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GOLF IN IRELAND

A STATISTICAL ANALYSIS OF PARTICIPATION

PETE LUNN AND ELISH KELLY



 **Confederation
of Golf
in Ireland**
Supporting Golf



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Pete Lunn
Elish Kelly

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FOREWORD – REDMOND O’DONOGHUE



Golf is one of the most popular sport and exercise activities in Ireland. Golf clubs and members have long known the benefits through their direct involvement with the game but until now we have been unable to quantify golf’s participation levels and direct impact on issues such as public health, physical activity and mental wellbeing.

Golf in Ireland: A Statistical Analysis of Participation, commissioned by the Confederation of Golf in Ireland, is the result of work conducted by the Economic and Social Research Institute (ESRI). Dr. Pete Lunn, Senior Research Officer at the ESRI and Dr. Eilish Kelly, co-authors of this report, are to be complimented on the production of such a quality piece of research.

The information contained within this report will provide helpful evidence for the various organisations involved in managing and administering golf in Ireland. The report outlines key policy implications including actions to make golf more appealing to younger adults and how to market the sport as beneficial to overall health. Also addressed are the factors that influence decline in participation and recommendations outlining how these may be addressed.

As we continue to work to grow the game in Ireland through the CGI Get into Golf Programmes, this report allows us to explore further possibilities that will encourage more individuals to come along and try the game that so many have fallen in love with already.

Redmond O’Donoghue
Chairperson, Confederation of Golf in Ireland

EXECUTIVE SUMMARY

This report, commissioned by the Confederation of Golf in Ireland, provides evidence relating to the level of participation in golf in Ireland and the factors that underpin it. Four data sources are used – three from the Republic of Ireland and one from Northern Ireland. In addition, the report reviews evidence for the positive contribution made by golf to physical activity, health and wellbeing. The analysis assesses patterns of participation in golf over time and by social group, as well as exploring people’s motivations and patterns of playing. The analysis examines both active participation in golf, i.e. physically playing the game, and social participation in the form of club membership and attendance at events.

The primary purpose is to provide helpful evidence for the various organisations involved in managing and administering golf in Ireland. Below we summarise some of the key findings and policy implications. Additional findings, details and discussion of policy implications are to be found in the body of the report.

FINDINGS

- Golf is one of the most popular sport and exercise activities in Ireland.
- Among the more popular activities, it has a unique appeal to older adults, with the highest participation rates for individuals in their 60s and 70s.
- For older people in particular, the recorded level of regular physical activity is likely to be highly beneficial.
- Individuals with higher levels of educational attainment and income, as well as those in professional and managerial occupations, are far more likely to play golf.
- Almost half of golfers play more than once a week and around 40 per cent of participation is in competitions.
- Physical and mental wellbeing are common motivations for playing golf.
- Participation in golf increased in the latter decades of the twentieth century, but has since begun to decline, despite an ageing population.
- The primary reason for this drop in participation is not the economic crisis.
- The decline began prior to the crisis and is occurring among adults aged under 55.
- Golf has further increased in popularity among older people, especially women.

- The recent decline in participation is greatest among people in higher socio-economic groups and those with children under 18.
- Golf may be being affected by changes in family and working life.
- Club membership has declined in a similar way, but among those who play, club membership has not declined.
- Participation is highest in Dublin, Leinster and urban areas, but these areas have also seen the larger recent declines.
- Affordability is also an issue in whether people play golf.

POLICY IMPLICATIONS

- Boosting the physical activity of older people is a key selling point for golf.
- There is a substantial risk to the popularity of the sport from the decline in participation among younger adults.
- There are things golf might do to appeal more to younger adults: ensuring that clubs are family friendly; offering multiple forms of exercise at golf clubs; marketing golf as an investment in lifelong activity; offering formats that reduce the time required to play.
- Expanding golf beyond high socio-economic groups will require marketing and promotion of lower cost opportunities to try the game.

CHAPTER 1

Introduction

This report, commissioned by the Confederation of Golf in Ireland, provides evidence relating to the level of participation in golf in Ireland and the factors that underpin it. The analysis is based on four data sources from the Republic of Ireland and one from Northern Ireland. The study is conducted in the context of a substantial body of international research that implies a strong relationship between physical activity, health and longevity. One strand of this international literature (reviewed below), suggests that golf is likely to make a significant contribution to public health, as well as being a game that thousands enjoy.

The picture of participation in golf in Ireland that emerges from this study is a consistent one. Golf remains a popular sport, especially among middle-aged and older people, who are likely to derive considerable health and wellbeing benefits from their participation. Yet the sport has suffered something of a decline in recent years, in particular among people under 55 years of age. This pattern presents some challenges to those who manage and administer the game, but there are also opportunities. The Irish population is ageing, with the proportion of the population that is middle-aged and older set to increase in the coming decades.

The primary aim of this report is to provide detailed statistics to assist those involved in managing and administering golf to identify and meet these challenges and opportunities that the game faces. Most obviously, this means providing evidence of potential use to relevant governing bodies, but the goals of the report are broader than that. The results aim to be of interest to multiple additional stakeholders who might have regard to the level of participation in golf, including Local Sports Partnerships, golf clubs and societies, businesses, planners and national organisations with an interest in increasing participation in sport and physical activity. In the context of the growing body of research on sport and physical activity in Ireland, it is also hoped that the present project offers a further indication of how quantitative research can contribute to our understanding of participation in specific sports and, therefore, assist efforts to increase participation.

The report is organised into three sections. The remainder of this first section provides the background to the study, including an overview of relevant academic literature and essential details about the data sources employed and methods used to analyse the data, while noting some limitations of the approach.

Chapter 2 presents the results, with the primary research questions separated into subsections. The emphasis in the main body of the report is on providing a quantitative statistical analysis that is readily understandable to the general reader who is not trained in multivariate statistical methods. The methods of data presentation have been selected with this goal in mind. Many of the results, however, are based on multivariate statistical models that may be of interest to those with statistical expertise. We provide a subset of this raw statistical output in the Appendices. Chapter 3 considers and discusses the policy implications of the findings.

1.1 HEALTH AND WELLBEING BENEFITS OF GOLF

The primary aim of this report is to provide evidence for policies designed to increase the level of participation in golf. Before presenting the findings, it is reasonable to consider the associated public benefits. There will clearly be those who might criticise aspects of the sport of golf, which has not been without its controversies over the years. Golf courses occupy large amounts of land, access to which is managed in a variety of ways. Golf clubs control their membership and some of the more traditional ones do so in a manner that many in modern society find objectionable. These controversies rumble on and different individuals hold different views about the rights and responsibilities involved. Regardless of these views, it is important to recognise that golf is a popular sport that provides physical activity to a substantial proportion of the population. A growing body of international evidence has sought to assess the associated public health benefits.

According to an estimate made at the turn of the century, golf is played by approximately 55 million people in 206 countries worldwide (Farrally et al., 2003), making it one of the world's most popular sporting activities. In undertaking an exhaustive recent review of the relationship between golf and health, Murray et al. (2017) identified relevant studies undertaken in 24 of those countries. Sixteen of these studies considered health outcomes as their primary goal and results are sufficiently consistent for some conclusions to be drawn.

Health benefits and exercise are important motivations of golfers (Petrick et al., 2001; Kolt et al., 2004). Golf is unusual among sporting activities in that its contribution to overall levels of physical activity increases in older adults (Kolt et al., 2004; The Scottish Government, 2014, p. 147) and is sufficient to make a contribution to meeting minimum recommendations for moderate to vigorous physical activity (Tangen et al., 2013).

A number of studies have quantified the physical activity involved in playing golf, using standard techniques for the comparison of activities. In terms of calorie

expenditure, golf amounts to a moderate intensity physical activity (Murase et al., 1989). Studies of the Metabolic Equivalent of Task (MET) value of golf also conclude that it amounts to moderate intensity aerobic activity (Passmore and Durnin, 1955; Ainsworth et al., 2011; Tangen et al., 2013). Golfers who play 18 holes in a session typically take 11,000-17,000 steps, walking an average of 4-8 miles (Pakkari et al., 2000; Tangen et al., 2013), although this contribution is clearly greatly diminished if golfers choose to ride in a buggy rather than walk.

Although this level and type of physical activity implies a likely link between playing golf and reduced risk of circulatory diseases, there is currently a lack of studies that have directly assessed the link (Murray et al., 2017). Other research does link golf to specific health outcomes. Among older people, golfers have better balance and strength than non-golfers (Sell et al., 2007; Tsang and Hui-Chan, 2010; Gao et al., 2011). Playing golf is also associated with higher levels of mental wellbeing (Kruger et al., 2007; Das and Horton, 2012).

It needs also be recognised that studies suggest there are some negative health effects of playing golf. Most notably this includes moderate risk of injury (Gosheger et al., 2003), especially to the wrist, shoulder, lower back and spine. As with other forms of exercise, research also records an increased risk of heart attacks while actually playing (Fujiwara et al., 1995), including specifically in Ireland (Quigley, 2000).

However, perhaps most striking is that, while it is difficult to demonstrate a causal relationship, golfers have higher life expectancy than non-golfers (Farahmand, et al., 2009; Coate and Schwenkenberg, 2013) and the effect is potentially substantial. Farahmand, et al. (2009) compared mortality rates in Sweden between golfers and non-golfers, controlling for age, gender, socioeconomic status and the handicap of the golfer. They found that golfers' mortality was lower by 40 per cent, or an additional five years of life expectancy. The effect was larger among lower socio-economic groups and for golfers with lower handicaps – a variable likely to be correlated with the regularity of playing. The authors state:

While we cannot conclude with certainty that all the 40 per cent decreased mortality rates that we observe in the golf cohort are explained by the physical activity associated with playing golf, we conclude that most likely this is part of the explanation (p. 423).

Overall, this evidence would suggest that golf is very likely to have significant overall health benefits, with quite substantial impacts possible, especially because the game provides moderate levels of physical activity to large numbers

of middle-aged and older adults. As research increasingly reveals the large contribution of physical activity to health and wellbeing (Lee et al., 2012; Kohl et al., 2012), the potential benefits of golf need to be taken seriously. For the remainder of this report, therefore, it is assumed that participation in golf is of net benefit and represents a legitimate public health goal.

1.2 GOLF IN IRELAND

Golf in Ireland is organised on an all-Ireland basis and is overseen by a number of bodies, most directly the Golfing Union of Ireland (GUI), the Irish Ladies Golf Union (ILGU) and the Professional Golfers Association (Irish Region), which have together created the Confederation of Golf in Ireland (CGI). CGI is partly funded by Sport Ireland through the annual round of grants to the National Governing Bodies (NGBs) of sport. CGI commissioned the present study.

The formation of CGI was in part a response to a drop in the number of golf club members in the five years following the economic crisis of 2008. CGI administers some aspects of elite golf in the form of high performance grants for emerging professionals, but has a strong focus on developing the grassroots game and increasing participation. Its published strategy for 2014-2020 commits the organisation to increasing the number of golf club members and junior members, and increasing the proportion of members who are female (Confederation of Golf in Ireland, 2014). The organisation has a number of initiatives designed to achieve these aims, including specific programmes targeted at new participants and encouraging former players back to the game, as well as education, training and support for golf clubs.

A primary intention of the present report is to supply evidence that is likely to assist CGI to achieve these goals of increased participation. Yet the findings should also prove useful to individual golf clubs, societies, golf-related businesses and other individuals and organisations associated with the game. Golf clubs themselves have command of varying but often significant resources for attracting greater involvement, including potential funding through the Sports Capital Programme administered by the Department of Transport, Tourism and Sport.

1.3 DATA AND STATISTICAL METHODS

Table 1 provides a summary of the four data sources employed together with key information about the timing of data collection, survey sizes, populations surveyed, methods of data collection and the reference periods over which respondents were asked to recall their sporting activities. The largest and most detailed data sources are the Quarterly National Household Survey (QNHS) and

the Irish Sports Monitor (ISM). The present report makes extensive use of these two surveys and limited use of the Sport and Physical Activity Survey (SAPAS) in Northern Ireland and the Survey of Sport and Physical Exercise (SSPE). Note that the surveys were conducted on residents of Ireland only. While golf tourism is an important element of golf in Ireland, participation in golf by visitors is not covered in the present report.

TABLE 1 **FOUR DATA SOURCES EMPLOYED IN THIS REPORT**

Survey	Date	Total Sample	Sampled Population	Interview Method	Reference Period
Quarterly National Household Survey (QNHS)	2006	40,000	16+ years, Rol ^a	Face-to-face	12 months
	2013	16,000			1 month
Irish Sports Monitor (ISM)	2007-2013 ^b	44,516	16+ years, Rol	Telephone	7 days
Sport and Physical Activity Survey (SAPAS)	2010	4,653	16+ years, NI ^c	Face-to-face	12 months
Survey of Sport and Physical Exercise (SSPE)	2003	3,080	18+ years, Rol	Face-to-face	12 months

Note: ^a Rol = Republic of Ireland; ^b Data were not collected in 2010 and 2012; ^c NI = Northern Ireland.

As is generally the case in this kind of research, there are aspects of the data and survey methods that need to be understood in order to interpret the statistical output. When comparing across surveys, it is important to bear in mind that the precise questions asked to survey respondents varies across surveys not only in the reference period for recalling activity, but also in the precise wording of the question. The main participation questions for each of the surveys are detailed in Appendix A.

A specific methodological issue surrounds the QNHS. These data are based on a high quality face-to-face survey conducted by the Central Statistics Office (CSO) and used to derive the national employment and unemployment figures. The survey employs a representative sample and enjoys a high response rate. The data on sport used here derive from a special module of questions added to the survey in 2006 and 2013 to measure participation in sport and physical exercise. Thus, the QNHS might have provided the perfect instrument for testing the level of participation in golf either side of Ireland's economic crisis. Unfortunately, however, the key survey question was changed in 2013, thereby limiting the degree to which inferences can be made about changes in participation between 2006 and 2013. The final column of Table 1 lists the 'reference periods' for the various surveys. These are the periods over which survey respondents were asked to recall their activity. For present purposes, the key question in the 2006 QNHS survey obtained information from respondents about whether they had played golf in the previous 12 months. Alas, in 2013, this same question asked about activity over the previous month. Consequently, we cannot know whether the differences in participation recorded among different socio-demographic groups

in these two surveys reflect changes in participation between 2006 and 2013, or differences in the numbers of regular and occasional golfers between these groups. Despite this drawback, the QNHS data contain much useful information on participation in golf and extensive use is made of them in this report.

The ISM was commissioned by the Irish Sports Council¹ and was designed specifically to monitor trends in Irish sport and exercise in the Republic of Ireland. The data collection was undertaken by telephone throughout the year and respondents were asked specifically to recall activities undertaken in the previous seven days. Details on the rationale for the survey design can be found in Lunn et al., (2009). Data were collected in 2007, 2008, 2009, 2011 and 2013. By the standards of social surveys, the sample of over 44,000 is very large. Again, however, this data source has some limitations. The collection of the data underwent a change of provider between 2009 and 2011, resulting in some changes to both methods and the collection of certain key indicators (Ipsos MRBI, 2013). Coupled with the fact that the ISM is a telephone survey conducted during a period of great change in telecommunications habits, this means that the time-series data generated are subject to some noise and must be interpreted carefully. Further references to this issue are made in the body of the report.

Since golf is organised on an all-island basis, it is important to include data from Northern Ireland. The Sport and Physical Activity Survey (SAPAS) of 2010, conducted by Sport Northern Ireland, is the closest analogue to the ISM, in that it asks comprehensive questions about sport and physical activity to a representative sample of adults. Further information is contained in Sport Northern Ireland (2011). There are important differences in the wording of questions, the reference period and, especially, the sample size, which is an order of magnitude smaller than the ISM. Given this, there are many findings reported here where the primary measure of statistical significance is taken from the ISM survey, but the results from the SAPAS survey are checked for compatibility. In general, as will be shown below, there is little reason to believe that patterns of participation in golf are substantially different on either side of the border.

Some use is made of the Survey of Sport and Physical Exercise (SSPE) from back in 2003. This survey involved a very comprehensive and high-quality questionnaire, which included data on past regular participation in sport dating back over several decades. It therefore remains useful for setting current participation levels in a historical context. An account of how the data were transformed to reconstruct historical patterns of participation is contained in Lunn and Layte (2008).

¹ In 2015, the Irish Sports Council merged with the National Sports Campus Development Authority to form Sport Ireland. This new state agency with responsibility for sport came into effect on 1 October, 2015.

