



UNDERSTANDING  
THE SOCIAL IMPACT  
OF PARTICIPATION  
IN DRIVEN GAME  
SHOOTING IN THE UK

Executive Summary of a PhD thesis  
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# 1 INTRODUCTION

## 1.1 AIM & RESEARCH QUESTIONS

The aim of the study was to fill a gap in the research base in relation to the social impacts of participation in Driven Game Shooting (DGS) in the UK. A need for this study was clearly outlined by National Resources Wales and its independent evaluation consultants (Hillyard and Marvin, 2017). The PhD project was the first research study to consider the social impacts of DGS in full, utilising a recognised Social Impact Assessment method to produce a framework for future use in evaluating the social impact of shooting and therefore represents an original and needed contribution to knowledge.

The following research questions were considered:

- To what extent does DGS create social impact through the creation of social capital and reinforcement of identity?
- How does the type and size of shoot mediate social capital and identity development?
- How can these social impacts be valued and compared in the future?

## 1.2 ACKNOWLEDGEMENTS

Thanks go to all of the participants as without them the study would not have been able to be completed. Their continuing support throughout the process was vital in enabling me to understand the reasons why individuals take part in Driven Game Shooting and how strongly many feel about its role in their life. This enabled me to develop a strong questionnaire and subsequently achieve high levels of responses to it. The researcher remains forever grateful.

Secondly, thanks go to the supervisory team and the department team members for their support, knowledge and guidance which was invaluable in developing the researcher's understanding of particularly theory-based research. Professor Richard Hazenberg and Professor Simon Denny were outstanding supervisors who supported the researcher throughout her journey and were always there when advice and guidance were needed.

Finally, the researcher thanks her family, in particular her husband and children who supported her throughout her journey.

## 1.3 PROJECT FUNDING AND CONFLICTS OF INTEREST

The project was funded solely from the departmental budget surplus of the University of Northampton's Directorate for Research, Impact and Enterprise. No external funding was received from any organisations. The researcher had never been involved in game shooting or rural field sports of any kind prior to the PhD study.

This report is a summary of the study. The full PhD thesis can be found from late September 2020 at the University of Northampton Pure site <https://pure.northampton.ac.uk/en/publications/> or a short while later at the British Library ETHOS online thesis repository here <https://ethos.bl.uk/Home.do>.

## 2 SYNOPSIS

What is the social impact of participation in driven game shooting?

*“I think it’s an endemic way of life. If you’ve grown up with it, it’s part of your DNA”*

*P48 (gun, syndicate)*

This study considered how involvement in DGS affects the people participating, not just ‘shooting guns’, but also beaters, pickers-up and others, using a recognised social impact assessment methodology with a theoretical underpinning of social capital theory. It considered the extent to which DGS creates social impact through the creation of social capital, which has been defined as “connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them” (Putnam, 2000, p. 19) and reinforcement of identity, whether this was affected by size and/or type of shoot and how these impacts can be valued in future. The study comprised of two stages of data collection. Firstly, qualitative, visiting shoots of different sizes and types from small and larger syndicates through to small and larger commercial shoots nationwide, observing/engaging with participants, contacting a sample of 45 people afterwards for a longer telephone interview. Results of these reflective observations and interviews were analysed using an academically recognised qualitative analysis approach, allowing the production of a questionnaire for wider distribution using online and hard copy distribution channels, during the second quantitative stage, which received 2,424 responses suitable for analysis.

Results indicate a positive impact on participant’s mental health and well-being measured using the short Warwick-Edinburgh mental well-being scale (SWEMWBS) compared to national data. This positive impact, facilitated by social support networks created within DGS, is influenced strongly by identity. Regular participation in physical activity, time spent outdoors, a sense of purpose and reduced loneliness appear to be contributing factors to this positive impact. Syndicate membership in particular enhances the mental well-being benefits. The study confirms that the financial value of these social impacts is potentially significant as-savings to the taxpayer in avoiding poor mental health and maintaining physical health can be very high. It is estimated that poor mental health costs the UK £105 billion per annum, when the various social and economic factors are taken into account (Department of Health Independent Mental Health Taskforce, 2016) and the overall costs of loneliness for each individual person can be £6,000 over ten years (Mcdaid, Bauer and Park, 2017). Physical inactivity and obesity can lead to long-term conditions such as diabetes and cardiovascular disease (Leong and Wilding, 1999), which are costly to manage in the NHS. A 2014 study indicated that obesity had a burden of around £47 billion a year on society (circa 3% of GDP), making it the greatest impact after smoking (Dobbs *et al.*, 2014), which is more than the annual cost of armed violence, war and terrorism (Press Association, 2014). This increased availability of green spaces to encourage physical activity could reduce this economic burden on society, a wider social impact. Avoiding premature death due to physical activity has been valued at £34,818 per person (The Scottish Government, 2003). Overall, Public Health England estimate that lack of physical activity costs the UK £7.4 billion per annum (Public Health England (PHE), 2016).

