaign represents over 80% of Gamban's turnover over the period December 2020-March 2022. Gamban donates its B2C revenue back to GamCare and so, excluding the B2C revenues from the total revenues, the grant payments from the TBS campaign make up 93% of Gamban's total revenue over the period December 2020-March 2022.

It should be noted that Gamban stated that its involvement in the TBS campaign has reduced its revenue from other channels, in particular revenue previously derived from distributors and operators. This may represent an opportunity cost for Gamban to participate in the TBS campaign.

From the information provided by the gambling blocking software providers engaged with and information available publicly, it appears that blocking software providers are commonly funded through a combination of B2C and B2B sales. The exception to this is Gamban which receives grant funding from GamCare and Betblocker which is a UK registered charity and is funded through donations made by gambling operators which enables Betblocker to provide a gambling blocking software free of charge.[75]

It is understood from the conversations held with Gamban that the majority of the operating cost in providing gambling blocking software is driven by its staff costs, for example to deliver research and development activity in order to keep pace with operating system updates. A large proportion of the costs are fixed costs, associated with the development and updating of the software itself, with limited marginal costs per additional user. However, the investment fixed costs are incurred to provide capacity up to a certain capacity (i.e. number of users). To increase capacity once the user limit is reached would require further investment. Gamban stated that it is currently reaching its capacity limit based on investments made to date and whilst there is some capacity to accommodate new users, to substantially scale up the operations new investment would be needed.

In the interview with another blocking software provider, the provider stated that its costs are not necessarily based on the total number of users but the number of new users in a given time period. The biggest ongoing variable cost for the provider interviewed related to customer support costs. Users typically experience difficulties during the set-up process which would lead them to contact customer support. Therefore, a large increase in new customers would require new user support agents to be employed.

In addition to incurring costs to expand capacity, it was noted by providers of gambling blocking software that they make ongoing investments to improve the reliability of their software as well as to enhance the user experience. For example, Gamban indicated that it is planning to make investments to implement methods to encourage users to engage with the talk and stop elements of the TBS campaign and would like to invest in improving distributor functionality, which it considers would

[75] https://www.betblocker.org/

support service delivery in particular the onboarding of users and incorporating 'warm transfers' between the talk and stop elements of the TBS campaign. Another provider reported that investments in increasing user support agents to allow for faster response times to support user requests, and upgrading iOS protections to benefit users would be among the areas it would prioritise if additional funding were available.

In terms of whether Gamban could deliver its blocking software at a lower cost to GamCare, the assessment did not examine this and only drew on information provided by Gamban itself. Following a review conducted for Gamban in 2020[76], fundamental standards for blocking software have been identified, in order to help to ensure that (vulnerable) consumers are protected and can access the best quality tools to help them. Gamban indicated that any measures it could take to reduce its operating costs for the provision of gambling blocking software would likely impact the quality of the product. and could result in it falling below the standards for gambling blocking software as set out in the review.

In particular, Gamban reported that any cost reductions may affect the ability for the blocking software to:

- be futureproofed to adapt to changes in operating system updates and keep the blocking software functional;
- measure and track the performance of Gamban;
- prevent circumvention of the blocking software;
- keep the list of sites to block is up to date;
- maintain consistent protection across all types of devices;
- have a quality back-end and apps; and
- maintain accessibility.

It is noted that the other UK blocking software provider interviewed as part of the project indicated that it considers that it has the lowest cost structure for delivering its blocking software service, specifically because its operating model results in all funding it received being deployed to maintain and improve the tools and support it offers[77]. It indicated that if it were to face any future funding cuts, this would result in cuts having to be made to prioritised investments, such as in user support and upgrades to iOS protections.

4.1.2 Cost to users of gambling blocking software

Whilst Gamban is available free to users through the TBS campaign, with licences funded by GamCare, there is a charge to users for a Gamban licence if it is being accessed outside of the TBS campaign.[78] Similarly, some other gambling blocking software products available in the UK are offered free of charge to users whilst others are paid for.

Of the survey respondents who currently use and have used blocking software 62% stated that they did not pay for their most recent gambling blocking software licence. However, this is unlikely to be

[76] VITA (2021) Fundamental standards for gambling blocking software: Ensuring quality support for people impacted by difficulties with gambling.
[77] This statement was not tested through this study - while cost information is available for this provider, data on the number of users is not available to estimate the average cost per user, nor was it within the scope of the study to conduct a detailed comparative assessment of different software from a technical and functionality perspective.
[78] Data provided by Gamban shows that over the period December 2020 to July 2022, Gamban had a total of 21,062 UK registrations. Of which 9,122 were free TBS registrations.

representative of all users of blocking software in the UK given the distribution of the survey, in particular to users of Gamban and those engaged with GamCare.

The survey of gambling blocking software users found that for those who used a free Gamban licence, 47% stated that had they not received a free Gamban licence they would have accessed an alternative free blocking software, whilst 15% would have paid for a blocking software licence.

Meanwhile 32% of the respondents using a free Gamban licence would not have used a gambling blocking software at all, with 21% opting not to use any tools to reduce their gambling and 11% would have opted to use other tools.

This suggests that a key factor determining whether individuals' access gambling blocking software is that it is free to use. This is further evidenced through findings from the survey of blocking software users set out in Section 4.2 below.

Table 13: Responses to "If Gamban had not been available to you for free, what would you have used instead (in addition to what you may have already been using)?"[79]

	Percentage of those who received a free Gamban licence through the TBS campaign
Paid for a Gamban licence	15%
Used an alternative free gambling blocking software	47%
Not used any gambling blocking software, but used other tools to reduce gambling	11%
Not used any gambling blocking software or additional tools to reduce gambling	21%
Other - please state	6%

Source: KPMG Survey

4.2 Analysis of quality attributes of gambling blocking software

Evidence from existing studies and industry reports highlight the quality attributes that are considered most important and appropriate for gambling blocking software. It has been suggested in one such study that gambling software, being a health intervention, should be evaluated in terms of its accessibility, effectiveness, responsiveness, and accountability and safety.[80]

The survey of gambling blocking software users conducted as part of this study, sought to understand users' experience with gambling blocking software, in particular in terms of accessibility, effectiveness and responsiveness.