In relation to statistical methods, given the variety of survey designs and sampling techniques associated with the different data sources, priority is given in this report to results that are consistent across them, although in general the findings indicate little disagreement between the different datasets.

At its most straightforward, the main statistical method employed in this report is to compare participation rates for different groups of individuals. That is, the majority of charts present the proportion, expressed as a percentage of the group in question that participated in golf during the reference period (one week, one month, etc.) for the survey concerned. The groups we contrast may differ by socio-demographics (age, gender, socio-economic status, family structure, etc.), region, time period, and so on. The reason to use this as our main measure is that calculating the participation rate is more helpful than providing raw numbers of participants from the perspective of evidence for policy. This is because while the policies of organisations aiming to increase participation in sport can potentially impact on the likelihood that members of a given group participate in an activity, they can do little to alter the numbers within each group, which tend to be driven by demographic factors. As the next subsection will show, demographic changes in Ireland are large and of substantial importance to understanding patterns of participation in sport over time.

Reporting participation rates like this is a relevant metric when providing evidence for policy, but can nevertheless be somewhat misleading. For example, older adults are much more likely to play golf than younger ones. Age clearly increases the tendency to participate. However, those with young children are less likely to participate than those with grown-up children. So, is age or family structure the more crucial influence? To answer such questions, we use multivariate statistical techniques (regression models) that estimate the individual impact of a given characteristic (e.g. gender, age, educational attainment, employment status, income, etc.) while simultaneously controlling for other background characteristics that can affect participation. Appendices B and C present the full results of two sets of statistical models, one based on the QNHS data, the other on the ISM data. Readers comfortable with interpreting such tables are invited to examine them.

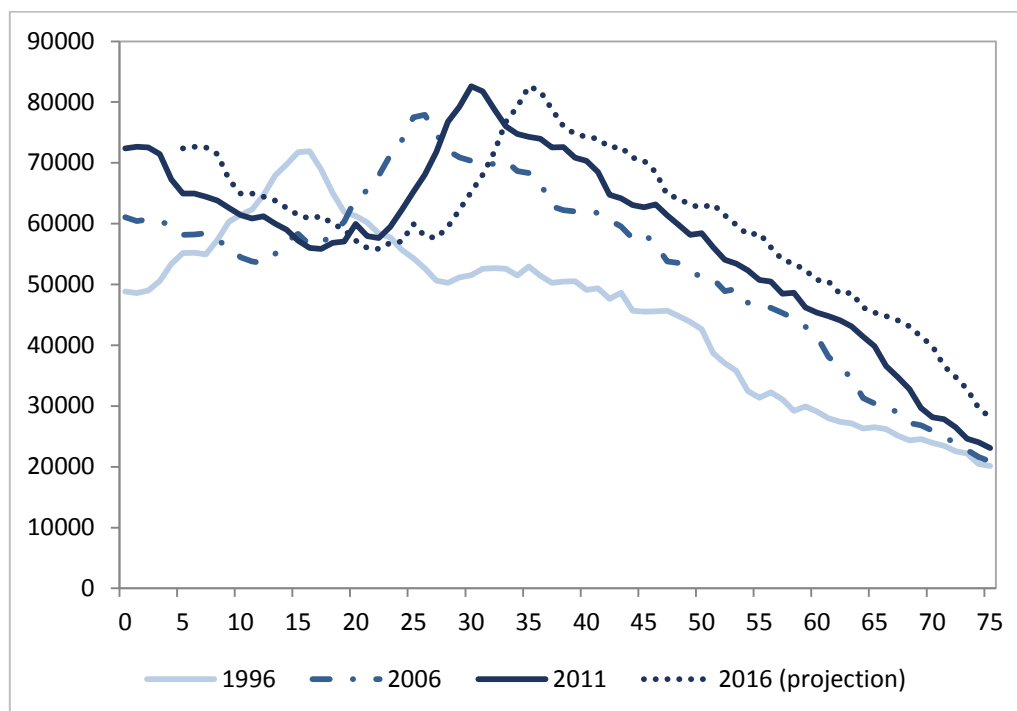
The main results of these analyses are more straightforwardly summarised in the text and charts in the main body of the report. It is important to understand that not all of the differences in rates of participation in golf that are apparent in the charts reflect genuine statistically significant differences in the tendencies of different groups to participate. The accompanying text draws the reader's attention to those differences that are significant and highlights instances where

some differences appear to be significant at first glance but are probably caused by a hidden factor, which our statistical models allow us to identify. It is important, therefore, not to consider the statistical results (presented in the charts) in isolation from the accompanying text.

1.4 DEMOGRAPHIC CONTEXT

The context for understanding the patterns of participation and the choice of measures presented in this report is provided by Irish demography. Figure 1.1 plots the number of people living in the Irish state by individual year of age, according to Census 2011, together with a projection for 2016. This chart makes plain the extraordinary difference in the size of successive cohorts that are less than a generation apart in age. The drop in numbers from those aged 30 years to those aged 18 years in 2011 is fully 32 per cent. This pattern results from a combination of historical fertility trends and migration patterns, both during Ireland's boom and its subsequent economic crisis. The age profile is similar for both genders. One consequence is that, in recent years, the birth rate has risen sharply as a large cohort of people passed into their early thirties and entered peak childbearing years. The increase in the number of younger children is substantial, especially those aged 0-4 years in 2011.

FIGURE 1.1 POPULATION BY INDIVIDUAL YEAR OF AGE (1996-2016) (ROI)



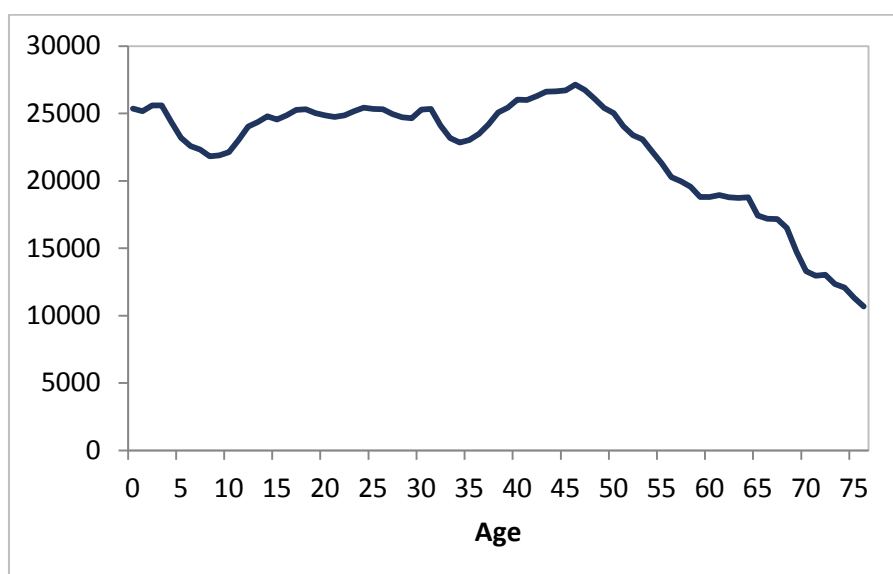
Source: Census 2011.

The demographic profile of Northern Ireland is different and is shown in Figure 1.2, based on population estimates for 2011 provided by the UK Office for

National Statistics (ONS). Again, there is variation in the size of successive cohorts, but the extent of variation is considerably smaller and the largest variation occurs at a different age. Rather than aged 18 years, the smallest cohort was aged eight years in 2011, since when the birth rate has increased.

These demographic figures are important for understanding patterns of participation in sport. For instance, contact team sports, which appeal most to younger people, have struggled to maintain participation levels as the number of teenagers and young people has fallen. For golf, the demographic picture has a different implication. As the data described below will show, golf is most popular among middle-aged and older adults. Figures 1.1 and 1.2 reveal an ongoing, substantial and steady rise in the numbers of middle-aged and older people, which is likely to continue for at least two more decades. Thus, despite challenges that the game may face in relation to maintaining its popularity, the demographic backdrop is highly favourable.

FIGURE 1.2 POPULATION BY INDIVIDUAL YEAR OF AGE (NI)



Source: ONS, 2011.

This variability in demographic profiles also has implications for how the data in this report are presented. From the perspective of policies designed to increase participation, the most important figure is arguably the proportion of individuals within a given group that participates in the target activity. A good participation policy can increase this probability, improving the chance that an individual plays the sport; it cannot alter national demographics. Thus, as outlined in Section 1.3, the charts presented in this report mostly compare and contrast not participation *numbers* but instead participation *rates*, i.e. the percentage of individuals within a given group that participates in golf, where the group might be defined by age, gender, socio-economic status, region and so on.

1.5 LIMITATIONS

All statistical surveys are approximate. Measurement error may be caused by people who recall their activity inaccurately, respondents who wish to paint themselves in a good light, survey staff who fail to make contact with hard-to-reach groups, interviewers who record responses inaccurately, and so on. All participation rates therefore have margins of error. Small differences should not be over-interpreted as meaningful. The statistical results presented in the Appendix employ techniques designed to ensure that the inferences drawn are given appropriate weight, while in the text emphasis is placed on results that are consistent across data sources or that correspond to large differences relative to plausible margins of error.

It is also almost always the case that surveys fail to capture some relevant information. In the present case, one difficulty is that the main survey questions of interest did not always distinguish between different types of participation in golf, e.g. between the full game, pitch-and-putt, practice sessions, visits to the driving range, and so on. Even where surveys do distinguish between pitch-and-putt and the full game, the level of participation in the former is too low to allow for separate analysis. Results reported in the main body of the report include participation in pitch-and-putt in the definition of participation in golf. Excluding it from the analysis would make only a marginal difference and would not affect the main patterns of results presented.

From a public health perspective, it would also be useful to know what proportion of golfers transport themselves around the course in a buggy rather than on foot. This is not captured by the surveys. Nevertheless, some inferences about these matters can be made from the estimates of the duration and intensity of participation sessions, which are presented in Section 2.10 below.

CHAPTER 2

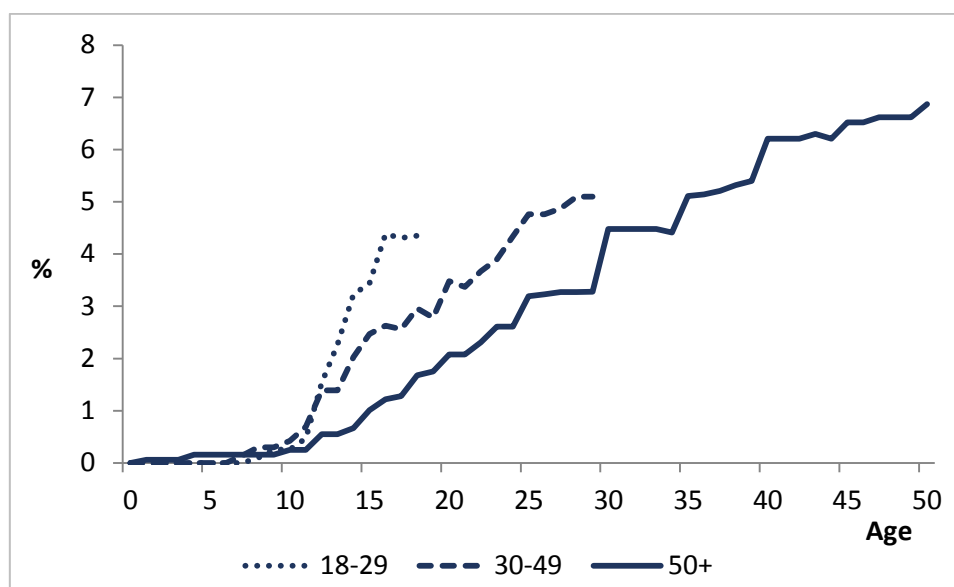
Results

2.1 HISTORICAL PARTICIPATION RATES FOR PLAYING GOLF

The SSPE survey conducted in 2003 was a unique survey of sport and exercise in that it asked very detailed questions about each individual's sporting history, i.e. the sports that they used to play regularly, the ages that they took them up and the ages that they dropped out. 'Regularly' was not strictly defined, but the survey question followed others where the term was used to cover activities that were undertaken at least once a month. From the data generated, it was possible to reconstruct participation rates in sport going back over the decades prior to the survey (Lunn and Layte, 2008). Before examining the best current estimates of participation in golf, it is instructive to use the SSPE data to provide a historical context for the level of participation.

Figure 2.1 presents the estimated participation rate at each age for three cohorts of people in Ireland prior to 2003: those over 50 plus (i.e. people who were born prior to 1954), those aged 30-49 years and those aged 18-29 years. Thus, the chart effectively reconstructs participation in golf going back over 50 years. The chart reveals a strong pattern of increased participation among successive cohorts.

FIGURE 2.1 HISTORICAL PARTICIPATION RATES COMPILED FROM INDIVIDUAL SPORTING HISTORIES BY AGE FOR THREE COHORTS, DEFINED AGE IN 2003



To understand this chart from a slightly different perspective, consider the likelihood of participation in golf at 18 years of age. When surveyed in 2003, each of those in the 18-29 year-old cohort would have been aged 18 years sometime between 1992 and 2003. So the figure of just over 4 per cent indicates that during that period, 1992-2003, an average of just over 4 per cent of 18-year-olds participated in golf. The cohort aged 30-49 would have been 18 years old between 1972 and 1991, so the figure of around 2.5 per cent suggests that as 18-year-olds they were far less likely to participate in golf. The cohort aged over 50 would have been 18 years old at some point prior to 1972, stretching as far back in some cases to the 1930s. For this group, only around 1 per cent were playing golf at age 18.

In their comparison of different sports, Lunn and Layte (2008) noted that golf was far from unique in experiencing strong growth over recent successive cohorts – most sports in Ireland experienced growth over the period in question also. However, the pattern of growth in golf was somewhat unusual in that the growth was particularly concentrated in the 1990s. This historical picture of increasing participation in golf among young adults provides important context for the analysis below.

2.2 RECENT PARTICIPATION RATES FOR PLAYING GOLF

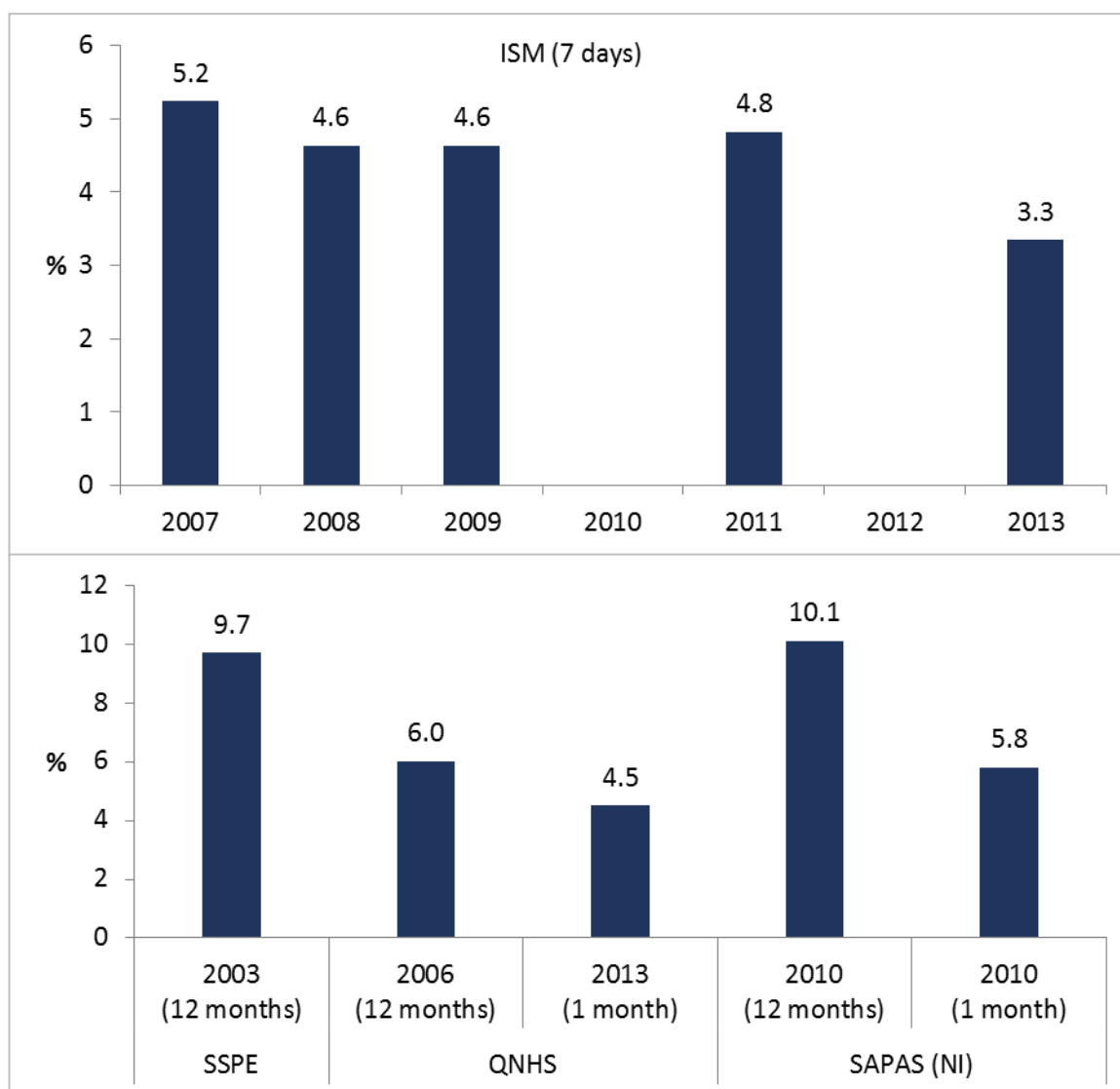
Figure 2.2 provides active participation rates for playing golf, measured as the percentage of the adult population that played golf within a recent reference period, which ranges from one week to 12 months depending on the survey. Given the limitations highlighted in Chapter 1, each of these measures will be subject to a degree of measurement error. Thus, when interpreting these results, it is consistent patterns of results across the surveys that should act as our guide rather than any one data point.