DGS receives no direct subsidies from Government. Preliminary research for this project indicated that many smaller, often syndicate shoots, are run on land holdings that have not applied to be part of either the Entry Level Stewardship, the Higher Level Stewardship or the Countryside Stewardship schemes (Department of Environment Food and Rural Affairs (DEFRA), 2005; UK Government, 2020b, 2020a). Any management of habitat, predation control, and supplementary feeding that is carried out is funded by the shoot members. However, some shooting does take place over either lowland farms or upland moors where a Stewardship scheme is in place. The operation of these schemes involves the landowner (or in some cases tenant) and some landowners/tenants are involved in DGS. Funding is received from government based on the achievement of stewardship objectives such as those of the previously funded Higher Level scheme (wildlife conservation; maintenance and enhancement of landscape quality and character; natural resource protection; protection of the historic environment; promotion of public access and understanding of the countryside) (Department of Environment Food and Rural Affairs (DEFRA), 2005), which could be regarded as both supportive of shooting (maintenance and enhancement of features such as hedgerows, promotion of public understanding of the countryside), and also detrimental to it (promotion of public access). It is important to highlight that driven game shooting is not the only activity that takes place on an area of land; rather it is one of a range of activities that landowners/tenants engage in for reasons of both financial return and personal enjoyment.

There are individuals and organisations who believe that the killing of any animal for sport is wrong (Royal Society for the Prevention of Cruelty to Animals (RSPCA), 2014; League Against Cruel Sports, 2020). This study did not set out to take a 'position' on the rights or wrongs of driven game shooting. It sought to identify some of the impacts on the c. 1.5 million people (see Appendix O in the full thesis) that take part in DGS, not to comment on the moral or ethical considerations involved in DGS. Neither did the study seek to examine fully the environmental or economic impacts of DGS, or the arguments that take place between those that think DGS is good for the environment and those that criticize it on environmental grounds. Taking an ethical position on DGS is not simple, as there are many different ways in which the sport is practiced. There are significant differences between DGS on a moorland estate where grouse shooting is part of an integrated pattern of activities aimed at increasing biodiversity, improving habitat, and reducing threats to human and animal health by reducing the number of ticks present in the vegetation (Game and Wildlife Conservation Trust (GWCT), 2020b); and a commercial pheasant shoot in, for theoretical example, the Midlands, that may not actively seek to improve the environment. Good practice DGS depends on three common factors: feeding of birds (which inevitably includes non-game birds getting more food); habitat management (which typically is intended to improve biodiversity); and predator control (Game and Wildlife Conservation Trust, 2018; Game and Wildlife Conservation Trust (GWCT), 2020a, 2020c). The only consistent ethical position that might be taken on these factors would be an opposition to predator control because it involves killing animals. However, predators survive by killing other animals and both conservation groups, and Government land stewardship schemes, both promote (and in the case of stewardship schemes reward) predator control as a way of maintaining a balanced and diverse ecosystem (Department of Environment Food and Rural Affairs (DEFRA), 2005; UK Government, 2020a, 2020b). Discussions relating to the ethics of shooting often include factors such as the use of lead shot, intensive game bird rearing and the impact of large game bird releases on the environment (Hutchinson, 2011), citing the intensive raising of pheasants and partridges for example (Humphreys, 2010). These environmental factors are discussed in section 3.6 of the full doctoral thesis.

The cultural, ritual and social elements of wild killing of animals by humans has also been considered in prior research (Marvin, 2006).

Therefore, this study did not seek to make judgement on the ethical position of shooting birds for sport, instead it follows the recognised GECES social impact assessment methodology (Hehenberger, Harling and Scholten, 2014), with a well-developed theoretical underpinning, to explore the social impacts of the sport in terms of the intended and unintended consequences, both negative and positive, for both the individuals involved and wider society, in relation to social capital and identity theory. Policy interventions to ban or regulate DGS might wish to take into account the evidence on social impact presented in the full thesis.

## 2.1 KEY FINDINGS

*“The other thing that obviously is a big attraction for myself and just about everyone I know is the social aspect because the very fact that you are doing something that isn’t run of the mill means that you are actually working with a group of people all of whom have similar interests and ability so it’s a sort of natural selection process really .....and why do I do it when it’s wet and horrible.”*

Strong social capital networks, one of the wider determinants of health as defined by Dahlgren and Whitehead (1991), exist within all forms of driven game shooting, in particular within not-for-profit syndicate shoots, and this study found examples of those support networks being activated in times of need, such as following a close bereavement. A very strong and clear ‘rural identity’ amongst almost all participants further strengthened the social networks - 91% of survey participants indicated a rural identity, a connection to the countryside and rural life influenced participation, Strong social support networks have a number of positive benefits to both mental and physical health and well-being and can help enhance and maintain social cohesion in rural communities.

*“...it’s a thing if you look at your friends, the vehicle you drive, the clothes you wear is all around the shooting aspect. I’ve got a 4x4 vehicle, I need a 4x4 vehicle. I wear moleskins, I’ve got a checked tattersall shirt on as we speak, so your clothing, you know also sometimes what you eat I mean we have pheasant sometimes on a Sunday so the whole, all these areas all come down to, it makes you in a sense.”*

Participation in DGS in any form has a moderate to large positive effect on participants’ mental health and well-being measured using the short Warwick-Edinburgh mental well-being scale (SWEMWBS)<sup>1</sup>. This is due to a number of factors including strong social support networks, reduced

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<sup>1</sup> Independent t-test with national dataset Understanding Society 2015-16 Wave 7 produced significant ( $p < .001$ ) difference between mean SWEMWBS of national dataset and DGS participants, with a medium to large effect size (Cohen’s  $d$ ) at 0.64

loneliness, strong rural and/or cultural heritage identity, time spent outdoors in nature, regular physical exercise and participating in an activity that gives a sense of purpose<sup>2</sup>.

Syndicate shoots have a potentially greater impact on participants' mental health and well-being, especially for those aged 55 year and over with stronger friendships/bonding social capital, providing stronger social support networks and less division, via stronger bridging social capital.