4.2.1 Accessibility

Accessibility refers to the ability of those in need to be able to readily access gambling blocking. This includes providers making the installation process as easy as possible for their users and the affordability of it, for example, through various subscription options to meet the needs of different users, or in the case of a number of blocking software being free of charge to end users. [81]

Industry reports suggest that blocking software is generally easy to install.[82] Evidence from a consumer review reveals that Gamban blocking software can be easily set up by following the

[79] Number of responses to the question = 185
[80] VITA CA (2021). Fundamental Standard report for gambling blocking software: ensuring quality support for people impacted by difficulties with gambling.
[81] VITA CA (2021). Fundamental Standard report for gambling blocking software: ensuring quality support for people impacted by difficulties with gambling.
[82] GambleAware (2018). Evaluating online blocking software.

instructions on the provider's website, which are considered to be simple to use and navigate. Once installed, the software works instantly by automatically changing the Domain Name System (DNS).[83]

The same consumer review report found that Betblocker can be installed by downloading a file from the provider website, but, at least at the time at which the study was undertaken, it was noted that its website "appears not yet fully developed […] hard to follow and there are spelling and grammar mistakes". [84] Once installed, the Betblocker software works instantly by modifying the host file and using a VPN.

Similarly, other providers' websites, such as Betfilter and GamBlock, have been reported in the same consumer review to be slightly challenging to navigate; also, their software installation procedure is "slightly more complex" as it requires multiple steps.[85]

Findings from the survey of gambling blocking software users conducted as part of this study support the above qualitative evidence in relation to Gamban. Approximately 90% of respondents who disclosed the provider of their most recent current software reported being Gamban users.

The survey evidence, as shown in Figure 5, suggests that:

- Users are most satisfied with the quality attribute of "the ease and speed with which their blocking software can be installed". Of a total of 285 respondents, 65% of current and past users reveal to be extremely satisfied with the installation procedure.

- 143 of the 202 current users (72%) who rated the quality of blocking software attributes said they are extremely satisfied with the ease and speed with which the software could be installed.

- Of the respondents who were past users of blocking software, just over half (51%) said they were extremely satisfied with the software's ease of installation.

- Overall, 58% of all Gamban user respondents reported being extremely satisfied with the extent to which they were able to install the software for their preferred length of time/period.

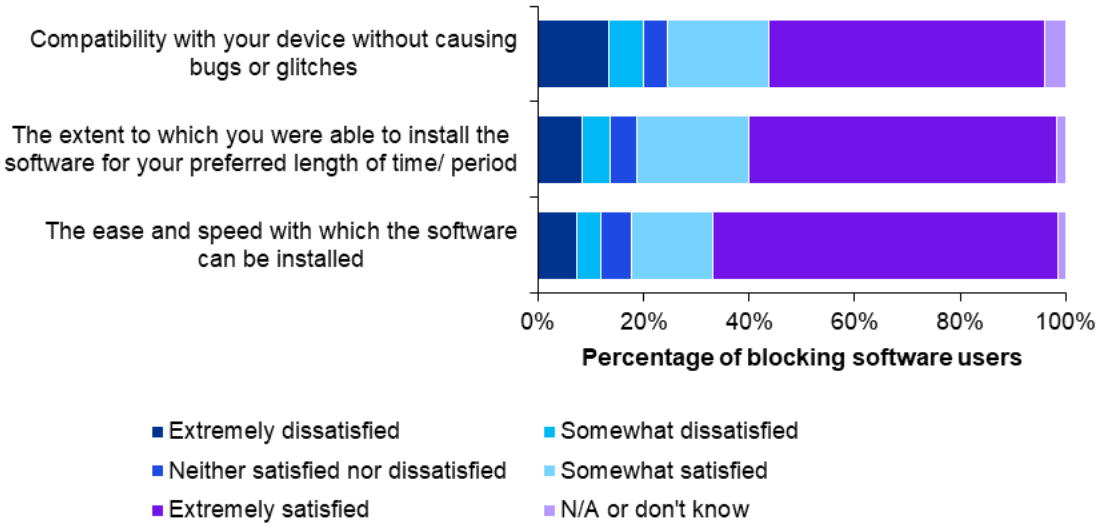
- 65% of current and 43% of past users of blocking software responding to the questions on quality attributes reported being extremely satisfied with the flexibility the blocking software guarantees when deciding the period for which to get a licence.

In terms of compatibility with different operating systems and devices, from desktop research of each blocking software's websites it was found that Gamban and the other blocking software products available are compatible with Windows, MacOS, iOS and Android operating systems. Some gambling blocking software products available are also compatible with other operating systems such as Linux, although Gamban is not.

From our survey results, about half of our survey respondents (52%) indicated they are extremely satisfied with the compatibility of blocking software with their devices. However, a relatively high percentage of users (13%) stated being extremely dissatisfied in terms of this attribute compared to other accessibility attributes (respectively, 7% and 8% for the ease and speed of installation and the flexibility when selecting the period in which to install the blocking software).

[83] Information of accessibility of the different software in the paragraph comes from Wyllie C. & Kallman A. (2020). Online gambling self-exclusion; rapid consumer review of selected tools 2nd Edition.
[84] Information of accessibility of the different software in the paragraph comes from Wyllie C. & Kallman A. (2020). Online gambling self-exclusion; rapid consumer review of selected tools 2nd Edition.
[85] Wyllie C. & Kallman A. (2020). Online gambling self-exclusion; rapid consumer review of selected tools 2nd Edition.