Nevertheless, there is broad agreement across the different surveys. To a very rough approximation, these data could be characterised as suggesting that somewhere approaching 5 per cent of the adult population plays golf regularly, while somewhere closer to 10 per cent plays occasionally. In relation to other sporting activities, this is a high participation rate, placing golf comfortably within the ten most popular sports for active participation (Lunn and Layte, 2010). The point estimates for Northern Ireland are marginally higher than the equivalent estimates for the Republic of Ireland, but given the sample size of the SAPAS survey this should not be considered definitive.

Notwithstanding some limitations highlighted in the previous section, the most accurate of the surveys for measuring an overall participation rate is probably the ISM. This is because of its one-week reference period, which is likely to be subject

to less recall error than longer reference periods that require respondents to remember their activities over a number of weeks and months. The ISM data record that active participation in golf has declined since 2007.

FIGURE 2.2 BASIC PARTICIPATION RATES (PROPORTION OF THE ADULT POPULATION THAT PLAYED GOLF WITHIN THE SURVEY REFERENCE PERIOD)



Source: Quarterly National Household Survey (QNHS); Irish Sports Monitor (ISM); Sport and Physical Activity Survey (SAPAS); Survey of Sport and Physical Exercise (SSPE).

Note that while we cannot be absolutely certain of this survey result, it is highly likely to reflect reality. Given the sample sizes, the reduction in the participation rate is statistically significant. Furthermore, this fall was recorded across successive waves of the ISM survey that, in general, recorded higher levels of participation in sport in 2011-2013 than in the period 2007-2009, especially in individual (as opposed to team) sports (Ipsos MRBI, 2013).

Thus, overall, the evidence suggesting a decline in the popularity of golf over this period is fairly strong. The pattern contrasts with the historical increases in participation in golf that occurred in the decades towards the end of the twentieth century (Figure 2.1). Many of the subsequent analyses below seek to delve deeper into the possible causes of this decline. Although the data above establish the pattern with some confidence, it should be understood that the systematic patterns among subgroups of the population, uncovered in what follows, further strengthen the evidence that golf suffered a decline in participation during this period. The implication, therefore, is that either more individuals were dropping out of the game or that fewer individuals were taking it up. Before looking at participation among different subgroups of the population in detail, it is worth noting that this decline occurred despite favourable demographic and sporting trends during the period in question. The proportion of the population that was middle-aged and older was growing and participation in sport generally was rising.

Like all sports, golf has certain natural advantages and disadvantages when it comes to mass participation. On the plus side, it is a game that can be enjoyed by people from childhood to old age. Golf can be played competitively or non-competitively and is able also to accommodate a large range of abilities within its competitive structures through extensive use of the handicap system. On the negative side, golf is typically played some distance from people's homes, takes a long time to play and requires expensive equipment, plus fees to access courses. Given this, there is reason to believe that the game will be subject to distinctive patterns of participation by socio-demographic group. Furthermore, how such patterns have changed in recent years may give clues as to the causes of the decline in active participation.

2.3 PARTICIPATION BY GENDER

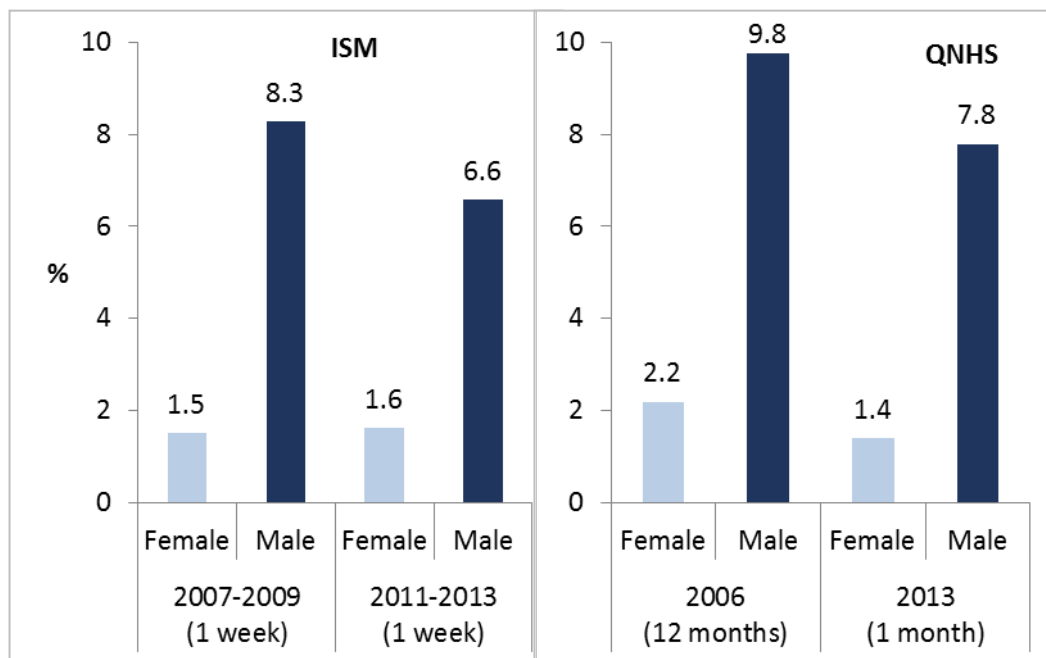
Figure 2.3 provides a breakdown of participation rates by gender for the two larger surveys (ISM and QNHS). The proportion of women who play golf is too small for the figures from the smaller sample surveys to be reliable.

Two elements of these charts are noteworthy. First, golf is a strongly male dominated sport. Men are approximately four-to-five times more likely to play golf than women. This proportion is reasonably constant across the different surveys and reference periods.

Nevertheless, the second aspect of this gender breakdown to observe is that the declining trend in participation seems to have been a male phenomenon. As described in the previous section, the change in the QNHS reference period from 12 months to one month confounds comparisons over time with differences in

frequency of participation. The ISM data, however, give a clear result. The fall in participation among men was statistically significant, while participation among women held up.

FIGURE 2.3 PARTICIPATION RATES BY GENDER



Source: Irish Sports Monitor and Quarterly National Household Survey.

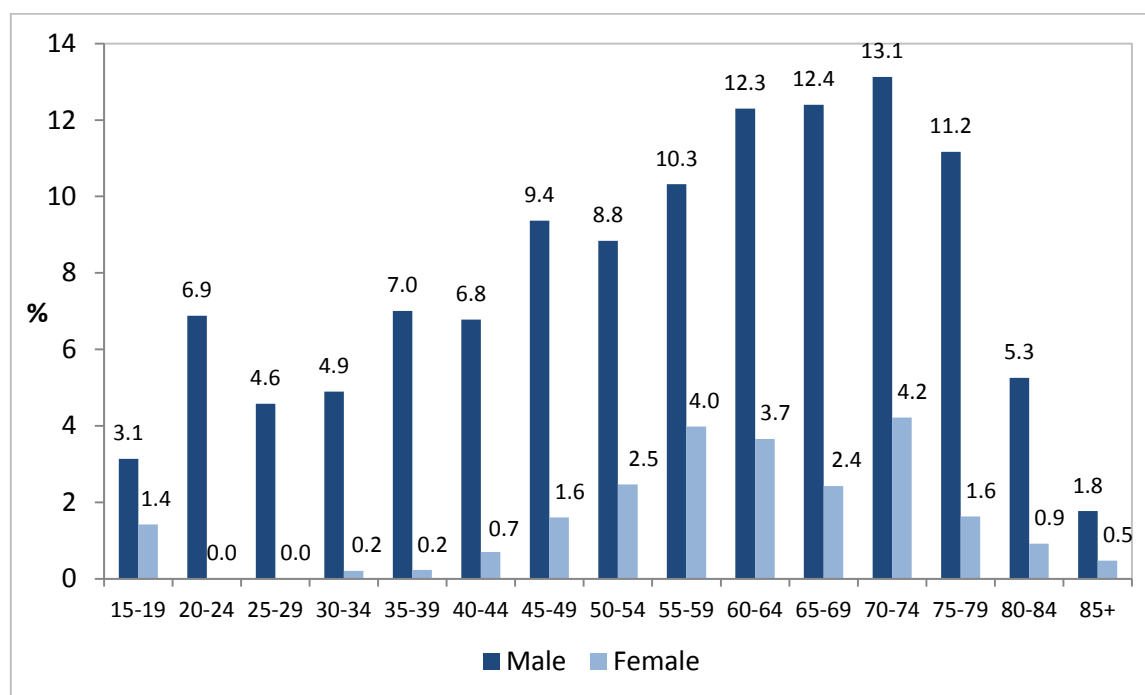
A fall in participation of this size among men over such a short time indicates that a significant proportion of male golfers gave up the game during the period concerned. In the following subsections we further examine possible causes of falling participation, but it is important to note at the outset that the causes have the potential to be numerous and quite complex. For instance, it may be tempting to conclude from these data that during this period some key factor affected whether men but not women played golf. This inference could easily be mistaken, however. The female participation rate must be considered against the backdrop of women's participation in golf, which it is fair to assume has risen appreciably in recent decades from a low base.² Hence it is possible that drop-out from the game was driven by one or more factors that affected both men and women, but that these were compensated for among females by an underlying long-term trend of steeper rising participation in women's golf.

² Indeed, the level of participation among women is historically too low for the analysis based on the SSPE carried out in Section 2.1 to be conducted separately by gender.

2.4 PARTICIPATION BY AGE

The present subsection focuses on the pattern of participation by age. Figure 2.4 shows participation rates by age and gender from the 2013 QNHS – the most recent large sample. Among both genders, the highest rates of participation are for middle-aged and older people, with high participation rates even for people in their 70s. This pattern is highly unusual among sporting activities and is a selling point of golf. Similar patterns typically emerge only for bowls and hill-walking, which are less popular activities. In contrast, the likelihood of participation in sport and physical activity generally declines substantially as adults get older. Golf provides many people with a form of physical activity that they can continue to enjoy well into old age. In the context of concerns about levels of physical activity and the link between physical activity and health, this is a simple but important point.

FIGURE 2.4 PARTICIPATION RATES BY AGE AND GENDER



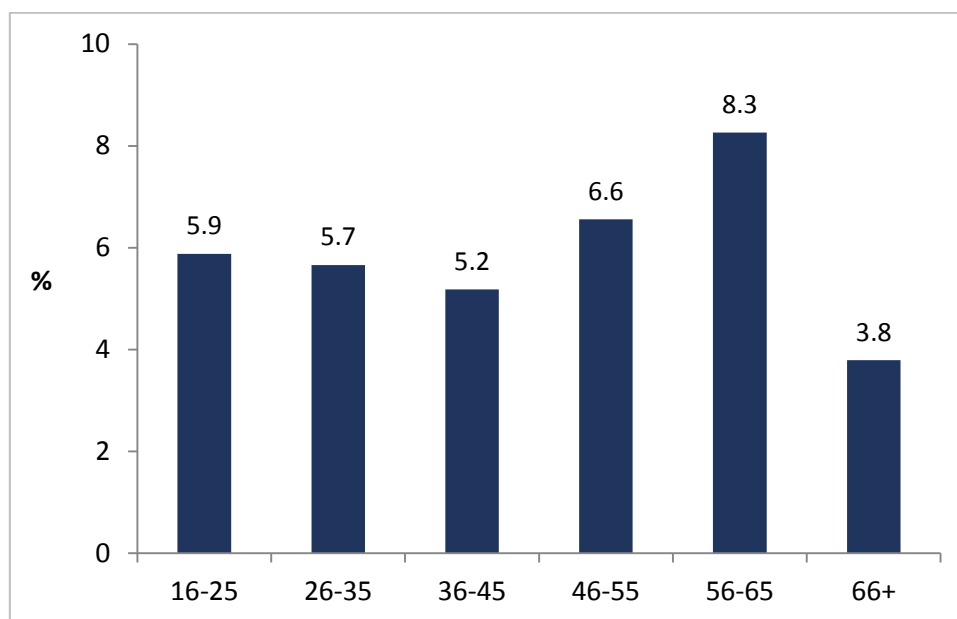
Source: Quarterly National Household Survey, 2013.

Another notable aspect of Figure 2.4 is that participation rates fall somewhat during early adulthood only to recover thereafter. The statistical models in Appendices B and C confirm that this fall is statistically significant. The lowest participation rates occur for individuals in their 20s and 30s. This is the period of the life-course during which many people form relationships, start families, join the labour market and begin to build careers. It is likely, therefore, that time represents a significant constraint for people at this age. The expense associated with household and family formation may also mean that, for some individuals, financial constraints limit involvement in golf.

Whatever the cause, it appears that some golfers drop out from the sport as young adults. They may start playing again as they get older, but the pattern of participation suggests that many golfers only ever take up the sport as they progress towards and through middle-age, or at least that occasional players only become regular players later in life.

Figure 2.5 shows the equivalent data for Northern Ireland in 2010, based on the SAPAS data. The smaller sample size means that it is not possible to separate the participation rates by gender. The pattern of participation by age is very similar to that recorded by the QNHS for the Republic of Ireland. There is a hint that participation among younger adults may be slightly higher in Northern Ireland, and perhaps the rate among older adults slightly lower, but given the different data collection methods it is not possible to test these propositions for statistical significance.