Sense of purpose was particularly important for beaters and pickers-up with 98% of regular beaters and pickers up agreeing or strongly agreeing that it was important that they (or their dog(s) if applicable) 'do a good job to contribute to the success of the shoot day'. Having a sense of purpose, particularly as we get older, has been shown to positively impact health and well-being (Alimujiang et al., 2019; McKnight and Kashdan, 2009).

*"I do think if you live to some extent on your own as you get older and become very introspective there can be a degree of how do I feel today and that's bad for anyone. You know, when you have a couple of kids you don't have time to invest in yourself and how you're feeling and I think that is a possible pitfall if you don't have enough to do as you get older."*

The study highlighted rural nature of DGS as a pastime and the particularly positive impact it can have on ageing, rural populations' mental health and well-being. In rural areas of the UK the proportion of those over 65 years is rising more quickly and will continue to be greater than in urban areas, therefore the importance of ensuring good mental health and well-being in rural areas is heightened. Avoiding loneliness is particularly important in rural areas, with isolated settlements and poor public transport. Loneliness has been shown to increase the risks of frailty (Gale, Westbury and Cooper, 2018), of developing coronary heart disease, and vulnerability to strokes (Valtorta et al., 2018).

*"I could easily go a day here where I wouldn't see anybody and you sort of think, that's not a good thing really ...I wouldn't want it to become like the norm that you don't do very much and you don't see very many people. I think that's when you become a little bit introverted and you don't sort of get yourself out there and that's when I think you're just, (sighs) you know waiting for the inevitable."*

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<sup>2</sup> In any social impact study alternative attribution or other factors that may influence positive impacts in addition to the intervention or activity being considered must be taken into account. Caution must be applied in interpreting the data, as the study compared the results of participants with a national dataset rather than with a genuine control group. As participants has often been taking part in DGS for many years, feeling it is an integral part of their lives and identity, deadweight factor, representing what would have happened anyway, and drop-off, reduction in the benefits resulting from an intervention over time, are not of high relevance in this study

Good mental health and well-being and strong support networks can positively impact long-term condition management, which is also important as the NHS has recognised we are living longer but often with long-term conditions to manage. This long-term condition management will become increasingly community based in line with the NHS long-term plan, with the role of self-care gaining increasing importance, so the ability to take part in a social network activity that also provides physical exercise such as DGS increases in importance.

DGS can be of benefit in encouraging physical exercise all year round. DGS participation encouraged individuals of all ages to go out and participate in walking long distances year in all weathers. The median distance walked by participants was 8.0 km (mean 8.1 km), rising to a median of 9.0 km (mean 9.4 km) for beaters and pickers-up. Throughout the season, 66.2% of beaters and pickers-up take part in DGS once a week or more, with 39.2% taking part twice a week or more which indicates a large amount of exercise is facilitated via participation in DGS throughout the winter months, in all weathers that may not be completed if individuals were not taking part in DGS. The annual impact of regular exercise can be measured to show a positive financial benefit to society using a recognised tool such as the WHO calculator. The benefit is higher for those aged over 45 years, which is relevant as DGS participants fell within the older range of individuals. In addition, walking has been recognised as a good way for reluctant men to exercise and DGS is a predominantly male sport (86.7 % male participants).

*“Everybody cheers you on, come on you know you’re getting on a bit now ...we all give a lot and take a lot really. I don’t rate getting up at six o’clock in the morning to go out beating a great idea this time of the year, you know but when it’s snowing it’s even worse (laughs) but I never say no...my wife...she says come on you gotta go, you can’t sit around doing nothing.”*

Based upon the WHO HEAT tool a value of around £547 million<sup>3</sup> per year can be suggested as the health-related financial impact of participation in DGS by beaters and pickers-up, due to the increased walking that this group participates in. This value is based on the weekly exercise during the shooting season being spread out over the entire year (i.e. 9km per week for a four-month period equates to 3km per week average across a year). Full details of the calculations can be found in the PhD thesis.

The unique status of the not for profit syndicate/family shoot provides a lower potential negative impact form of DGS participation, with less days shot across the year involving a lower number of birds. Syndicate shoots often use volunteers for a range of roles, which has been shown to positively impact health and well-being with potential societal value of regular volunteering estimated at £13,500 per annum (Fujiwara, 2013). The environmental benefits of land management carried out

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<sup>3</sup> Converted from EUR to GDP at a rate of 0.8453 on 11.02.2020. (Bank of England, 2019). Full calculation details can be found in the full thesis.



to facilitate many syndicate shoots receive no subsidy, so any environmental benefits come at zero direct cost to the taxpayer and this too should be recognised within any social impact measurement framework.

The study found a link to participation due to family and/or cultural heritage for some. The importance of social practices that are regular, seasonal events in contributing to individual and community well-being through a strong, heritage linked identity has been recognised by UNESCO as 'intangible cultural heritage' (United Nations Educational Scientific and Cultural Organization (UNESCO), 2018). For those within the DGS community who take part for family heritage reasons, participation is linked to their perception of history, reaffirming their identity. Those who grew up in rural areas were more likely to participate for heritage reasons and those that were member of a syndicate were more likely to participate for heritage reasons than those who were not syndicate members, an additional reflection of the strong bonds and friendships amongst syndicate members.