Figure 5: How most blocking software users rate accessibility attributes of gambling blocking software



Source: KPMG survey

Regarding affordability, amongst the gambling blocking software products available in the UK, some are offered for free and others at a fee.

Gamban (through the TBS campaign) and Betblocker are two gambling blocking software products that are available for free.

Based on desktop research, it was found that other blocking software products are available for a licence fee, often with a range of price options. [86] For example, for a BetFilter licence, users can pay different fees depending on the level of protection and number of devices on which they want to install the software, with a higher price charged to users to set protection on all devices. Similarly, users of GamBlock software can opt for products at different price levels, associated with the number of devices, length of the licence and the operational system onto which the software is to install.

Providing free licences guarantees access to the proportion of the population who would not have used the software if there were required to pay an annual fee.

As noted in Section 4.1.2 findings from the survey of gambling blocking software users found that for those who used a free Gamban licence, 47% stated that had they not received a free Gamban licence they would have accessed an alternative free blocking software, whilst only 15% of respondents would have paid for a blocking software licence. As 32% of respondents indicated that they would not have used a gambling blocking software at all if the free Gamban licence was not available, this implies that if these results are representative across all users of blocking software, a sizeable proportion of individuals, many of whom the survey results indicate are problem gamblers, would not be protected from gambling-related harm with the individual and societal benefits from the use of blocking software lost.

[86] Information of accessibility of the different software in the paragraph comes from Wyllie C. & Kallman A. (2020). Online gambling self-exclusion; rapid consumer review of selected tools 2nd Edition.

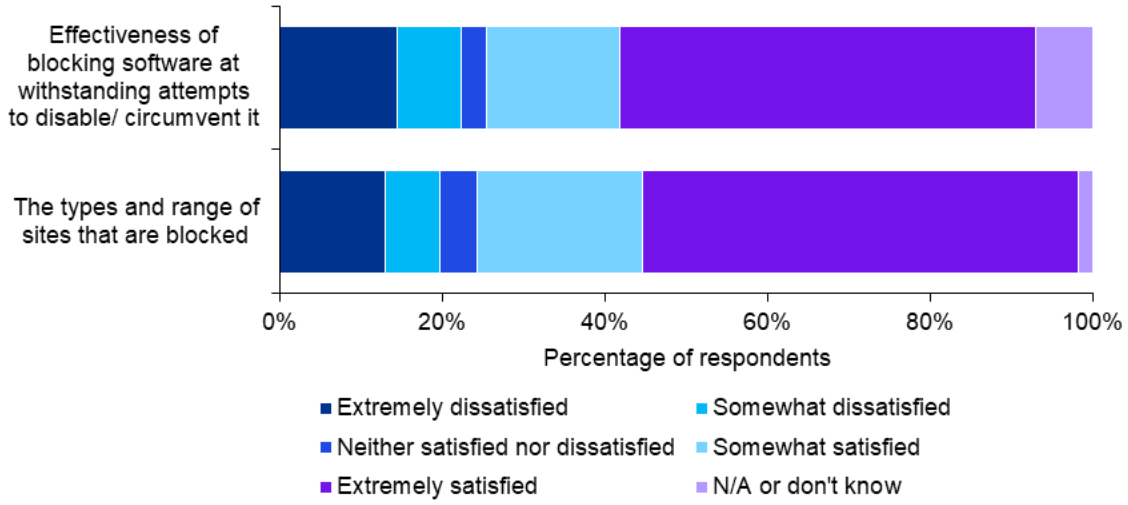
4.2.2 Effectiveness

Blocking software is designed with the objective of protecting users from online gambling and urges to gamble and so, according to some qualitative evidence, it might lessen the impulses to gamble over time.[87] Blocking software should therefore be evaluated not only according to the effectiveness of the physical barrier for online gambling but also regarding its ability to alleviate impulses to gamble and its overall impact on the mental health and well-being of its users.

Industry evidence suggests that gambling-specific blocking software (such as Gamban, Betblocker, and GamBlock) can block access to 80-90% of gambling blocking sites, with Gamban ranking highest.[88] Generic blocking software, such as Net Nanny, was reported to have a lower rate (50-60%) of blockage of relevant websites. However, evidence suggests none of the existing software is completely effective at blocking gambling with studies finding that approximately half of users find ways to circumvent the blocking software and gamble online.[89,90]

Findings from the survey of gambling blocking software users conducted as part of this study support this evidence. According to the results relating to users' satisfaction with the blocking software they are/ have used, the highest levels of dissatisfaction reported were in relation to "effectiveness of blocking software at withstanding attempts to disable or circumvent [the software]" and "the types of range of sites that [the software] blocked". Respectively, 23% and 13% of past and current user respondents reported being extremely dissatisfied in relation to these two attributes. Distinguishing by type of users, 40% and 22% of past user respondents and 16% and 9% of current user respondents reported being extremely dissatisfied in relation to these two attributes.

Figure 6: How most blocking software users rate effectiveness attributes of gambling blocking software



Source: KPMG survey

Even if blocking software is effective in blocking access to online gambling sites, there are potential ways that users are able to circumvent the software and/ or gamble in other ways, for example in person (rather than online).

[87] GambleAware (2018). Evaluating online blocking software.
[88] GambleAware (2018). Evaluating online blocking software.
[89] GambleAware (2018). Evaluating online blocking software.
[90] Vita Ca (2020) Gamban's impact: users view and experiences.

The most common ways to circumvent the software reported by survey respondents were:

— finding sites or browsers (such as Google Chrome) not blocked by software;

— using someone else devices;

— using VPN(s) to access gambling website;

— finding ways to disable the software through the device settings or following instructions found online; and

— opening links in emails from gambling operators.