FIGURE 2.5 PARTICIPATION RATES (1 MONTH) BY AGE (NI)

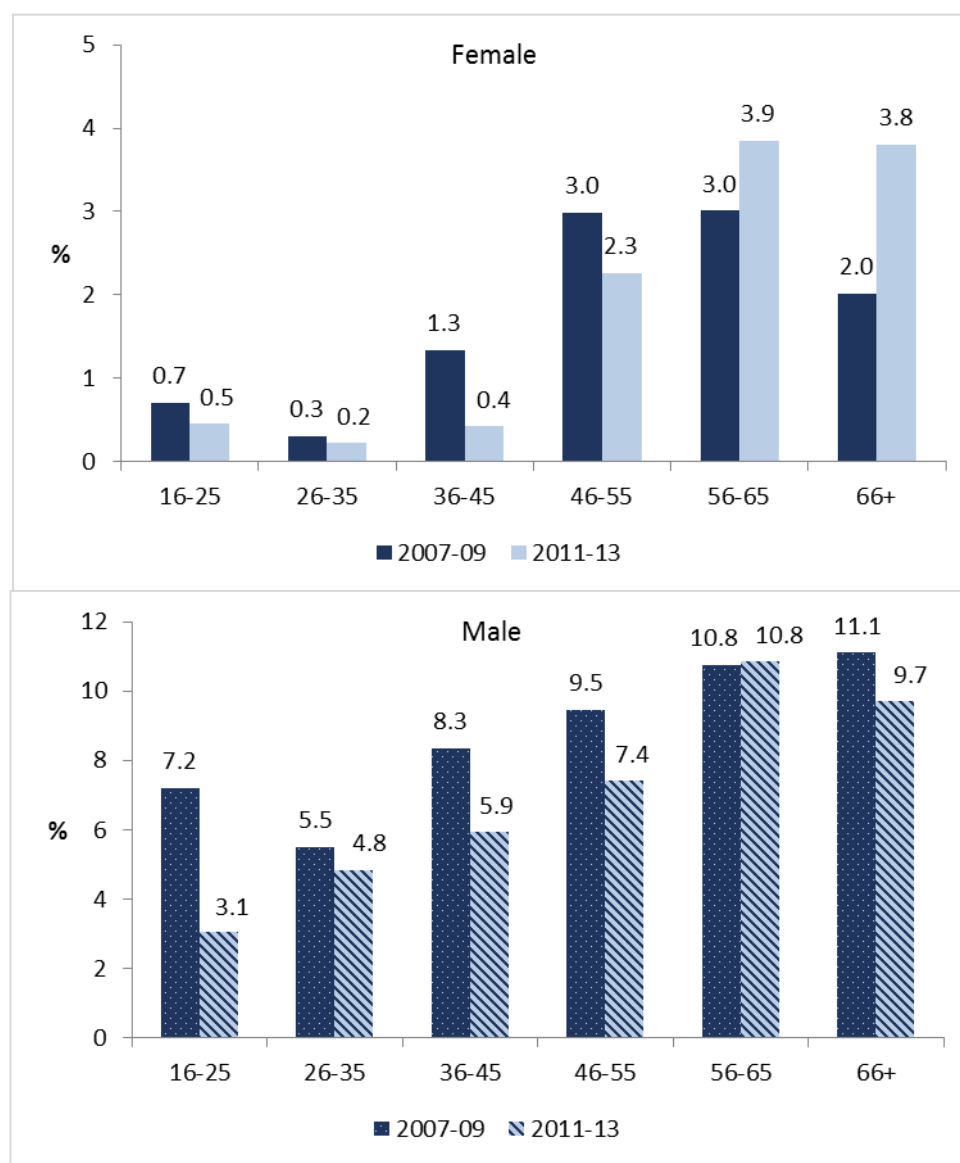


Source: Sport and Physical Activity Survey, 2010, one month.

The data from the ISM allow us to examine how the pattern of participation by age has changed in recent years. Figure 2.6 compares participation rates for men and women by age group for the years 2007-2009 and 2011-2013. There is generally good agreement across the two surveys. Ignoring, for now, the differences between years, the general pattern of participation by age is very similar to that recorded by the QNHS.

These two charts give us the first strong indication regarding the likely causes of the decline in participation in golf. For both genders, there was a fall in participation among every age category below 55 years of age. Above 55 years of age, there was a substantial increase in the proportion of women playing golf, with less change among older men.

FIGURE 2.6 PARTICIPATION RATES BY AGE AND GENDER, COMPARING 2007-2009 WITH 2011-2013



Source: Irish Sports Monitor.

The strength of this association between age and falling participation is striking and probably instructive. It suggests that the fall in participation is unlikely to have been caused by an overall change in the nature of the game or how it is organised; golf did not suddenly become less interesting or enjoyable as a sport than it was previously. Rather, the implication is that it became in some way more difficult or less attractive for certain subgroups of the population to participate, but not for others.

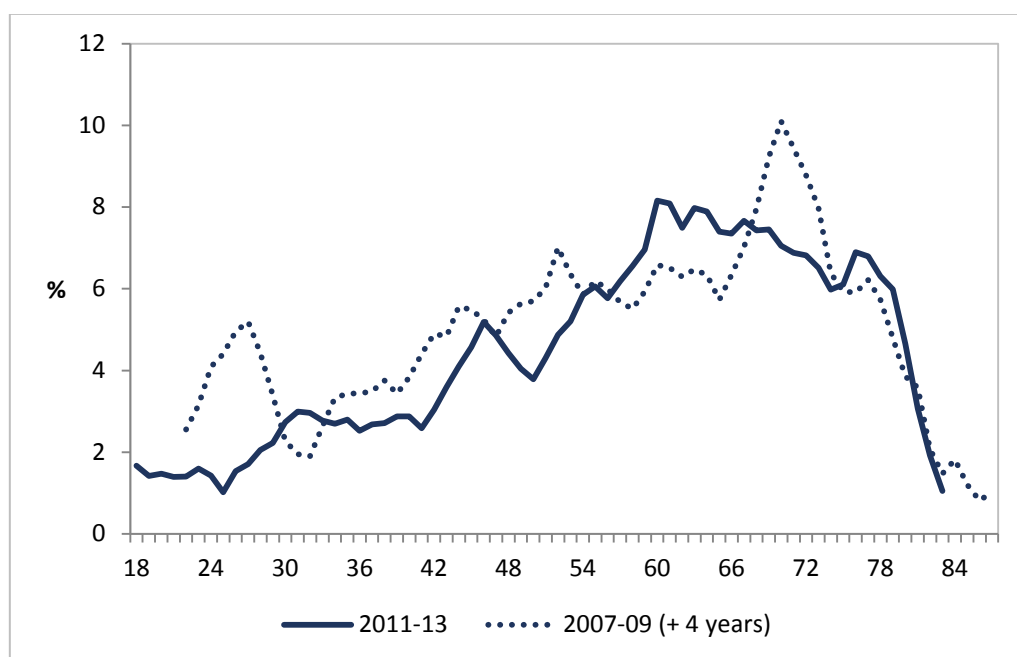
While Figure 2.6 is instructive, it nevertheless contains important ambiguities. A change in the participation rate over time within a particular age group can be caused by multiple effects. Firstly, it is unclear whether any difference is due to an age effect or a cohort effect. For example, the proportion of males aged 36-45 years who had played golf in the previous week fell from 8.3 per cent to 5.9 per cent over this period of 5-8 years. This could be because there were factors that made it harder for adults aged 36-45 to play the sport (an age effect). Alternatively, it could be because the particular group of individuals that was aged 36-45 years in 2013 was somehow different from the cohort aged 36-45 years in 2007 (a cohort effect, albeit that there is some overlap). From Figure 2.6, these two possibilities cannot be disentangled. What we can be more sure of is that the historical increase in participation among successive cohorts of young adults, as displayed in Figure 2.1 for cohorts up to 2003, has to some extent gone into reverse: the most recent cohort of young adults is playing less golf, not more. Secondly, because throughout most of adulthood the participation rate in golf rises with age, it is unclear whether changed participation in each age group reflects fewer individuals taking up golf or more individuals dropping out of the sport.

Greater insight into these matters can be had from Figure 2.7. This chart is somewhat more complex than previous ones, but worth dwelling on. The lines are generated by subjecting the ISM data to 'cohort matching', which works as follows. The solid line simply shows the participation rate by individual year of age, according to the age of individuals when surveyed in 2011 or 2013 – as in previous charts above. But the dotted line presents the participation rates for 2007-2009 with the curve shifted to the right by four years. In other words, the dotted line shows what participation rate would have been expected at each age had no people who played golf dropped out and no new people taken up the game. Thus, at any age where the solid line is above the dotted line, more individuals who were that age between 2011 and 2013 took up golf than dropped out of it; where the dotted curve lies above the solid one, more dropped out than took up the game. For instance, by lining up the participation rate for 50-year-olds in 2011-2013 with the rate for 46-year-olds in 2007-2009, Figure 2.7 shows that among individuals who were 50 years old in 2011 or 2013, a higher proportion of them played golf back when they were 46 years old; more of that cohort dropped out than took up golf.

Overall, from Figure 2.7, we can therefore conclude that, for those aged under 55 years, the number of individuals who initially played golf but dropped out over the four-year period was greater than the number of individuals who did not initially play golf but took up the game over the same period. The situation among the older cohorts is more mixed. Among those aged 55-67 years in 2011-

2013, more took up the game than dropped out. For those who were around retirement age when the economic crisis set in, aged 68-73 years in 2011-2013, there was net drop-out. Lastly, among the oldest cohort, participation in golf held up remarkably well. The two lines sit almost on top of each other from age 74, suggesting that participation among the oldest golfers sustained very well. So at least some of the decline in participation is due to younger golfers dropping out of the game, but some may also still be due to fewer people taking up the sport.

FIGURE 2.7 PARTICIPATION RATES BY AGE MATCHED BY COHORT



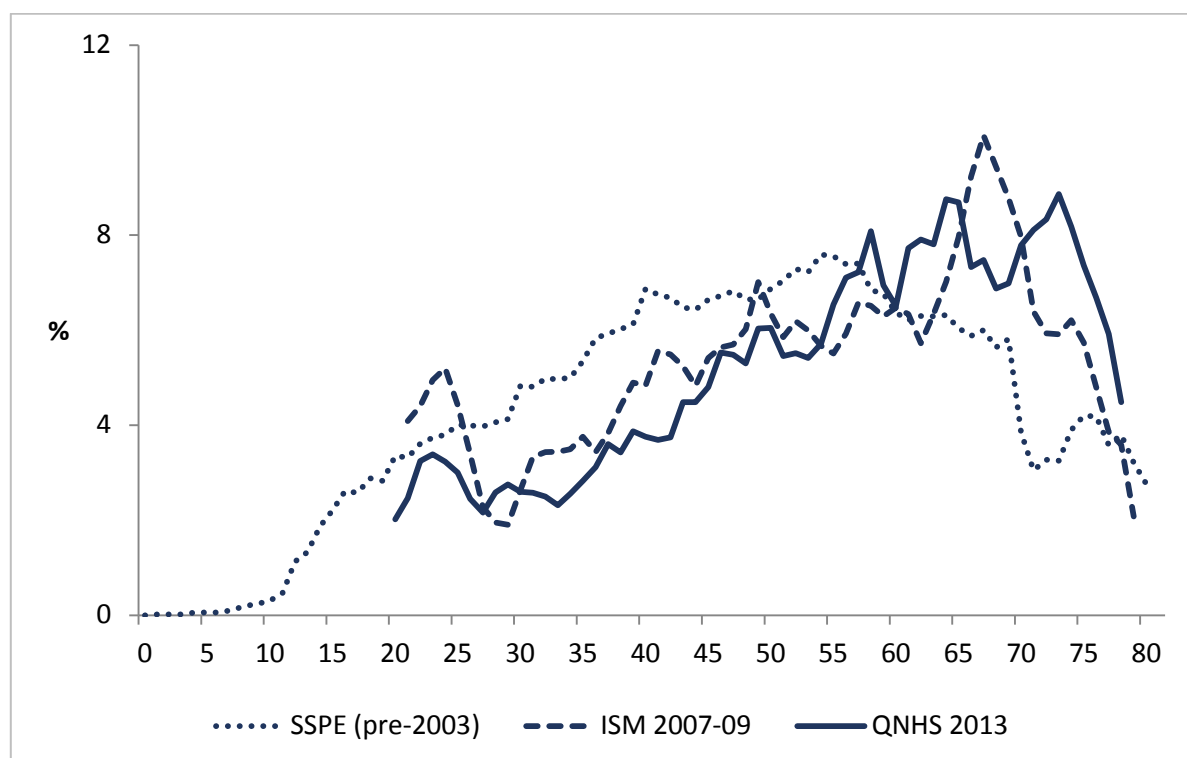
Source: Irish Sports Monitor, 2007-2013.

One obvious possibility, given the time period in question, is that the decline was linked to Ireland's economic crisis. In support of this possibility, the falls in participation were concentrated among the demographic subsection of the population most exposed to the extreme volatility in the housing and labour markets. Profound and rapid changes in the Irish economy resulted in redundancies, falling incomes, high household debt and, perhaps importantly for individuals considering an investment in golf club membership, lower expectations and higher uncertainty about future economic prospects. These economic impacts were strongest for younger adults and could have been a negative influence on the likelihood of participation in golf. According to this perspective, among older adults, many of whom were less affected by the economic crisis, the increase in participation in golf among women may simply have carried on. Thus, according to this account, there was little change in participation among women, because the increase among older women offset the decrease among younger women, while there was a decline in participation among younger men, which was not compensated for by increased participation among older men.

There is a key test that can be done to give some insight into whether the recent decline in participation in golf is, or is not, primarily caused by the economic crisis. The SSPE data from 2003 provide insight into historical participation rates at each age by cohort. These can be compared with the pattern of participation by age from 2007 onwards. If the fall in participation was due to the economic crisis, it should only have begun after 2007.

Figure 2.8 shows this comparison. It is important to understand that the data from the SSPE are not participation rates by age in 2003. The sample of 3,080 would be too small to generate participation rates by individual year of age. Rather the figures are generated from respondents' sporting histories. Each data point shows the proportion of the sample who had reached the age in question by 2003 and were participating regularly in golf at that age. So, for instance, the figure for 40 years of age relates to the proportion of people in the SSPE sample aged over 40 years who were playing regular golf at 40 years of age. Consequently, the data approximate a participation rate by age in the decades immediately prior to 2003.³

FIGURE 2.8 PARTICIPATION BY AGE ACROSS THREE SURVEYS



Source: Sport and Physical Activity Survey; Irish Sports Monitor; Quarterly National Household Survey.

³ Technically, this is the equivalent of a descriptive form of survival analysis known as Kaplan-Meier analysis (Kaplan and Meier, 1958).

So the comparison in Figure 2.8 is not completely like-with-like, but it is nevertheless instructive. Comparing the SSPE with the ISM data for 2007-2009, the implication is that a decline in participation in golf was already occurring among younger adults relative to the years prior to 2003. This was coupled with a substantial increase in participation among older adults from age 55-60 years onwards. The inclusion of the QNHS data for 2013 reveal that what happened after 2007 was a continuation of a pre-existing trend.

Note that the SSPE data refer to playing at least once a month, the QNHS data are based on a reference period of one month, while the ISM data are for a reference period of one week. So the ISM data are slightly too high relative to the other two series. We nevertheless know from the comparison of the ISM for 2007-2009 and 2011-2013 that the decline in participation carried on during this period.

It needs to be understood that this analysis does not show, definitively, that Ireland's economic crisis had no effect on participation in golf. What it does show, however, is that the primary driver of changes in the participation rates of different age groups was a trend that began well before the crisis started. After decades during which younger adults were increasing their participation in golf (see Figure 2.1), sometime around (or perhaps a bit before) the turn of the century, younger adults began to play less golf, while older adults played more.

It is interesting to note that this changing pattern of participation may well not be a phenomenon that is unique to Ireland. High-quality international research in this area is sparse. Nevertheless, research undertaken by the National Golf Federation in the United States has recorded a similar picture to the one described here. The organisation's annual industry monitoring reports suggest that social change among the modern generation of younger adults may be having a substantial effect on participation in golf.⁴

Overall, participation in golf has a unique profile by age among the most popular sports, appealing more to older adults than to younger ones. This age difference has become stronger over a period of at least the last decade and a half. The decline in participation among younger adults seems to have outweighed the increase among older ones, leading to a fall in participation overall. The following subsections aim to shed further light on why these happenings may have occurred.

⁴ See www.npf.org.

2.5 PARTICIPATION BY SOCIO-ECONOMIC STATUS

Socio-economic status can be measured in multiple ways. Here we focus on four indicators: educational attainment, income, occupation and employment status. Again, the interest is both in understanding the relationship between each of these indicators and the likelihood that an individual plays golf, and in examining how this relationship changed in recent years.

One complication in investigating this issue is that each of the different datasets uses slightly different categorisations for the different indicators, making direct comparisons difficult. That is, most surveys record age and gender in a way that is comparable across surveys, but there are multiple ways to record educational attainment, income and status with respect to the labour market. However, these multiple categorisations do not prevent a coherent overall picture from emerging in this case.