*"I have always been a country person brought up on a farm, never lived in a village or anything rather live out in the sticks sort of thing.....I was brought up to it actually, father and brother. My father and my brother were always into their shooting, rough shooting really on the farm and I sort of always tagged along behind, a little kid, sort of happy to carry the game."*

Previous research highlighted the important role of commercial shoots in providing employment (a wider determinant of health) in remote areas (Public and Corporate Economic Consultants (PACEC), 2012, 2014a). The provision of social events in the community found via this study can be of value within rural areas so this should also be considered, with large commercial shoots providing such opportunities recognised. Newcomers to rural areas were shown to be welcomed to the DGS community if they showed an interest in taking part, allowing them to make friends and build social capital networks in the area they have now moved to. Intergenerational mixing opportunities, evidenced by the age ranges of shoot participants, was also found also a factor in enhancing social cohesion.

*"I enjoy the fact that it's something that the rest of my family enjoy partaking in as well and that it's almost a generational gathering of different ages and people of different backgrounds and interests."*

Regular consultation with the commercial shooting industry is vital to ensure best practice is followed and that those not following respect for quarry, environmental and other guidelines are tackled whilst good practice is recognised. The good practice of some commercial shoots should be recognised and poor practice should lead to consequences. A licensing scheme could be considered for commercial shoots above a certain size, shooting above a certain number of days. However, this should be formulated in conjunction with the shooting industry to ensure decisions are not made

that can cause irreparable damage to businesses, as was seen in the case of the general licence survey issues in Spring 2019, potentially exacerbating the conflicts between those for and against shooting. Ensuring smaller commercial enterprises, shooting fewer, smaller days as part of their business diversification have a less burdensome regime to ensure compliance with good practice, will allow the positive benefits of shooting as a diversification of farm income to continue within reasonable guidelines, whilst minimising any negative impacts. Failure to recognise the importance of following good practice and stopping poor practice risks widening the conflicts between those who shoot and those that do not.

The social impact framework developed in this research (see Figure 3.2) can be used to allow the true value to society of DGS social impacts to be measured and also facilitate comparison between different shoot types and sizes, in line with recommended SIA procedures. However, in order to use a framework effectively, an assessment would need to be made of the number of large commercial, small commercial and syndicate/family shoots across the UK. This data does not currently exist, particularly in relation to syndicate and family shoots. Any social impact valuation would need to be completed by an independent consultant who does not participate in DGS to avoid bias.

It is important that the voices of those participating in DGS are heard in balance with those against, in spite of their lack of media expertise, and that any decisions on future regulation/restriction are based on evidence. Even when evidence is reviewed independently, as in the case of the National Resources Wales consultation, and recommendations are made to allow game shooting to continue, a single voice against can unduly influence any decisions. This leads to feelings of powerlessness amongst those who feel under-represented and under-equipped to challenge decisions through modern communication channels. Instead, a more balanced approach should be taken, considering the evidence. The National Trust has taken such an approach, balancing the views of those for and against shooting and continuing to allow shooting on its land that has a link to heritage and is in line with the ethos of the organisation.