Out of 256 respondents who reported they are currently using blocking software, 26% reported that they had gambled online despite the software, 15% reported having gambled in person, and 7% reported having gambled both online and in person (see Table 6 in Section 3.2.1).

Although the survey results indicate that the use of blocking software does not stop a proportion of users from gambling online, 70% of current and 51% of past users who reported they had gambled online while having a blocking software licence stated they had gambled less having installed and used blocking software compared to their gambling behaviour in the absence of the software. Therefore, although there may be improvements that could be made to software to improve its technical efficacy in preventing access to online gambling website, it seems to be able to create a hurdle for users when trying to gamble and delay and/or discourage them from gambling as much as they used to.[91]

Moreover, our survey findings also suggest that among survey respondents gambling blocking software is their preferred tool for minimising gambling-related harms. The 161 surveyed users of blocking software who reported having used different strategies other than blocking software ranked gambling blocking software as their preferred option.[92] In the second and third positions of the respondents' ranking of the preferred tools were GAMSTOP and talking therapies, which align with the layered approach of the TBS campaign.

4.2.3 Responsiveness

Industry reports suggest that providers of gambling blocking software must respond to user needs. To be responsive, providers need to have systematic ways of collecting the views and experiences of users and using them to improve and develop their services.[93]

Users of Gamban are able to contact Gamban via email and via a live chat function. Gamban has stated that it has an average first reply time of less than 1 hour. In contrast, another gambling blocking software provider that was interviewed stated that at present the majority of user support requests receive a response within 24 hours. With additional funding, however, this provider indicated it would prioritise investment in increasing user support agents in order to allow for faster response times.

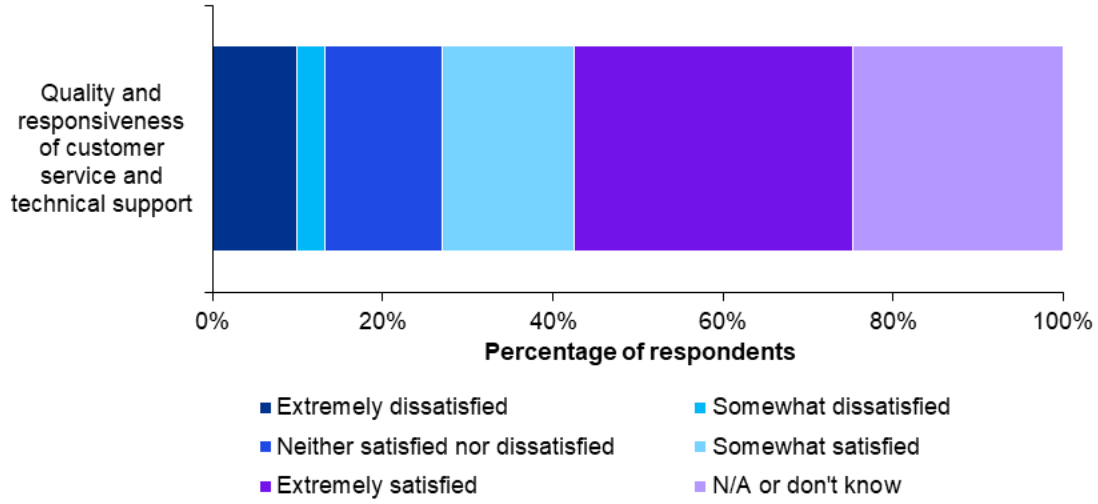
According to the survey of gambling blocking software users, blocking software does not rate particularly favourably or unfavourably in terms of user satisfaction with "the quality and responsiveness of consumer service and technical support".

The question about this quality attribute had the highest proportion of respondents who are neither satisfied nor dissatisfied (14% of current users and past users). A relatively high proportion of survey

[91] GambleAware (2018). Evaluating online blocking software.
[92] It should be noted that this ranking is based on the survey of blocking software users and may not be representative of all people who use gambling reduction tools.
[93] VITA CA (2021). Fundamental Standard report for gambling blocking software: ensuring quality support for people impacted by difficulties with gambling.

respondents also selected the “Not Applicable (N/A) or don’t know” option for this question (25%), suggesting that many may not have needed to access customers service or technical support.

Figure 7: How most blocking software users rate responsiveness attributes of gambling blocking software



Source: KPMG survey

4.3 Cost per user of gambling blocking software

Information provided by Gamban indicates the cost of providing blocking software, as explained in Section 4.1.1 above, is driven by the fixed costs of developing the software to meet required user capacity levels as well as the ongoing operational costs to maintain and update the software, with the marginal cost per additional user being minimal, up to set capacity thresholds.

The functionality of the software, as well as wider support provided to users will also drive, at least to some extent the costs of blocking software provision.

As noted previously in this report, to provide its blocking software free of charge, Gamban receives a grant from GamCare as part of the TBS campaign. The cost to GamCare of this is £2.4m, covering provision over the period from December 2020 to March 2023. **Based upon the value of the grants GamCare pays to Gamban for the blocking software element of the TBS campaign, it is estimated that the cost per free licence is £210.68[94], whilst the cost per free licence provided to problem gamblers is £230.71[95, 96].** It should be noted that these figures represent the current total cost of free provision of Gamban licences divided by the number of relevant users over the period and not the incremental cost per additional user.