FIGURE 2.9 PARTICIPATION RATES BY EDUCATIONAL ATTAINMENT

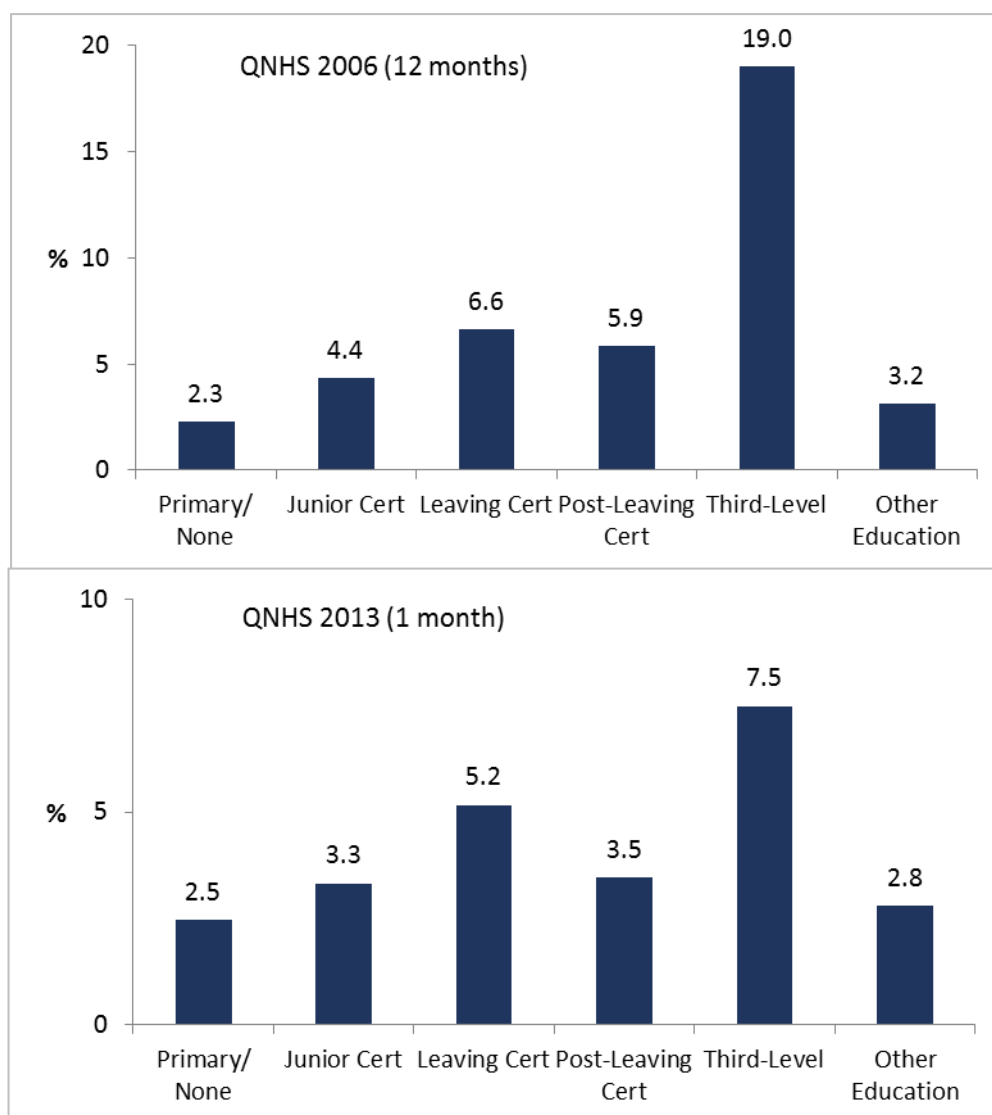


Figure 2.9 presents participation rates by six categories of educational attainment based on the QNHS data. Two points need to be emphasised. First, there is a strong 'social gradient'. Individuals with higher educational attainment are much more likely to play golf. The statistical models detailed in Appendix B show this effect to be highly statistically significant.

Second, the size of the effect varies substantially between 2006 and 2013. As previously, there is ambiguity here, because we cannot know whether the much higher participation rate for individuals with a third-level qualification in 2006 reflects a substantial change in participation among this group between 2006 and 2013, or whether it is due to those with a third-level qualification being more likely to be occasional players and, therefore, to respond more positively to a question about whether they have played golf in the last year than to a question about whether they have played golf in the preceding month. Given the size of the effect, it is quite likely that the different reference period played at least some kind of role. It may be that those with higher educational attainment are more likely to be members of golfing societies that play irregularly or perhaps more likely to play casually with friends or on holiday.

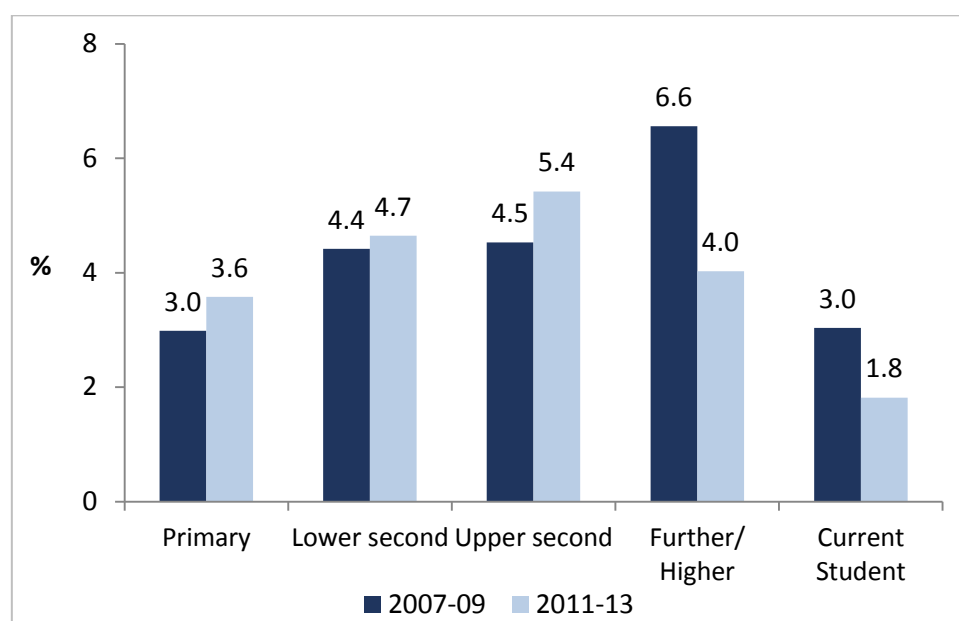
The SAPAS data for Northern Ireland do not contain such a detailed breakdown of educational attainment with sufficient sample sizes within subgroups to perform the equivalent analysis. Nevertheless, the data do confirm a strong relationship between educational attainment and participation in golf. The participation rate among those with a third-level degree is just over 10 per cent, while for all other categories the rate lies below 6 per cent.

Less ambiguity surrounds the equivalent results from the ISM, which are provided in Figure 2.10 and are based on a different categorisation of educational attainment. Again, as confirmed by the models in Appendix C, there is a strong and statistically significant social gradient, with those of higher educational attainment being most likely to play. However the size of this effect, which is based on a reference period of one week, contrasts somewhat with that above for the QNHS. This suggests that the result for the 2006 QNHS probably is due to a greater prevalence of occasional golfers among those with third-level qualifications.

Figure 2.10 gives a strong indication of a socio-economic element to the decline in participation in recent years. The fall seems to have been concentrated among people with high educational attainment. We need to be careful how we interpret these results, however. As outlined in Chapter 1, there are correlations

between different variables that can give a misleading picture unless they are controlled for simultaneously within a statistical model. In this case, there is a correlation between age and educational attainment that needs to be taken into account. The statistical models in Appendix C conduct a multivariate analysis that provides an estimate of the relationship between educational attainment and playing golf while simultaneously controlling for age (and other background characteristics). The coefficients estimated by those models confirm that the relationship between educational attainment and the likelihood of playing golf weakened between 2007-2009 and 2011-2013, although the resulting differences in participation for 2011-2013 between individuals with further/higher qualifications and those with only Leaving Certificate or Junior Certificate, as shown in Figure 2.10, are not statistically significant. Once other background characteristics are controlled for, in particular age, the model continues to estimate that those with higher attainment were significantly more likely to play golf in 2011-2013.

FIGURE 2.10 PARTICIPATION RATES BY EDUCATIONAL ATTAINMENT, COMPARING 2007-2009 WITH 2011-2013



Source: Irish Sports Monitor.

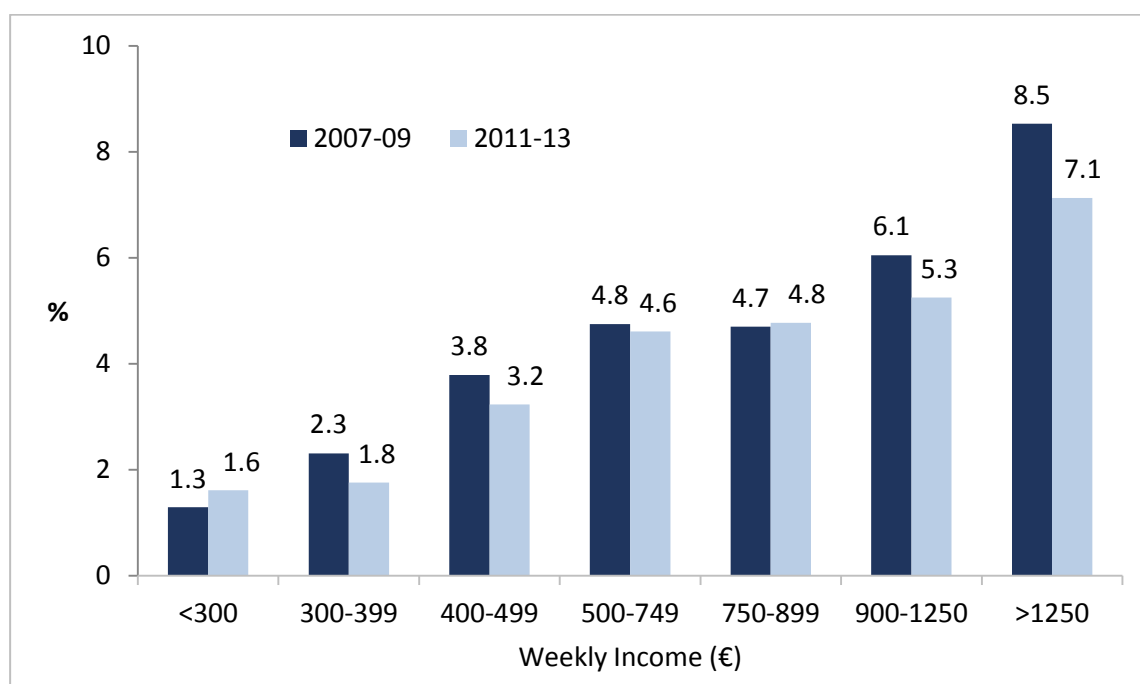
Nevertheless, the message of the above analysis is that the decline in participation in golf occurred among individuals with high educational attainment. This again fits with the view that the fall in participation is not a result of the economic crisis, since people with higher attainment would, on average, have been less negatively affected than those with lower attainment.

Greater insight can be had by looking at how participation relates to household income. This is only possible using the ISM data, because the QNHS dataset does not contain information on income.

Figure 2.11 shows how the participation rate for golf varies by seven categories of weekly household income. The first thing to note about this chart is the very strong relationship between income and the likelihood of participation: those with higher incomes are much more likely to play golf. Comparing 2007-2009 with 2011-2013 confirms that, as the analysis by educational attainment implies, a decline in participation in golf did indeed occur among people in higher socio-economic groups. Participation fell in the highest income groups. It also fell somewhat in some lower income groups, however, while holding up among middle income groups. The multivariate analysis in Appendix C confirms that these relationships are significant once other background characteristics are controlled for.

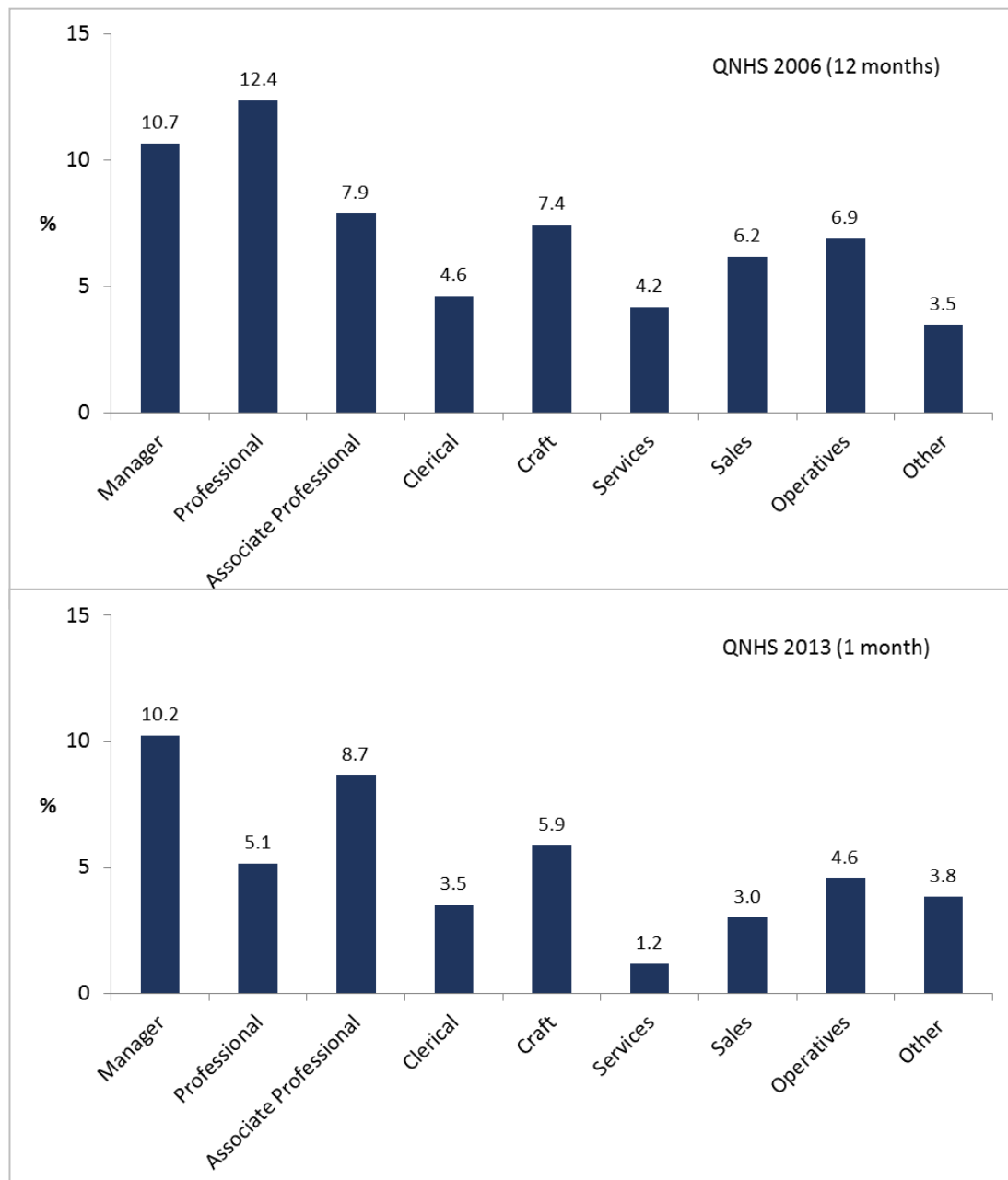
This chart raises the possibility that the economic crisis may have had some impact on the likelihood that those in lower income households played golf, although we estimate that this effect was substantially smaller than the reduction in participation among higher socio-economic groups and younger adults in general.

FIGURE 2.11 PARTICIPATION RATES BY HOUSEHOLD INCOME, COMPARING 2007-2009 WITH 2011-2013



Before considering possible explanations for this pattern, we consider the relationship between playing golf and people's position in the labour market. Because the QNHS is primarily a survey of employment, it is the superior dataset for considering this relationship. Figure 2.12 provides participation rates by occupation for 2006 and 2013.

FIGURE 2.12 PARTICIPATION RATES BY OCCUPATION



Source: Quarterly National Household Survey.

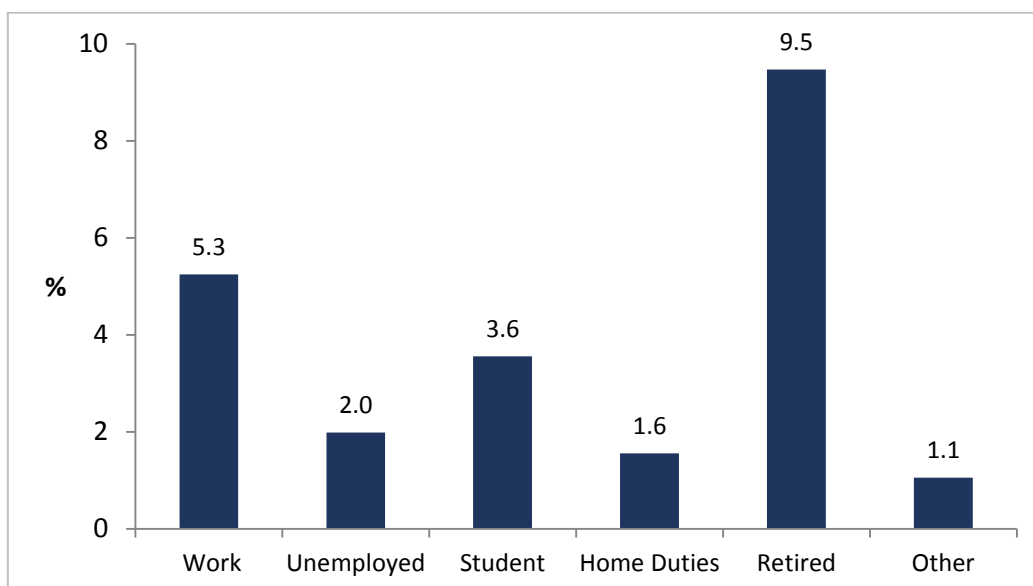
The results again indicate a strong socio-economic gradient. Individuals who work in what are considered to be 'higher' occupations, such as managers and professionals, are substantially more likely to play golf. One interesting aspect to these data is the relatively high rate of participation among those in 'Craft'

occupations. This may well be due the fact that many in this primarily male occupational category are self-employed and, therefore, have greater flexibility over their use of time.