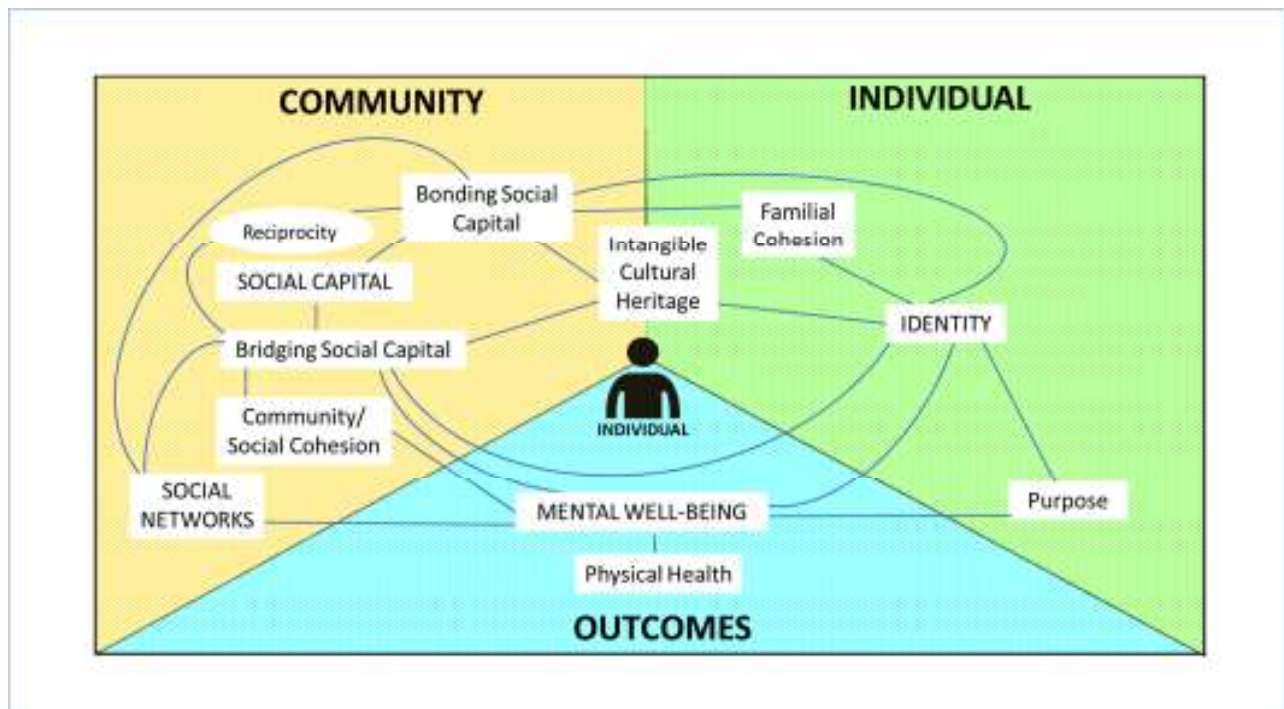
### 3 CONCLUSIONS AND POLICY RECOMMENDATIONS

#### 3.1 RESEARCH OVERVIEW

This study found that participation in DGS results in the building of bonding social capital, which is strengthened by a clearly defined, strong rural identity. This rural identity sometimes represented a link to intangible cultural heritage (United Nations Educational, 2018) which relates to social practices, knowledge and seasonal events that some individuals and communities recognise as part of their cultural heritage. Bridging social capital was also found within both commercial and syndicate shoots, although it was stronger within syndicate shoots as there was less division between guns and other participants than that found at commercial shoots. This bridging social capital facilitates wider participation in DGS for newcomers to rural areas and widens the social networks of those participating, strengthens community cohesion and potentially enables DGS participants to access services, training and employment. The combination of strong identity and social capital has been shown to create social support networks, ready to be 'activated', or used as a support network in times of need. The study found that some individuals faced circumstances in which the support network created via their participation in DGS was used to support them through a difficult time.

Participation in DGS resulted in higher mental well-being levels measured using the short Warwick-Edinburgh mental well-being scale (SWEMWBS) for participants across all sizes and types of shoot. The benefit was particularly high in older individuals who are part of a syndicate shoot, with stronger social networks, reinforcing the role of social capital networks in good mental health and well-being. The higher mental well-being level was influenced by a number of factors including strong friendships, reduced loneliness levels (as a consequence of having a well-developed friendship/social support network), having a purposeful life, strong identity, spending time outdoors and completing regular physical exercise outdoors, (further benefitting participants' physical health). There is a large potential cost saving to the UK taxpayer in avoiding poor mental health for those who participate in DGS in any role, whether that be as a gun, beater, picker-up or otherwise, and from the physical health benefits of exercise completed by beaters and pickers-up in particular. The complex nature of the linkages within DGS is shown in the diagram Figure 3.1 overleaf, outlining the positive, social impact outcomes found in this study, showing links between social capital, identity and social networks and the outcomes for individuals and communities.

The study also found that the conflict between those for and against shooting was exacerbated by perceived and reported lack of social media expertise that participants felt reduced their ability to defend negative wider perceptions of DGS. The use of evidence-based decision making by government can help reduce this conflict, as noted the next section 3.2, which also discusses how the social impacts of DGS can be valued and compared in future.



**FIGURE 3.1 SOCIAL CAPITAL, IDENTITY AND SOCIAL NETWORKS-COMMUNITY AND INDIVIDUAL OUTCOMES**

## 3.2 VALUING AND COMPARING SHOOT SOCIAL IMPACTS

### 3.2.1 FUTURE MEASUREMENT FRAMEWORK

Based on the benefits of social impact measurement as described by GECES, two key reasons for measuring social impact are to provide an evidence-based assessment of societal impacts of any activity or intervention to be used when decisions are being made that may affect these societal impacts, and to feed reliable and robust evidence into policy-making decisions (Hehenberger, Harling and Scholten, 2014). DGS is currently an activity (intervention) that is not funded by the taxpayer. If it were to be restricted any positive social impacts identified and potential societal cost-savings realised would need to be funded by the taxpayer, or they would be forgone. It is important to consider any irreversible and undesirable effects of restricting DGS before they occur (Burdge and Johnson, 1998) and a structured method of both valuing DGS overall and comparing and contrasting different shoot types is required.

An outline social impact measurement framework is shown in Figure 3.2. This research has shown that participation in DGS is often not restricted to one size or type of shoot, with beaters and pickers-up in particular often attending a range of shoot types and sizes. Therefore, the impacts seen in those that participate could have resulted due to attendance at one or many shoots of different sizes/types or through involvement with the DGS community as a whole. To compare the social impact of different shoot types and sizes fully, further research would need to be undertaken to assess the number of different types and size of shoot across the UK, the additional social activities they provide for participants and to what extent GWCT and BASC good practice guidance is followed by shoots. It was clear from the literature review that previous valuations relating to economic and environmental impacts of DGS have

been accused of bias. Therefore the use of a fully independent assessor, following a uniform measurement method, would be vital to produce a reasonable, unbiased social impact assessment value of any individual shoot or group of shoots.

It is important to note that the impacts discussed in this report and the full thesis represent the maximum potential impact on mental health and well-being that could be attributed to participation in DGS. In terms of alternative attribution (meaning the other factors that could influence the increase in well-being) and the proportion of the increase in SWEMWBS score that is attributable to DGS, caution must be applied in interpreting the data, as the study compared the results of participants with a national dataset rather than with a genuine control group. As the individuals concerned have been taking part in DGS for many years, it is difficult to ascertain a deadweight factor, representing what would have happened anyway, as many believe that DGS is integral to their lives and identity. The longevity of participation also indicates that drop-off, reduction in the benefits resulting from an intervention over time, is not particularly relevant in this study.