Information was not available on what the cost per licence would be for another provider to become a partner in the TBS campaign (on a like-for-like basis) rather than Gamban, or what the cost per user of

[94] The cost per free licence is based on the cost to GamCare of providing the blocking element of the TBS campaign from December 2020-July 2022 (see Section 3.3.1 for detail) and the total number of free TBS licences registered during the same period.
[95] The cost per free licence provided to problem gamblers has been estimated is based on the cost to GamCare of providing the blocking element of the TBS campaign from December 2020-July 2022 (see Section 3.3.1 for detail) and the estimated number of problem gamblers receiving a free Gamban licence. The number of problem gamblers has been estimated based on the total number of free TBS licences registered from December 2020-July 2022 and survey data on the proportion of blocking software users who are problem gamblers (as defined by having a PGSI score >8)
[96] Through the TBS Campaign, Gamban licences for up to 5 years are available. Table 5 in Section 2 sets out the percentage of free Gamban licences by length provided through the TBS Campaign.

other blocking software is[97]. Therefore, comparisons in terms of cost across providers are not made within this study. It is noted, however, that another provider of blocking software interviewed as part of the study indicated that it considers it has the best product available from a technical standpoint and due to its operating model considers it delivers the lowest cost structure for delivering this service. However, this was not tested through this study - while cost information is available for this provider, data on the number of users is not available to estimate the average cost per user, nor was it within the scope of the study to conduct a detailed comparative assessment of different software from a technical and functionality perspective.

Producing a fuller CEA and assessment of relative costs of provision of free blocking software through the TBS campaign by alternative providers would require much more detailed information. This could be obtained by GamCare, for example, through a detailed market testing exercise to obtain cost quotes from potential providers based on a range of different specifications for the software, for example in terms of technical specifications, quality attributes, different numbers of users and/ or different levels of outcomes/ impacts that should be achieved. Such information could be used to determine if a lower cost per user might be achieved for the same level of expected benefits and/or if greater levels of benefits could be achieved for the same cost as currently paid for the intervention.

Notwithstanding the limitations of the CEA included in the study, as per the evidence in Section 3.3.2, given the scale of benefits associated with blocking software, both in terms of benefits to the individual user from reduced financial losses as well as to government and society more widely through the reductions in gambling-related harm, the evidence suggests that for the same levels of effectiveness achieved through existing free provision of blocking software the cost per user could be higher while still delivering value for money with an overall positive benefit to cost ratio.

However, as a number of users reported that they would otherwise have paid to use blocking software if the Gamban licence was not available free of charge, there is an element of "deadweight" associated with it. Reducing this may serve to enhance cost effectiveness, although it would likely be difficult to target the free licence only at users who otherwise would not pay and may risk losing benefits associated with its use, especially given the importance of the accessibility related attributes.

Also, as the evidence points to additional benefits of using blocking software in conjunction with other forms of support, removing or reducing the availability of blocking software as part of the TBS campaign may risk these additional benefits being generated if users of alternative free blocking software are not directed toward them.

[97] While data on BetBlocker's costs are available in its published Financial Statements, data on the number of users was not available to include an estimated cost per user figure in the assessment.

Appendix 1 Literature review summary

Study	Brief description	Method	Key findings
Abbott, M. W. (2020). The changing epidemiology of gambling disorder and gambling-related harm: public health implications. Public health, 184, 41-45.	This study examines the evolution of gambling, gambling-related harm and the implications for public health policy and practice.	This is a literature review, with emphasis on recent studies.	• Greater gambling availability was associated with an increase in participation and expenditure and an increase in at-risk and problem gambling prevalence rates. • Harms are impact disproportionately marginalised populations. • Harms are caused by financial problems, damage to relationships and health, psychological distress and adverse effects on work and education.
Afifi TO, Nicholson R, Martins SS, Sareen J. A Longitudinal Study of the Temporal Relation Between Problem Gambling and Mental and Substance Use Disorders Among Young Adults. Can J Psychiatry. 2016;61(2):102-11.	This longitudinal study explores the temporal relation between at-risk gambling or problem gambling and mental health and substance use in young adulthood in Canada.	The study uses data from the Manitoba Longitudinal Study of Young Adults (MLSYA) conducted on individuals between 18 to 20 years of age in 2007. Respondents were followed prospectively for 5 years. The analysis was run using a cross-sectional and longitudinal regression model, with the socio-demographic control variables.	• In cross-sectional analyses, at-risk or problem gambling was associated with increased odds of depression, OCD, alcohol dependence, and illegal drug use. • In the longitudinal analysis problem gambling is associated with subsequent incident major depressive disorder, alcohol dependence, and illegal drug. The reverse relationship was true only for illegal drug use.

Auer, M., Hopfgartner, N., & Griffiths, M. D. (2018). The effect of loss-limit reminders on gambling behavior: A real-world study of Norwegian gamblers. *Journal of Behavioral Addictions*, *7*(4), 1056-1067	The study determines whether receiving personalized feedback about exceeding 80% of a personally set monetary limit affects subsequent playing behaviour of gamblers, compared to those who did not receive personalized feedback. The study was conducted on gamblers registered at Norsk Tipping, the Norwegian government's gambling operator	The dataset consists of a random sample of all active Norsk Tipping players from September 2015 to September 2017. A matched-pairs design was implemented on 54,002 players who (i) had chosen a personal global monthly loss limit by the 31st of December 2016, and (ii) had played during the first quarter of 2017.	• Out of 54,002 players selected, 7,884 received at least one feedback that they had exceeded 80% of their personal global monthly loss limit between January and March 2017. • Those gamblers receiving personalized feedback in relation to limit-setting showed significant reductions in the amount of money gambled.
Auer, M., Hopfgartner, N., & Griffiths, M. D. (2019). The effects of a mandatory play break on subsequent gambling among Norwegian video lottery terminal players. *Journal of Behavioral Addictions*, *8*(3), 522-529.	The study explores the relationship of gambling behaviour and mandatory breaks using data from the government' gambling operator in Norway, Norsk Tipping.	The dataset of this study consists of 7,190 video lottery terminal (VLT) players who gambled between January and March 2018, for a total of 218,523 playing sessions. A pair-matching design is used to analyse the gambling behaviour of players subject to a 90 sec mandatory break after 1h session and those who did not experienced the break.	• Expenditure was higher in the subsequent 24 hr for terminated sessions • Results might be driven by selection bias as higher intensity gamblers are more likely to trigger mandatory breaks. Implications of these findings are discussed
Auer, M., Hopfgartner, N., & Griffiths, M. D. (2020). The effects of voluntary deposit limit-setting on long-term online gambling expenditure. *Cyberpsychology, Behavior, and Social Networking*, *23*(2), 113-118	This study examines the effects of voluntary limit-setting on subsequent gambling expenditure, using from an online gambling operator, Kindred, active seven different countries (Belgium, Denmark, The Netherlands, Norway, Romania, Sweden, United Kingdom).	Mann-Whitney U-tests and Z-tests were used to compare group differences on sample of 49,560 players (90.3%male and 9.07 females), representative of the total population of Kindred and who had placed at least one wager between January and March 2017. Of these, only 649 players (1.31 percent) set a voluntary limit.	• There were no differences about age and gender. • Limit-setting was more effective the more individuals gambled. The top 10 percent of most gambling-intense individuals in this study significantly reduced their gambling expenditure over a 1-year period.