Once again with the QNHS dataset, change over time is confounded with regularity of playing. Nevertheless, the greatest degree of change between the two surveys occurred for the 'Services', 'Sales' and, in particular, 'Professional' occupations. This latter finding is consistent with the previous analyses, in that the decline in participation in golf appears to have occurred largely among higher socio-economic groups.

Figure 2.13 shows the equivalent analysis by employment status. (In this case only one chart is presented, because the results are very similar across the surveys and changes between years occurred similarly in all categories). Retired and working people are more likely to play golf. However, once other background characteristics such as age and gender are controlled for, the two most consistently significant effects are lower levels of participation among people who are unemployed or who are in the category 'Other', implying that disconnection from the labour market reduces the likelihood of playing golf. The greater likelihood of participation among retired people is statistically significant in the statistical models relating to 2013 (Appendix B), once age is controlled for.

FIGURE 2.13 PARTICIPATION RATES BY EMPLOYMENT STATUS



Source: Quarterly National Household Survey, 2013.

Summarising the relationship between socio-economic status and playing golf, two things stand out. First, the relationship is consistent and strong. People who have higher educational attainment, higher income and better employment

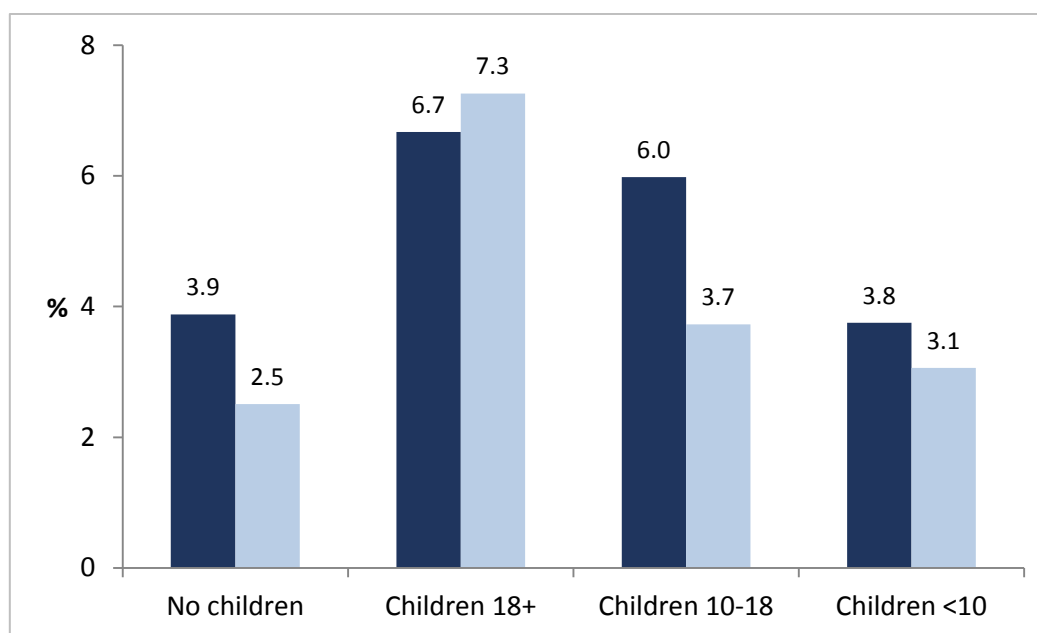
positions are much more likely to play golf. This is perhaps unsurprising, but for those interested in increasing participation in the sport, it is important to recognise. Second, the decline in participation in recent years appears to have been concentrated to a significant extent among those in higher socio-economic groups. While it is also true that some individuals in low income households became less likely to participate between 2007-2009 and 2011-2013, the greater decline occurred among people with high educational attainment, high income and/or professional occupations.

One implication that can be taken from this is that, while the expense involved in playing golf is likely to be a factor in whether people play, there is much more to participation in golf than affordability. Furthermore, the results confirm that the falling level of participation in golf in recent years seems to be caused by more than Ireland's economic crisis; other factors appear to have been at play.

2.6 PARTICIPATION BY FAMILY STATUS

The statistical models in Appendices B and C produce several consistent findings that suggest a relationship between the likelihood of playing golf and family structure. In the models based on both the QNHS and the ISM data, individuals in families with children are less likely to play golf, unless the children are grown up. The SAPAS survey also shows that participation in Northern Ireland is less likely among individuals living in households with children aged under 16.

As Figure 2.14 shows, for the ISM data the effect depends on the age of the children and is related to the decline in participation in recent years. Note that it is not clear from this chart that, as indicated in the previous paragraph, individuals without children are more likely to play golf. This is because those without children tend to be younger adults. The models presented in Appendices B and C control for this difference and the results suggest that once age is accounted for, individuals with non-adult children are significantly less likely to play golf.

FIGURE 2.14 PARTICIPATION RATES BY FAMILY STRUCTURE, COMPARING 2007-2009 WITH 2011-2013

Source: Irish Sports Monitor.

The ISM data are the most relevant for this analysis, as they contain more detail on the age of children, as well as the most accurate measure of how participation has changed over time. The results show that participation fell among all categories other than the category of individuals with children over 18 years of age. Perhaps most notable is the change for the category of parents with children aged 10-18 years, in which participation fell back to similar levels to that for parents with young children (under ten years). The statistical models in Appendix C confirm the significance of this effect, while controlling for other background characteristics, in particular age. Moreover, they give an indication of effect size. The impact on playing golf of having children in the home in 2011-2013 is estimated to be on a similar scale to those of socio-economic status and age. In other words, family structure appears to be one of the most important determinants of the likelihood of playing golf, and has become more so in recent years.

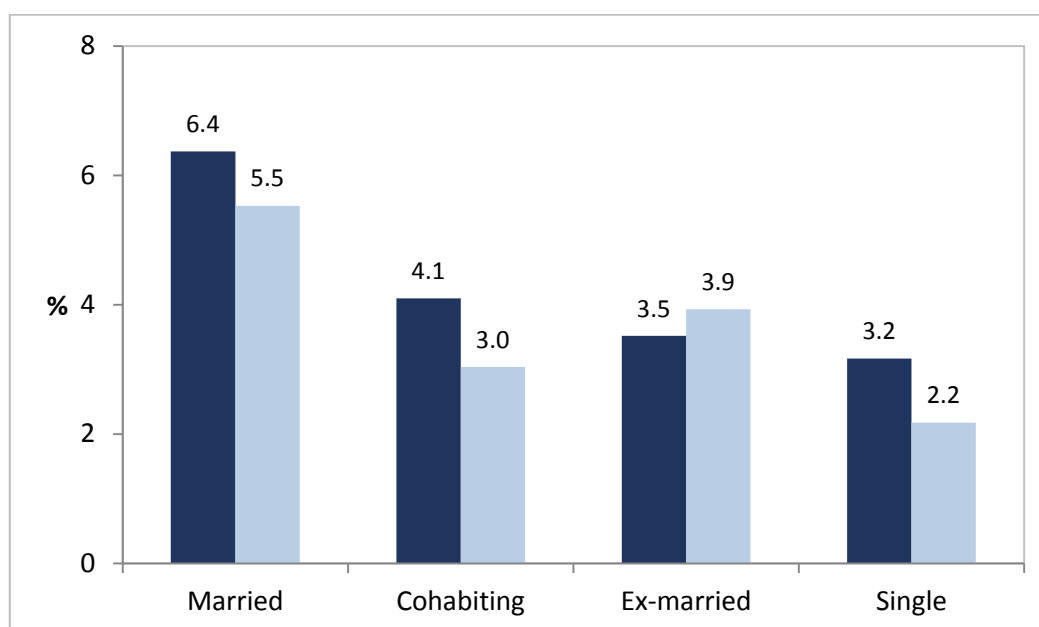
Based on the present data, we cannot be sure of the driving force behind these results. Yet, when put together with the fact that the decline in participation among younger adults began more than ten years ago, it appears likely that, at least to some extent, the results reflect social change. The present cohort of younger adults has a higher proportion of couples in which both partners work and a higher proportion in which the woman has the more lucrative career, in comparison to previous cohorts of Irish adults who engaged with more traditionally gendered occupations. Shared responsibility for looking after children is an accepted norm for many in this generation. The time commitment

required to play regular golf may be considered less desirable or acceptable for parents than was previously the case.

A further factor may also be involved. Previous reports that have examined the ISM data (especially *The Irish Sports Monitor: Third Annual Report 2009*) have noted a trend towards parents of children under 18 years of age becoming increasingly physically active in sport and physical exercise, especially in individual activities such as going to the gym, exercise classes, swimming, cycling and running. Another possibility, then, is that parents in the current generation seek other forms of physical activity that are more intensive and less time consuming than playing golf.

Figure 2.15 presents participation rates by marital status. The results show that participation fell between 2007-2009 and 2011-2013 by similar amounts in all categories except for among those formerly married. Models based on both the QNHS and ISM data (Appendices B and C) confirm that the higher level of participation among people who are married is statistically significant. Again, the estimated size of this effect is quite large in relation to the other main determinants of participation in golf identified in this report.

FIGURE 2.15 PARTICIPATION RATES BY MARITAL STATUS, COMPARING 2007-2009 WITH 2011-2013



Source: Irish Sports Monitor.

Overall, therefore, this subsection leads to a clear conclusion: participation in golf is strongly influenced by the shape of an individual's family. Since family structures have been and continue to be subject to fairly rapid change, this amounts to an important influence, which we return to in the final section. For

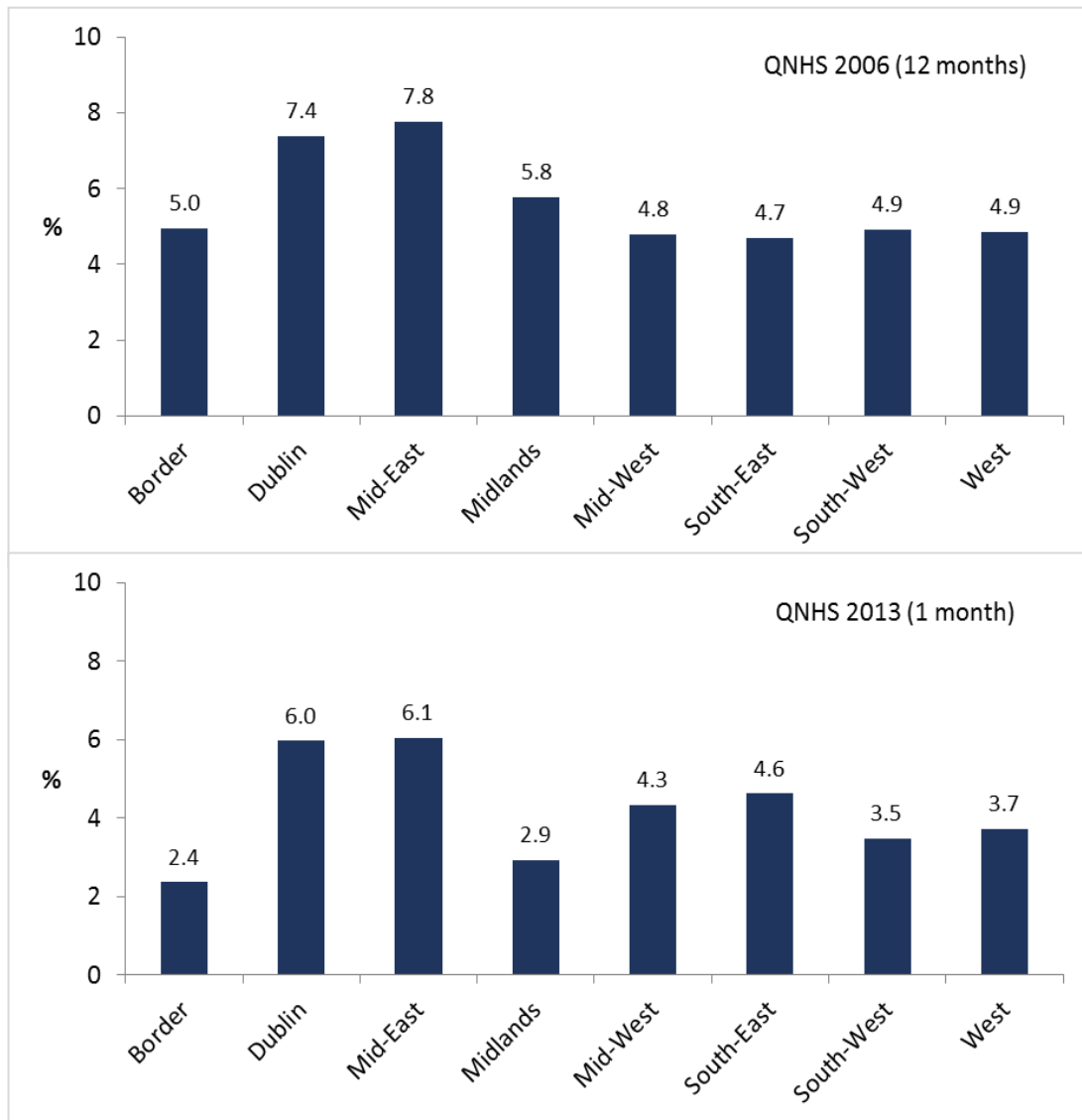
now, in addition to recalling that the balance of labour market activity and responsibility for raising children has changed in modern times, it is also worth noting that the present cohort of young adults tends to form partnerships later and to have children later. All of these factors are likely, given the data above, to reduce participation in golf.

2.7 PARTICIPATION BY REGION AND AREA

Both the QNHS and ISM data provide the opportunity to examine regional variation in participation. This includes how participation has changed by region in recent years, since there is arguably little reason to believe that the proportion of occasional versus regular players would be subject to strong regional variation, at least in comparison to factors such as age and socio-economic status, which have strong impacts on the time and resources available to individuals. Thus, the confound between the year of the survey and the regularity of playing, which is unfortunately present in the QNHS data, is less problematic when addressing this research question.

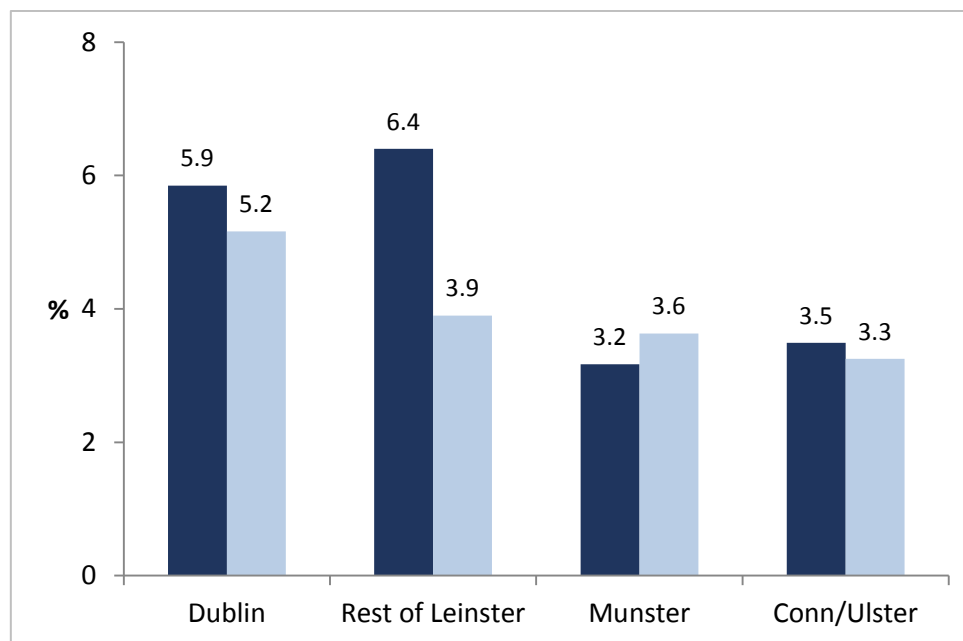
Somewhat more difficult is that it is not possible to produce a perfect match in the granularity of the regional breakdown between the two datasets, because sample sizes by year for the ISM are not as large as for the QNHS. Hence, we divide the country into eight regions for the QNHS (using the European Union's 'NUTS 3' regions) and four regions for the ISM. Nevertheless, a fairly consistent pattern emerges.