### 3.2.2 SOCIAL IMPACT VALUE: MENTAL HEALTH AND WELL-BEING

The data collected in this study does not allow for a robust valuation of the overall potential financial impacts relating to mental well-being, because it is not possible to accurately account for difference in well-being between DGS and non-DGS participants to a degree that would allow for accurate financial projections. This study has shown that syndicate shoots have a potentially greater impact on participants' mental health and well-being, especially for those aged 55 year and over with stronger friendships/bonding social capital, providing stronger social support networks and less division, via stronger bridging social capital. This means a greater proportion of the social impact value shown in this section could be attributed to syndicate shoots. The overall mental well-being impact can be explored in more detail once further research has been completed into the distribution of shoots of different sizes and types across the UK. There are few studies that attempt to value subjective well-being (Maccagnan et al., 2019). However, a 2019 study suggested that maintaining well-being could be valued at £10,560 per person, per year (Cox, Bowen and Kempton, 2012 in Maccagnan et al., 2019). This valuation compares loss of subjective well-being with severe mental health problem development, using Quality Adjusted Life Year (QALY) health economist assessed weights<sup>4</sup> (Maccagnan et al., 2019; Cox, Bowen and Kempton, 2012; Sainsburys Centre for Mental Health, 2010). Further research should seek to explore this amongst the DGS population (and indeed other groups who engage in outdoor physical activities).

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<sup>4</sup> "QALYs are one way economists use to estimate the varying types of health outcomes in a common metric—with a value of 1 indicating a year in full health and 0 indicating death. Taking the loss of QALYs from a severe mental health condition (0.352) and multiplying by the NICE Cost Effectiveness threshold of £30,000 gives a value of £10,560 per year for overall well-being" (Maccagnan *et al.*, 2019, p. 16). The NICE cost effectiveness threshold is used to assess new clinical interventions to around cost-benefit analysis. The standard threshold stands at £20,000 to £30,000 per quality-adjusted life year (QALY), however higher thresholds are used in some circumstance in areas such as end of life care and when patients make individual funding requests for treatment that are considered by an NHS panel.

### 3.2.3 PHYSICAL HEALTH AND WELL-BEING

Whilst all participants in this study walked a median average of 8km on a shoot day, reducing to 7km for paying guns and increasing to 9km for beaters and pickers-up, it is beaters and pickers-up who most frequently participate in the shooting season, which takes place for around one third of the year. An indicative value for physical health benefits via regular exercise participation, for an estimated number of beaters and pickers-up in the UK has been calculated using the WHO Health Economic Assessment Tool (HEAT) for walking and cycling (World Health Organisation (WHO), 2019). The calculation takes into account age, distances walked and frequency of participation, with those who participate less than once a week not included in the calculation. Based upon the HEAT tool a value of around £547 million<sup>5</sup> per year can be suggested as the health-related financial impact of participation in DGS by beaters and pickers-up, due to the increased walking that this group participates in. This value is based on the weekly exercise during the shooting season being spread out over the entire year (i.e. 9km per week for a four-month period equates to 3km per week average across a year). The total maximum economic impact calculated by HEAT over the full assessment period of 10 years equals £5.47 billion<sup>6</sup>, which when discounted to 2020 values at an annual discount rate of 5% amounts to £4.22 billion<sup>7</sup>. These calculations are based on the HEAT prediction that the increased walking and physical activity experienced by beaters and pickers-up prevents 158 premature deaths per year, which equates to 1,601 premature deaths prevented over ten years. Full details of the calculations can be found in the full PhD thesis.

### 3.2.4 SOCIAL IMPACT VALUES: NEGATIVE IMPACTING FACTORS

Whilst this study has shown the social networks in DGS had a positive impact on participants' mental health and well-being measured using SWEMWBS and in relation to physical exercise for those who engage as beaters and pickers-up, these values need to be considered in conjunction with potential negative impacts identified in this study. These negative impacts, in the form of wider conflicts and societal perceptions, vary between shoot sizes and types and their consideration would therefore be essential to compare the overall social impact of different sizes and types of shoot. For example, commercial shoots that can prove compliance with best practice and traceability of all meat into the food chain reduce the negative impact of these conflicts, whereas those that do not potentially increase the impact of these negative factors. The framework shown in Figure 3.1 could be used with an application of positive and negative impact factors, such as those suggested in the full thesis, for which values and scoring mechanisms would need to be developed in future research. As an example of practical use, this would result in shoots following the exemplar standards resulting in higher net social impacts, when potential negative impacts have been considered compared to those who do not comply to such standards, recognising the potential negative impacts of DGS identified during this research study.

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<sup>5</sup> Converted from EUR to GDP at a rate of 0.8453 on 11.02.2020. (Bank of England, 2019)

<sup>6</sup> *ibid*

<sup>7</sup> *ibid*

**Estimated 1.5 million people take part in Driven Game Shooting in the UK**

**Social Capital & Identity**  
 EVIDENCE: Social Network/Friendship high scores; Bridging SC/wider participation (demographics); Rural Identity – 91% of participants. Wider rural links to participation; Heritage links.

Symbolic interactionism, shared understandings (Mead, Stryker)	Community, trust and reciprocity (Putnam, Coleman)	Identity Theory (Tajfel and Turner) ICT (Burke & Cantwell)
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**Social Network Creation**  
 EVIDENCE: Strong, positive correlation 'if I needed help, I can rely on my friends from within the shooting community' 'I have made some close, long-term friends from my involvement in DGS'

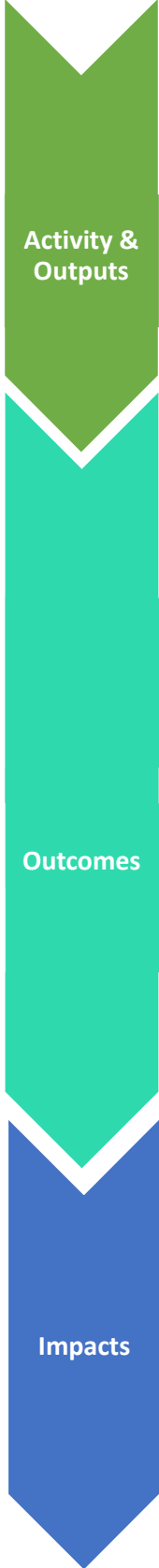
Identity Control Theory, unbroken process, create and maintain social structures (Burke and Cantwell)	Symbolic interactionism (Mead, Stryker). Putnam, Coleman –Trust and reciprocity Community Support
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**Positive Impact on Mental Health and Well-Being**  
 EVIDENCE: Statistically Higher SWEMWBS, regular exercise, reduced loneliness