Caillon, J., Grall-Bronnec, M., Perrot, B., Leboucher, J., Donnio, Y., Romo, L., & Challet-Bouju, G. (2019). Effectiveness of at-risk gamblers' temporary self-exclusion from internet gambling sites. *Journal of gambling studies*, *35*(2), 601-615.	The study evaluates an online, temporary, voluntary 7-day self-exclusion program for at-risk gamblers to decrease gambling behaviour (money wagered and time spent), 15 days (short-term) and 2 months (medium-term) after the implementation of the self-exclusion program. The experiment took place in France, where since 2010, online operators must provide preventative measures, such as the 7 days self-exclusion program.	This study is a randomized controlled trial (RTC) on with multiple harms to assess the effect of self-exclusion on gambling expenditure and type for different gambling type. The experiment counted only 60 participants (30 in the control and 30 in the treatment group), who selected among volunteers recruited between September 2013 and February 2017.	• The self-exclusion had no short-term impact on gambling habits, craving for gambling, cognitive distortions, and severity of gambling problems. • Some gambling-related cognitions ("illusion of control" and "the perceived inability to stop gambling") and "desire" gambling (according to the Gambling Craving Scale) have improved after 2 months.
Emond A, Griffiths MD, Hollén L. A longitudinal study of gambling in late adolescence and early adulthood: Follow-up assessment at 24 years. 2019.	This longitudinal study describes the relationship of gambling in young adults and addictive behaviours, such as drug and alcohol use, and mental health in the UK.	The descriptive study uses data from the UK Avon Longitudinal Study of Parents and Children (ALSPAC). The sample sizes completing the gambling surveys were 3,757 at age 17 years, 4,340 at 20 years, and 4,345 at 24 years.	• Many young people gamble without any harm • A significant minority (mainly males) show problem gambling behaviours which are associated with poor 4 mental health, involvement in crime, and potentially harmful use of drugs and alcohol.
Håkansson, A., & Widinghoff, C. (2020). Gambling despite nationwide self-exclusion–a survey in online gamblers in Sweden. Frontiers in Psychiatry, 11, 599967	This survey study assesses one-year self-reported self-exclusion and gambling behaviours in a nationwide, multi-operator, online exclusion system, "Spelpaus") which was introduce in Sweden in 2019.	The web survey was conducted in May 2020 on 997 gamblers recruited from a pre-existing web panel of market survey company Ipsos. The surveys contained questions about gambling patters, problems, psychological distress, self-exclusion and gambling despite the self-exclusion since "Spelpaus" introduction. The authors used a logistic regression to identify the predictors of self-exclusion and gambling behaviour despite the exclusion.	• 7% of the recruited gamblers reported ever self-excluded at "Spelpaus". • Reporting self-exclusion was associate with younger age, female gender, gambling problems, and chance-based games and online poker. • Among the self-excluded, 38% reported gambling despite self-exclusion.

Hopfgartner, N., Auer, M., Santos, T., Helic, D., & Griffiths, M. D. (2021). The effect of mandatory play breaks on subsequent gambling behavior among Norwegian online sports betting, slots and bingo players: A large-scale real-world study. *Journal of Gambling Studies*, 1-16.	The study examines the effect of mandatory play breaks of different lengths (90s, 5 min, 15 min) and personalized feedback (on money wagered, won, and net win/loss) on subsequent gambling behaviour in an online casino setting. The study was conducted on gamblers registered at Norsk Tipping, the Norwegian government's gambling operator.	The authors conducted a randomized real-world experiment on 21,129 online players who experienced at least one play break between the 17th of April and the 21st of May 2020, for a total of 156,989 mandatory play breaks.	• 15-min mandatory play breaks interrupt players gambling significantly longer than a 90-s or 5-min breaks. Also, longer play breaks did not lead to increased wagering. • There was no significant effect of personalized feedback in combination with mandatory play breaks.
Jonsson, J., Hodgins, D. C., Munck, I., & Carlbring, P. (2021). Reaching out to big losers: How different types of gamblers are affected by a brief motivational contact initiated by the gambling provider. *Journal of gambling studies*, *37*(2), 387-401	This study explores how feedback intervention by letter and telephone affect the gambling theoretical loss of players, using data from the Norsk Tipping (the Norwegian government's gambling operator).	The randomized experiment was conducted on 3,009 participants, randomly selected from the top 0.5% of Norsk Tipping customers who had lost most money during the previous 12 months. Participants were also classified in six classes based on involvement in different gambling forms ('High Casino', 'High Sport', 'High Lottery', 'High VLT', 'Lottery/Mix' and 'Bingo/Casino') to study the differential impact of the two feedbacks.	• Both the interventions by telephone and letter seem to have a similar stable long-term effect. • The effect of the intervention differs depending on the players' gambling subtypes. Letter seems like a possible alternative to telephone regarding the 'High Lottery' type, but telephone performs better for 'High Casino', 'High Sport', 'High VLT' and 'Lottery/Mix".
Lahn J, Grabosky P. Gambling and clients of act corrections. 2003; L aursen B, Plauborg R, Ekholm O, Larsen CV, Juel K. Problem Gambling Associated with Violent and Criminal Behaviour: A Danish Population-Based Survey and Register Study. J Gambl Stud. 2016;32(1):25-34.	This study explores the relationship between crime charges and gambling behaviour in Denmark.	This study is based on data from the Danish Health and Morbidity Surveys in 2005 and 2010, which were linked at the individual level with data from The Danish National Criminal Register. The sample size counted a total of 5,233 persons in the 2005 and 13,392 in the 2010. Multiple logistic regression analyses were used to determine the association between	• Problem gamblers had significantly higher odds of being charged than non-gamblers. • The odds ratio for economic crime charges was 2.6, for violence charges 2.2, and for drug charges 3.7.