Figure 2.16 shows the participation rates by region for the QNHS data in 2006 and 2013. Participation in golf is highest in the Dublin and Mid-East regions. The models presented in Appendix B reveal this to be a statistically significant difference. However, the data also suggest that the decline in participation in recent years was not uniform across regions. More substantial falls are indicated in the Border and Midlands regions, with the Mid-West and South-East holding up better.

FIGURE 2.16 PARTICIPATION RATES BY REGION

Source: Quarterly National Household Survey.

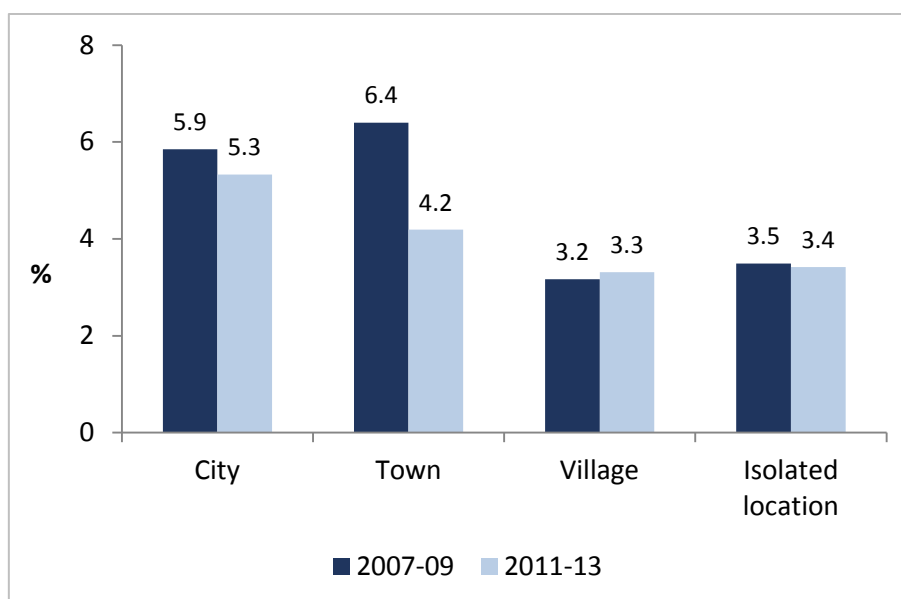
For comparison, Figure 2.17 shows the results for the ISM data. Here the regions are defined by province, with the three Ulster counties in the Republic of Ireland grouped together with Connacht. Participation was again higher in Dublin, but also in the rest of Leinster generally. However, this region suffered the greatest decline in participation.

FIGURE 2.17 PARTICIPATION RATES BY PROVINCE, COMPARING 2007-2009 WITH 2011-2013

Source: Irish Sports Monitor.

Comparing both datasets, the picture is not one of a perfect match, but it is fairly coherent. The implication is a modest fall in participation in Dublin coupled with a more substantial drop in the Midlands and the ‘commuter counties’ that surround Dublin, while participation in Munster held more firm. The only potentially contradictory findings are for the Border and West regions, which make up the counties of Connacht and Ulster, where a larger fall is implied by the QNHS data than by the ISM data.

Figure 2.18 extends this analysis by breaking participation rates down by residential location. Participation is higher in cities and towns. Analysis of the QNHS data confirms that individuals living in urban areas are more likely to participate than those in rural areas, but the classification does not extend beyond this distinction. Returning to Figure 2.18, the fall in participation in recent years occurred in more densely populated areas.

FIGURE 2.18 PARTICIPATION RATES BY RESIDENTIAL LOCATION, COMPARING 2007-2009 WITH 2011-2013

Source: Irish Sports Monitor.

2.8 OTHER INFLUENCES ON PARTICIPATION

In addition to factors identified in the preceding sections, the statistical models in Appendices B and C identify several other significant determinants of participation in golf.

Both the QNHS and ISM datasets contain information on whether an individual has a disability. Those who identified themselves as having a disability were, perhaps unsurprisingly, less likely to be participants. The ISM asked respondents whether they had a disability that prevented them from participating in sport and physical activity and, again unsurprisingly, individuals who identified themselves as such were less likely to participate. However, the group that identified themselves as having a disability that did not prevent them from participating in sport and exercise were no less likely to play golf.

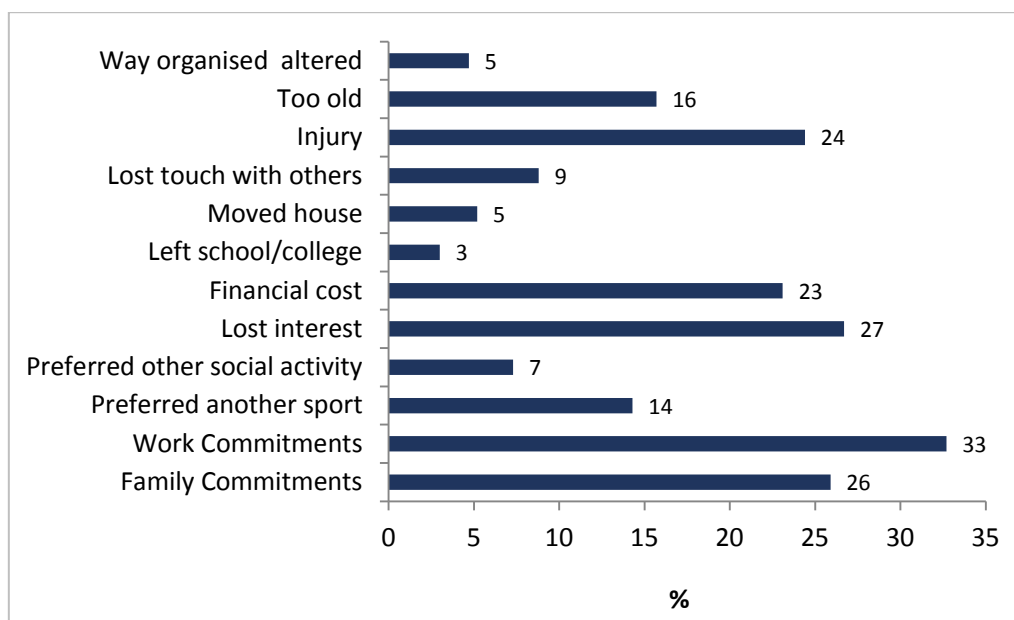
The two surveys also recorded respondents' nationalities. The models based on the QNHS data (Appendix B) find significantly lower participation among non-Irish nationals. The ISM data have a more useful breakdown of nationality, which splits respondents into UK nationals, then nationals of other European Union countries, other English-speaking countries and the rest of the world. The models reveal lower participation among all non-Irish nationals, but the effect is much stronger for those from EU countries not including the UK and for non-English speaking countries. These findings may simply reflect the fact that golf is generally less popular in many non-English speaking countries and, hence, individuals who arrive in Ireland from those countries are less likely to take an interest in golf, or to have golfers within their social networks.

2.9 MOTIVATIONS FOR PLAYING AND REASONS FOR DROPPING OUT

In 2008, the ISM survey included additional modules designed to explore specific reasons for people dropping out from and continuing to participate in sport. It is possible to use these modules to identify equivalent reasons specific to golf. The survey module asked people about the most recent sport they had dropped out of and the sample of golfers who had recently given up the sport is of a sufficient size for the results to be illuminating.

Figure 2.19 shows the proportion of ex-golfers who listed various stated reasons as ‘major’ factors involved in their dropping out from the sport. The reasons that stand out are: work commitments, family commitments, losing interest, financial cost and injury. Hence, three of the five stand-out reasons are associated with time and cost. This pattern differs from those for many other sports, notably team sports, for which factors associated with leaving school/college, relocation and age tend to be more prominent. Preferring another sport or preferring another social activity do not feature to the same extent, but it important to bear in mind that these are reasons why people who played golf dropped out, not reasons why people might not take up the sport in the first place.

FIGURE 2.19 PROPORTION OF DROP-OUTS FROM GOLF WHO CITED LISTED REASON AS ONE OF THEIR ‘MAJOR FACTORS’ FOR DROPPING OUT

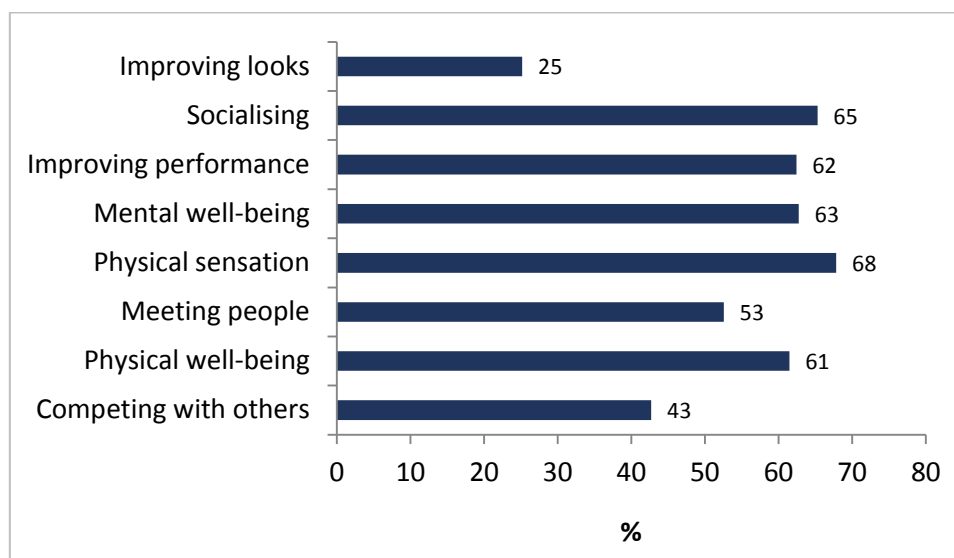


Source: Irish Sports Monitor module, 2008.

The question seeking information about golfers’ main motivations for playing the sport is perhaps less illuminating. The answers, presented in Figure 2.20, do suggest that the motivations of individual players are varied and broad. It is

worth recognising that both mental and physical wellbeing feature strongly, while competing with others is well down the list. The most prominent reason for participation is enjoying the physical sensation, although socialising and meeting people feature more prominently than is typical for other sports (Lunn et al., 2012).

FIGURE 2.20 PROPORTION OF GOLFERS WHO CITED LISTED REASON AS ONE OF THEIR 'MAIN MOTIVATIONS' FOR PARTICIPATION

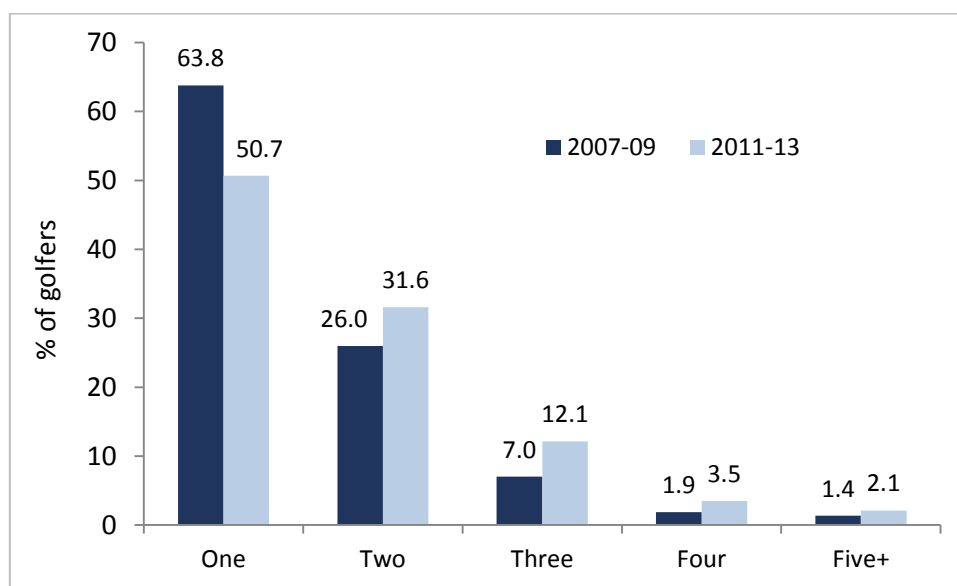


Source: Irish Sports Monitor module, 2008.

2.10 FITT ANALYSIS

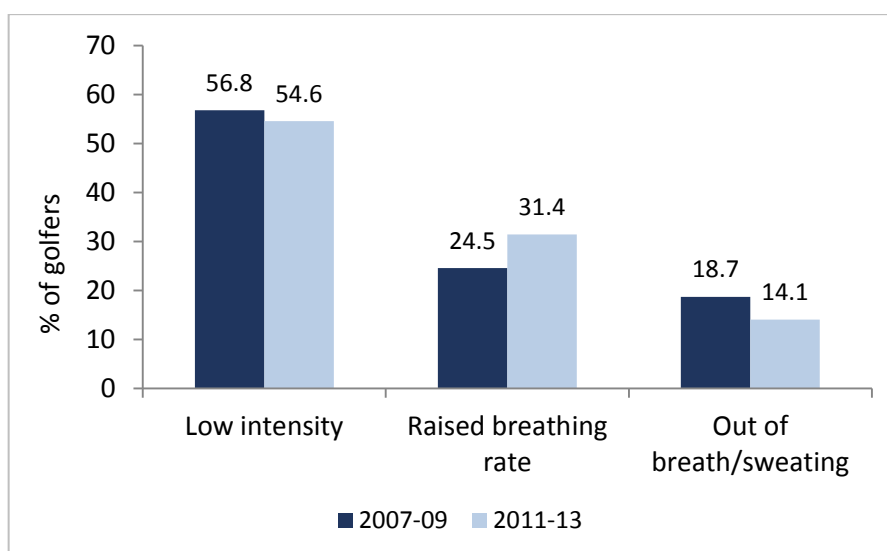
FITT analysis stands for Frequency, Intensity, Time and Type; it is a standard way to analyse participation in sport and physical activity intended to give a more detailed picture of the extent and nature of participation. This subsection makes use of both the ISM and QNHS datasets, each of which asked questions intended to generate a FITT analysis. However, in most cases only the ISM results are reported, because the QNHS results are very similar and do not permit an analysis of change over time, for reasons discussed previously.

Figure 2.21 provides the frequency of sessions of playing golf in the previous week, as recorded by the ISM. Again, the period 2007-2009 is contrasted with 2011-2013. Almost half of golfers who had participated in the sport during the previous week had done so more than once. This proportion of more regular golfers increased between the two periods. One obvious explanation for this, given earlier findings, is that the profile of regular golfers became somewhat older during this time and many older golfers are retired or no longer have children under 18 living in the household and, therefore, have the time to play golf more than once a week.

FIGURE 2.21 FREQUENCY OF PARTICIPATION IN THE PREVIOUS WEEK, COMPARING 2007-2009 WITH 2011-2013

Source: Irish Sports Monitor.

Figure 2.22 shows the self-reported level of intensity of participation in a 'typical' session. The measure used here is a standard and validated survey question employed in surveys of sport and physical activity, which asks about the impact of activity on breathing and sweating. It reveals that somewhere approaching half of participants experienced an increase in breathing rate or greater level of exertion during participation. Especially for older people, this level of exertion is significant and should be recognised as a contribution to overall physical activity.