Higher SWEMWBS	Reduced Loneliness	Sense of Purpose	Regular Exercise	Time spent in nature	Identity rural/heritage	Friendship. activatable support network
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**Potential reduced costs to society**

Mental Well-being including from volunteering where applicable. Physical Exercise – Health	Adjustments for positive and negative weighting factors
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**FIGURE 3.2 OUTLINE SOCIAL IMPACT MEASUREMENT FRAMEWORK FOR PARTICIPATION IN DGS**

### 3.2.5 POLICY CONSIDERATIONS

A summary of policy recommendations is shown in Table 3.1. These policy recommendations are based on the evidence presented in the full thesis for this study relating to the social impact of participation in driven game shooting and should be considered in any review of the regulations relating to DGS. The policy recommendations refer to potential financial benefits to society of participation in DGS. To give context to the policy recommendations, whilst there are few studies that attempt to value subjective well-being (Maccagnan et al., 2019), it has been suggested maintaining well-being could be valued at £10,560 per person, per year (Cox, Bowen and Kempton, 2012 in Maccagnan et al., 2019). Using the WHO HEAT tool to measure the impact of walking (World Health Organisation (WHO), 2019), a value of around £547 million<sup>8</sup> per year can be suggested, with the number of premature deaths potentially prevented over one year estimated at 158<sup>9</sup>. Once further research to assess the distribution of shoot sizes and types has been completed, and a mechanism for applying positive and negative impacts factors described in the full thesis has been developed, an overall value to society of individuals' participation in DGS comparing the different types and sizes of shoot could be calculated, utilising the framework shown in Figure 3.2.

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<sup>8</sup> Converted from EUR to GDP at a rate of 0.8453 on 11.02.2020. (Bank of England, 2019)

<sup>9</sup> Full details of the WHO HEAT tool calculation can be found in the full PhD thesis



**TABLE 3.1 POLICY RECOMMENDATIONS**

<b>Recommendation</b>		<b>Outline</b>
1	Recognise the strong social support networks apparent across all forms of DGS and in particular within not-for-profit syndicate shoots.	This research illustrated the strong social capital networks that exist within all forms of driven game shooting and has given examples of those networks being activated in times of need. This included a very strong and clear ‘rural identity’ amongst almost all participants, which further strengthened the social networks. Strong social support networks have a number of positive benefits to both mental and physical health and well-being, as outlined in Chapters 2 and 3, and can help enhance and maintain social cohesion in rural communities.
2	Recognise the benefit of participation in DGS on participants’ mental health and well-being.	This study has shown that participation in DGS in any form has a moderate to large effect on participants’ mental health and well-being measured using the short Warwick-Edinburgh mental well-being scale (SWEMWBS). This is due to a number of factors including strong social support networks, reduced loneliness, strong rural and/or cultural heritage identity, time spent outdoors in nature, regular physical exercise and participating in an activity that gives a sense of purpose.
3	Recognise the rural nature of DGS as a pastime and the particularly positive impact it can have on ageing, rural populations’ mental health and well-being.	The positive impact on participants’ mental health and well-being was particularly high in those who are members of a syndicate, either roving or location based, above the age of 55 years, reflecting the importance of strong social networks as we get older. In rural areas the proportion of those over 65 years is rising more quickly and will continue to be greater than in urban areas, therefore the importance of ensuring good mental health and well-being in rural areas is heightened. Good mental health and well-being and strong support networks can also positively impact long-term condition management, which is also important as the NHS has recognised we are living longer but often with long-term conditions to manage. This long-term condition management will become increasingly community based in line with the NHS long-term plan, with the role of self-care gaining increasing importance, so the ability to take part in a social network activity that also provides physical exercise such as DGS increases in importance.
4	Recognise the benefit of DGS in encouraging physical exercise all year round.	This study has found that DGS participation encouraged individuals of all ages to go out and participate in walking long distances in all weathers. The median distance walked by participants was 8.0 km (mean 8.1 km), rising to a median of 9.0 km (mean 9.4 km) for beaters and pickers-up. Throughout the season, 66.2% of beaters and pickers-up take part in DGS once a week or more, with 39.2% taking part twice a week or more which indicates a large amount of exercise is facilitated via participation in DGS throughout the winter months, in all weathers that may not be completed if individuals were not taking part in DGS. The annual impact of regular exercise can be measured to show a positive financial benefit to society using a recognised tool such as the WHO calculator. The benefit is higher for those aged over 45 years, which is relevant as DGS participants fell within the older range of individuals. In addition, walking has been recognised as a good way for reluctant men to exercise and DGS is a predominantly male sport (86.7 % male participants).