		problem gambling and charges for different categories of crime.	
Langham, E., Thorne, H., Browne, M., Donaldson, P., Rose, J., & Rockloff, M. (2015). Understanding gambling related harm: A proposed definition, conceptual framework, and taxonomy of harms. *BMC public health*, *16*(1), 1-23.	This paper tries to provide an international framework and definition of gambling harm.	Information for this paper was gathered using different methodologies: literature review, focus groups and interview to professionals, gamblers, and their close relatives.	• This paper presents a definition and conceptual framework of gambling-related harm that captures the full breadth of harms that gambling can contribute to. • This paper defines a taxonomy of harms to facilitate the development of more appropriate measures of harm.
Luquiens, A., Dugravot, A., Panjo, H., Benyamina, A., Gaïffas, S., & Bacry, E. (2019). Self-exclusion among online poker gamblers: effects on expenditure in time and money as compared to matched controls. *International Journal of Environmental Research and Public Health*, *16*(22), 4399.	This article documents the long-term effects of self-exclusion on subsequent time and money spent gambling, with data from a poker website, Winamax. The study was conducted in France, where self-exclusion is a voluntary process, and its duration is chosen by the player from 1 day up to a maximum of 3 years.	The sample included all gamblers on Winamax, who self-excluded for the first time over a 7-year period from June 2010 up to October 2016 (4,887 players), and gamblers matched for gender, age and account duration (4,451 players). Analyses were performed on the whole sample, on the sub-groups that were the most heavily involved in terms of time or money (higher quartiles) and among short-duration self-excluders (less than 3 months).	• Significant effects of self-exclusion and short-duration self-exclusion were found for money and time spent over 12 months. • Among the gamblers who were the most heavily involved in terms of time (top quartile), a significant effect was found on time spent. • Among the gamblers that were the most heavily involved financially (top quartile), no significant effect on the amount spent was found.
May-Chahal C, Wilson A, Humphreys L, Anderson J. Promoting an Evidence-Informed Approach to Addressing Problem Gambling in UK Prison Populations. The Howard Journal of Criminal Justice. 2012;51(4):372-86.	This observational study produces descriptive evidence on gambling behaviour in a prison setting. This study is conducted in the UK.	This is a survey study was conducted on 423 prisoners from two prisons in the UK. Z tests were used to compare the sample proportions/means with the proportions/means assumed to be representative of the wider population.	• 27.8% of men and 18.1% of women were rated as medium-risk and problem gamblers. • Gambling problems were linked to current and previous offending for between 7% and 13% of all offenders.

Muggleton N, Parpart P, Newall P, Leake D, Gathergood J, Stewart N. The association between gambling and financial, social and health outcomes in big financial data. Nat Hum Behav. 2021.	This observational study documents the association between gambling as a proportion of monthly income and financial, social, and health outcomes using anonymous data provided by a UK retail bank.	The dataset for this study consists of approximately 6.5 million people, or around 10.6% of the UK population, over a period of seven years. Regression analyses were run to understand association between the main variables, employing an ordinary least squares estimator in a specification that controlled for various socio-economic factors.	• Gambling is associated with higher financial distress and lower financial inclusion and planning, and negative lifestyle, health, well-being, and leisure outcomes. • Gambling is associated with higher rates of future unemployment, physical disability, and, at the highest levels, substantially increased mortality.
Wardle, H., & McManus, S. (2021). Suicidality and gambling among young adults in Great Britain: Results from a cross-sectional online survey. *The Lancet Public Health*, *6*(1), e39-e49.	This observational study explores the association between male and female suicidality and problem gambling specifically for young adults in the UK.	The dataset consists of 3,549 individuals who participated in the Emerging Adults Gambling Survey in 2019. This is a cross-sectional, online, non-probability sample survey of young adults aged 16–24 years living in the UK, who were selected from a YouGov online panel. Multivariable binary logistic regression analyses were understanding the relationship between suicide attempts and gambling behaviour.	• Problem gambling appears to be associated with suicide attempts in both young men and young women, with a stronger association for men. • Young people with problem-gambling behaviours should be considered at risk for suicidality.
Wardle H, Dymond S, John A, McManus S. Problem gambling and suicidal thoughts, suicide attempts and non-suicidal self-harm in England: evidence from the Adult Psychiatric Morbidity Survey 2007. 2019	This observational study describes the association between suicidality and problem gambling specifically for young adults in the UK.	The data from this study comes from the 2007 Adult Psychiatric Morbidity Survey (APMS). The dataset consists of 7,403 individuals aged 16 and over. Multiple variable logistic regression analyses were conducted to study the relationship between gambling and suicidality.	• Problem gamblers are more likely than the rest of the population to experience suicidal thoughts and have made a suicide attempt in the past year. • Only 172 people identified as at risk of problem gambling and 41 identified as problem gamblers. Both problem gambling and past-year suicide attempts/thoughts are relatively rare, and the analyses were underpowered.