5	Recognise the unique status of the 'not for profit' syndicate and family shoot and its resultant positive social impacts	The unique status of the not for profit syndicate/family shoot needs to be recognised as a lower potential negative impact form of DGS participation, with less days shot across the year involving a lower number of birds. Syndicate shoots often use volunteers for a range of roles, which has been shown to positively impact health and well-being with potential societal value of regular volunteering estimated at £13,500 per annum (Fujiwara, 2013). The environmental benefits of land management carried out to facilitate many syndicate shoots receive no subsidy so any environmental benefits come at zero direct cost to the taxpayer and this too should be recognised within any social impact measurement framework.
6	Recognise the strong heritage cultural identity linked to participation in DGS for some people, particularly in the form of a syndicate, as a form of intangible cultural heritage.	This study has found a link to participation due to family and/or cultural heritage for some. The importance of social practices that are regular, seasonal events in contributing to individual and community well-being through a strong, heritage linked identity has been recognised by UNESCO as 'intangible cultural heritage' (United Nations Educational Scientific and Cultural Organization (UNESCO), 2018). Participation in DGS by those within the DGS community who take part for family heritage reasons, participation is linked to their perception of history, reaffirming their identity. Those who grew up in rural areas were more likely to participate for heritage reasons and those that were member of a syndicate were more likely to participate for heritage reasons than those who were not syndicate members, an additional reflection of the strong bonds and friendships amongst syndicate members.
7	Recognise the positive impact on social cohesion, wider participation and welcoming newcomers to an area DGS can have if carried out in an appropriate way.	This study found that previous studies have highlighted the important role of commercial shoots in providing employment (a wider determinant of health) in remote areas (Public and Corporate Economic Consultants (PACEC), 2012, 2014). The provision of social events in the community found via this study can also be of value within rural areas so this should also be considered, with large commercial shoots providing such opportunities recognised. Newcomers to rural areas were shown to be welcomed to the DGS community if they showed an interest in taking part, allowing them to make friends and build social capital networks in the area they have now moved to. Intergenerational mixing opportunities, evidenced by the age ranges of shoot participants, was also found also a factor in enhancing social cohesion.
8	Consult with the commercial shooting industry to ensure best practice is followed and that those not following respect for quarry, environmental and other guidelines are tackled whilst good practice is recognised.	The good practice of some commercial shoots should be recognised and poor practice should lead to consequences. A licensing scheme could be considered for commercial shoots above a certain size, shooting above a certain number of days. However, this should be formulated in conjunction with the shooting industry to ensure decisions are not made that can cause irreparable damage to businesses, as was seen in the case of the general licence survey issues in Spring 2019, potentially exacerbating the conflicts between those for and against shooting. Ensuring smaller commercial enterprises, shooting fewer, smaller days as part of their business diversification have a less burdensome regime to ensure compliance with good practice, will allow the positive benefits of shooting as a diversification of farm income to continue within reasonable guidelines, whilst minimising any negative impacts. Failure to recognise the importance of following good practice and stopping poor practice risks widening the conflicts between those who shoot and those that do not.

9	Use the social impact framework developed in this research to allow the true value to society of DGS social impacts to be measured and also facilitate comparison between different shoot types and sizes.	This study has shown that the use of a social impact framework would be the best way to measure and compare the social impact of different shoot sizes and types, in line with recommended SIA procedures. However, in order to use a framework effectively, an assessment would need to be made of the number of large commercial, small commercial and syndicate/family shoots across the UK. This data does not currently exist, particularly in relation to syndicate and family shoots. Any social impact valuation would need to be completed by an independent consultant who does not participate in DGS to avoid bias.
10	To ensure the voices of those participating in DGS are heard in balance with those against, in spite of their lack of media expertise, and that any decisions on future regulation/restriction are based on evidence.	This study has shown that even when evidence is reviewed independently, as in the case of the National Resources Wales consultation, and recommendations are made to allow game shooting to continue, a single voice against can unduly influence any decisions. This leads to feelings of powerlessness amongst those who feel under-represented and under-equipped to challenge decisions through modern communication channels. Instead, a more balanced approach should be taken, considering the evidence. The National Trust has taken such an approach, balancing the views of those for and against shooting and continuing to allow shooting on its land that has a link to heritage and is in line with the ethos of the organisation.

### 3.3 RESEARCH LIMITATIONS AND FURTHER RESEARCH AREAS

This study was unable to consider the impact of DGS, particularly larger commercial shoots, on those that live in a shoot area, but perhaps do not participate in DGS. A study could be completed in the areas where the shoots took place. However, it is likely a simple survey would need to be administered in hard copy via post in the surrounding area, as online contacts are not available for this group of people and the response rate for hard copies in this study was low. The use of local area forums (such as Next Door) and local area handbooks to promote any future survey could also be explored. This further research would provide a wider perspective and consider whether living in the vicinity of a shoot impacts mental health and well-being negatively or positively for example.

An assessment of the total number of driven game shoots within the UK would enable a more accurate comparison of the value of the social impact of DGS, taking into account all of the factors detailed in this chapter. This study produced a framework for valuing the social impacts of participation in DGS as shown in Figure 3.2 in section 3.2. Some potential financial values for the social impact of DGS participation in are given in section 3.2.

It would be useful to value the social impact of different types and sizes of shoot. Syndicate shoots would be the most obvious area for initial valuation within the UK, as they have been considered very little in previous research, which has focussed on economic and environmental impacts of primarily commercial shoots. Syndicate shoots have a potentially greater impact on participants' mental health and well-being, especially for those aged 55 year and with stronger friendships/bonding social capital, providing stronger social support and less division, via stronger bridging social capital. This means a greater proportion of any social impact value could be attributed to syndicate shoots. This can only be confirmed once further research has been completed into the distribution of shoots of different sizes and types across the UK. They also had fewer potential negative impacting factors. The syndicate shoot provides most impact to those who are older, important in an ageing society with rural populations ageing more quickly than urban populations.

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