Appendix 2 Methodology

Approach to estimating the reduction in costs to UK government and wider society of problem gambling

The reduction in economic burden to the UK government and wider society of at-risk and problem gambling associated with gambling blocking software was estimated using the following procedure:

1. In the survey of gambling blocking software users, survey respondents were categorised as non-problem, low-risk, medium-risk and problem gamblers (according to the PGSI methodology), first considering their behaviour in the 12 months before installing the blocking software and then considering their behaviour in the 12 months after installation of the blocking software. These data were used to calculate **the variation in the proportion of respondents in each PGSI class** (non-problem gambler, low-risk gambler, medium-risk gambler, problem gambler) before and after the gambling blocking software installation.[98]

   According to the survey data, individuals using different tools improved their PGSI score by 19% more than users relying only on gambling-blocking software. Hence, when computing the reduction in gambling-related harm associated with the use of the blocking software, in order to avoid inflating our estimate, the analysis only considered the subset of respondents who were using blocking software but no additional other tools.

2. Two data sources were used to cost the gambling-related harms per PGSI group:

   i) **PHE excess costs for the society associated with problem and at-risk gambling**.[99] PHE's excess costs were uprated to 2021-2022 prices using HM Treasury's gross domestic product deflator.[100] PHE estimated the excess cost for the UK government and broader society for at-risk individuals (PGSI score from 1 to 7) and problem gamblers (PGSI score equal to or above 8). By dividing the total annual excess cost for the estimated number of people in each PGSI group, the **yearly excess cost per gambler associated with each PGSI category** was estimated.

   ii) **IPPR excess costs for the society associated with problem gambling**.[101] IPPR's figures of gambling-related harm were uprated to 2021-2022 prices using HM Treasury's gross domestic product deflator.[102] IPPR estimated a lower and an upper bound total cost linked to problem gambling, considering the lower and upper bound of the 95% confidence intervals of the prevalence rate of harmful gambling in the population. With this information, the unit cost per problem gambler figures in the IPPR report were scaled up or down to obtain a **lower and upper bound cost per problem gambler** to reflect the prevalence rate of gambling harm in the population.

3. The **average reduction in excess costs per gambler associated with blocking software** was estimated by summing up the products of the variation in the proportion of the survey respondents using blocking software only for each PGSI class (1) and the estimated PHE

[98] The Problem Gambling Severity Index (PGSI) is the standardized measure of at-risk and problem gambling. It is assess taking the PGSI questionnaire, which investigates on the common signs and consequences of problematic gambling. According to the PGSI classification, non-problem gamblers have a PGSI score of 0, low-risk gamblers have a PGSI score of 1 or 2, medium-risk gambler have a PGSI score between 3 and 7 (included), and problem gambler have a PGSI score between 8 and 27.
[99] Public Health England (2021) Gambling-related harms evidence review: the economic and social cost of harms. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1022208/Gambling-evidence-review_economic-costs.pdf
[100] Data on the GDP deflator are available here: GDP deflators at market prices, and money GDP - GOV.UK (www.gov.uk).
[101] IPPR (2016) Cards on the table: the cost to government associated with people who are problem gamblers in Britain. Available at: Cards-on-the-table_Dec16.pdf (ippr.org)
[102] Data on the GDP deflator are available here: GDP deflators at market prices, and money GDP - GOV.UK (www.gov.uk).

excess cost per gambler for that PGSI class (2.i). Moreover, the variation in the proportion of problem gambler using blocking software only from the survey (1) was multiplied by the estimated IPPR lower and upper excess cost per gambler (2.ii), to obtain a **lower and upper bound of the per gambler reduction in excess costs associated with the blocking software.**

4. The central, lower and upper bound per gambler reduction in excess costs (3) were multiplied by the number of free registrations that Gamban received in the appraisal period (December 2020-July 2022) to obtain a central, a lower bound and upper bound estimate of the overall decline in excess harm associated with the use of Gamban blocking software.

Approach to estimating the reduction in gambling-related financial losses

The overall reduction in financial losses associated with gambling-blocking software was estimated using the information in our survey related to the survey respondents' gambling-related financial losses in the 12 months before and after the installation of the blocking software.

The following procedure was followed to estimate the overall reduction in financial losses associated with Gamban:

1. The average reduction in financial losses for respondents using gambling blocking software was estimated by averaging the individual differences in gambling-related financial losses in the 12 months before and after the software installation for respondents using blocking software only. According to the survey data, respondents using different tools (such as self-exclusion mechanisms, talking therapies etc.) had, on average, a reduction in financial losses, which was 48% more than users who used blocking software only. Thus, to isolate the effect of the blocking software from the combined use of different tools, the average reduction in financial losses was estimated only considering the subsample of individuals using blocking software only.

2. The average gambling-related financial loss for the survey respondents who used blocking software only was multiplied by the number of free registrations that Gamban received in the appraisal period (from December 2020 to July 2022).

Approach to estimating the willingness to pay for blocking software

The willingness to pay for blocking software was estimated using information from our survey of respondents who had used or were currently using blocking software. In detail, the survey contained information on whether respondents had paid for a blocking software licence and how much they would have paid per year for a licence. With this information, the survey respondents' average willingness to pay was estimated and then multiplied by the number of free Gamban registrations given out through the TBS Campaign between December 2020 and July 2022.

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