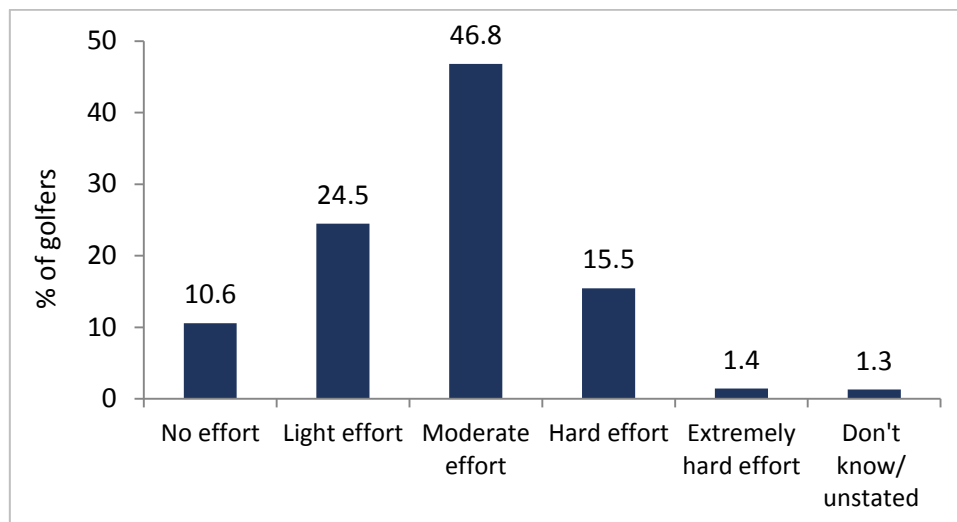
FIGURE 2.22 INTENSITY OF PARTICIPATION COMPARING 2007-2009 WITH 2011-2013

Source: Irish Sports Monitor.

Despite being a standard survey instrument, this question asked by the ISM is arguably not ideal for present purposes, because golf tends to be played over a longer period of relatively low exertion and therefore some of the benefit in terms of increased physical activity from playing golf is not likely to be captured.

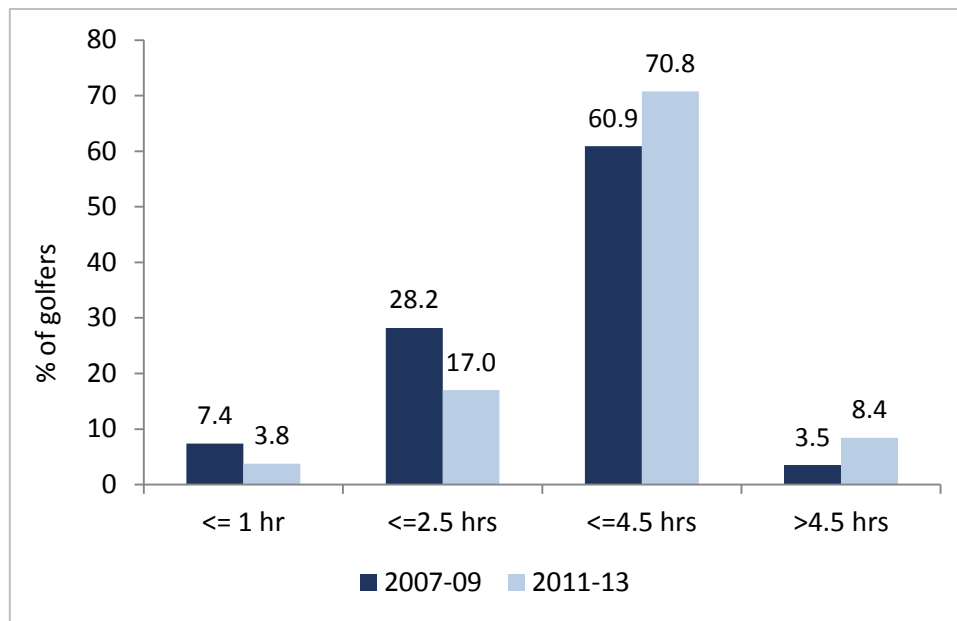
The QNHS survey question offered more response categories and the results for 2013 are presented in Figure 2.23. According to this categorisation, more than half of golfers judged the intensity of their participation to be 'moderate' or greater. The implication here is that, while golf clearly could not be classified as a high intensity sport regardless of how it is played, the level of physical activity involved is far from non-significant, especially for older people for whom more intense forms of activity may be prohibitive.

FIGURE 2.23 INTENSITY OF PARTICIPATION



Source: Quarterly National Household Survey, 2013.

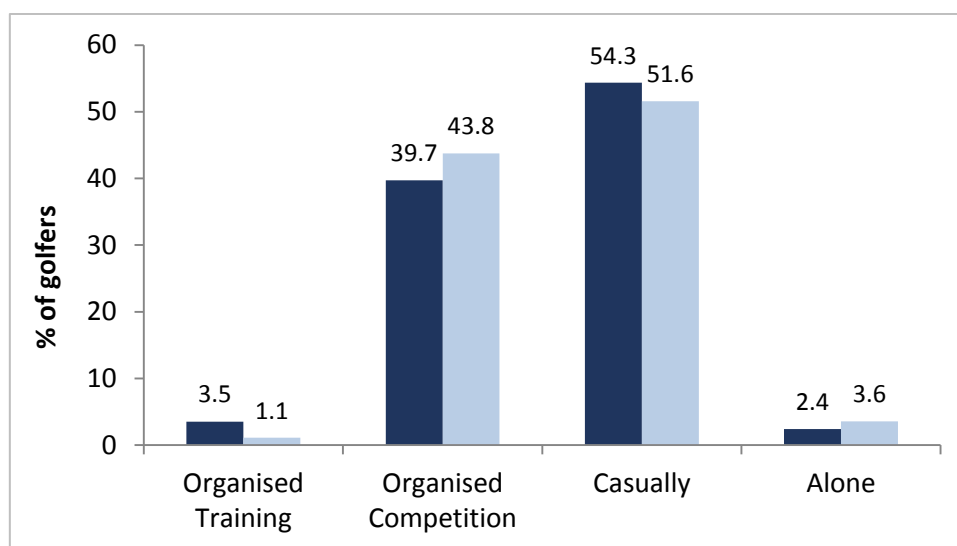
Figure 2.24 presents the distribution of durations of sessions of playing golf. From this chart it is evident that the large majority of sessions consist of between 2.5 and 4.5 hours and, essentially, consist of an 18-hole round of golf. The proportion of such sessions has increased in recent years. This probably reflects the fact that fewer sessions of participation consist of practice sessions, lessons or visits to the driving range. The finding is in keeping with the idea that a greater proportion of participation may be being undertaken by older adults who are more likely to have the time necessary to complete a regular full round of golf.

FIGURE 2.24 DURATION OF PARTICIPATION, COMPARING 2007-2009 WITH 2011-2013

Source: Irish Sports Monitor.

The final component of the FITT analysis is the type of participation, which refers to the nature of the context in which participation takes place. Figure 2.25 shows that just over half the time that golfers play, they do so casually with friends, but that 40 per cent of the time they are engaged in an organised competition, rising slightly in more recent years. This implies a high level of organised structure compared to many other sporting activities, especially among older people.

Overall, the FITT analysis reveals that golfers tend to spend a considerable amount of time playing the game and that they derive an amount of physical activity from the sport that is significant, especially for older people. These findings are consistent with the studies reviewed in Chapter 1, which suggest that golfers obtain health benefits from their regular participation.

FIGURE 2.25 TYPE OF PARTICIPATION COMPARING 2007-2009 WITH 2011-2013

Source: Irish Sports Monitor.

2.11 CLUB MEMBERSHIP

In addition to information about active participation in sport, i.e. actively playing sport or taking part in physical exercise, the ISM records information about social participation. It is common to classify social participation as volunteering, attending events (i.e. spectating) and club membership. The proportion of survey respondents who had engaged in the first two of these was too low to permit meaningful analysis, but the issue of club membership is of greater interest for golf.

Figure 2.26 provides the proportion of adults who are members of golf clubs by gender. In general, this pattern for club membership closely resembles that for playing. The sport is male dominated but the decline in membership in recent years is specific to males.

One additional interesting observation is based on the comparison between this picture and that of Figure 2.3 for playing. The proportion of club members is slightly higher than the proportion of individuals who played the sport in the previous week, but only slightly. The implication is that the clear majority of golf club members play the game within a given seven-day period, indicating a high level of use of golf courses by club members and few idle members.

One hypothesis that can be tested with the present data concerns a potential response of golfers to the recent economic crisis. Golf is a relatively expensive game, so those wishing to continue to play but to reduce their expenditure might

cease to be club members and play on a more casual basis, perhaps playing more with golfing societies or via pay-per-use, i.e. paying a green fee as a non-member.

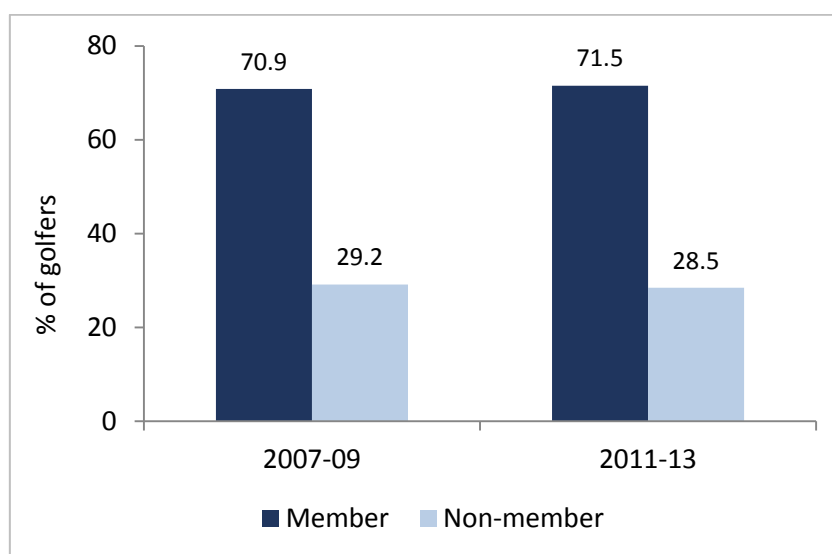
FIGURE 2.26 PROPORTION OF ADULTS WHO ARE MEMBERS OF A GOLF CLUB BY GENDER, COMPARING 2007-2009 WITH 2011-2013



Source: Irish Sports Monitor.

Figure 2.27 shows that this hypothesis is not in keeping with the data. The proportion of players who are club members has remained steady in recent years at just over 70 per cent. There is no evidence, therefore, that golfers are becoming more casual and less inclined to be club members.

FIGURE 2.27 PROPORTION OF GOLFERS WHO ARE CLUB MEMBERS, COMPARING 2007-2009 WITH 2011-2013



Source: Irish Sports Monitor.

CHAPTER 3

Conclusions

The multiple data sources accessed and analysed for this report contain a broad range of findings with the potential to inform policies that aim to increase participation in golf. This section briefly recaps the main statistical findings before offering up some policy implications of the results for discussion.

3.1 MAIN FINDINGS

Golf remains one of the most popular sport and exercise activities in Ireland. Among the more popular activities, it has a unique appeal to older adults. The highest participation rates are for individuals in their 60s and 70s. There are a broad range of motivations for participation, but physical and mental wellbeing feature prominently among them.

Participation in golf increased in the latter decades of the twentieth century, but has since begun to decline. This decline is occurring despite a favourable demographic background in which numbers of middle-aged and older people are growing.

The primary reason for this drop in participation in golf is not the economic crisis, because a comparison of data collected in 2003 and thereafter reveals that the fall began prior to the crisis. The decline is occurring among younger adults, aged under 55 years, and who are predominately male. This decline is being somewhat countered by a continuing increase in popularity among older people, especially women. Although golf remains a male dominated sport, the gender gap is closing.

Participation in golf is subject to a strong social gradient, such that individuals with higher levels of educational attainment and income, as well as those in professional and managerial occupations, are far more likely to play golf. Nevertheless, it is those with higher socio-economic status that are responsible for the recent decline in participation as well.

Further analyses provide some clues as to why this might be the case. The fall in participation has been greater among those with children aged under 18. While we cannot be sure of the reasons, the emerging picture is consistent with the proposition that golf is being affected by changes in family and working life. Many of the individuals in higher socio-economic groups are in two-earner couples, often in which the woman has equivalent or higher earning power than the man.

They form partnerships later, marry later, have children later and have different expectations about spending time with their children. The analysis of those who have dropped out from golf reveals that family and working life both feature strongly among the reasons. Another possibility is that they seek more strenuous, quicker and flexible forms of physical activity, which have risen in popularity in recent times.

The decline in participation is not uniform across the country. There are some indications that participation may be higher among younger adults in Northern Ireland, although the small sample size of the SAPAS survey means that we cannot be sure. Participation is generally higher in Dublin, Leinster and in urban rather than rural areas. These areas are also the ones that have seen the greatest decline, however.

Despite the fact that the economic crisis does not appear to be the main driving force behind the fall in participation, several findings suggest that the affordability of golf is an issue. In addition to the social gradients mentioned above, working-age people who are not connected to the labour market are significantly less likely to play golf. There has been a small reduction in participation among low income groups since 2007 and financial cost features among the reasons that people give for dropping out of the game.

Club membership has declined in a similar way to active participation, although levels of membership among those who play have not declined. Most golfers are club members. Almost half play more than once a week and around 40 per cent of participation is in competitions. While the level of physical effort involved in playing golf clearly cannot match that of higher intensity sports, many participants recognise that a significant degree of physical effort is involved. For older people in particular, this physical activity is likely to be highly beneficial.

3.2 POLICY IMPLICATIONS

This subsection considers some of the policy implications of the present findings. Given that a degree of uncertainty surrounds the interpretation of the results, that uncertainty necessarily transfers to what might be inferred from them. What follows should therefore be read critically and cautiously. Nevertheless, there are some findings that are solid and one clear issue to be considered by those who run the game: what might be done about the recent decline in participation?

Although much of the focus of this report and the policy implications that flow from it relate to the drop in participation, it is important not to lose sight of the advantages that golf enjoys. No other sport and exercise activity except

recreational walking can boast that it is regularly undertaken by more than 10 per cent of people aged 60-80 years. This makes golf an important contributor to the physical activity of older people.

That said, the lower level of participation in golf among younger adults has to be a concern. The more benign possibility is that it reflects not so much a decline as a delay in playing golf. That is, it could be that while adults currently aged under 55 years play less golf than the previous cohort of adults, they will participate in the same numbers once they get older. It has long been the case that people become more likely to take up golf as they age, and perhaps the current generation of adults is just leaving it later, perhaps engaging more in alternative forms of physical activity that are increasing in popularity, until children have left home and careers are coming to an end. The less benign possibility is that the lower level of participation among younger adults will simply translate into lower participation as this cohort ages in the coming decades. To some extent, Ireland's demography will help to maintain the numbers who participate in golf, even if the proportions who participate continue to fall. Yet it remains possible that the larger effect will be insufficient numbers taking up golf. If so, participation will continue to decline. With the present data, it is not possible to determine which of these futures is more likely. The important thing to recognise is that there is a clear risk to the popularity of the sport.

What might be done to make golf more attractive to younger adults? The present results cannot answer this question, but they perhaps offer some useful hints.

The decline in participation among parents suggests strategies that might be helpful. To be appealing to modern two-earner couples with children, golf clubs might do well to ensure that the club is not a place to escape the family, but a place that welcomes the family. Certainly, one lesson contained in the current data is that golf is unlikely to thrive if it allows male domination of the sport to make golf less appealing to women.

Less obvious is what to do about the fact that golf may be losing out to more strenuous forms of physical exercise. Individual sport and exercise activities have grown strongly in popularity and many in the current generation of young adults have absorbed the message that physical activity throughout adulthood is important for health and wellbeing. One possibility is to try to link golf and golf clubs more explicitly to overall efforts to increase physical activity.

Many clubs have the resources and space to offer more than access to a golf course and clubhouse. Golf clubs that can also offer opportunities to undertake

other physical activities, such as exercise classes, gym, yoga etc., may be more appealing to modern young adults.

Potentially this represents an additional reason to market the sport as offering good opportunities for physical activity among older adults. For the increasing numbers of people who want to remain active as they age, learning to play golf alongside other activities as young adults may represent an investment and also make playing when older a more attractive prospect.

The time commitment required to play golf is also likely to be a factor. The excessive length of time it can take to complete a round is a common refrain among club golfers, but has wider consequences for the game. Clubs and competitions that are organised so as to reduce the time taken to play, and that market themselves as such, are likely to be more attractive to younger adults.

A clear concern for those wishing to expand the game is the strong social gradient in participation. By the standards of most sports, golf is simply expensive. Limited access to the best courses and the desire for the latest equipment constrains the extent to which this can change, but this does not mean that the organisations responsible for running the game cannot provide good value opportunities for playing golf to those in lower socio-economic groups. It is important to ensure that there is a geographic and commercial spread of opportunities to try golf, some of which can be undertaken at low expense. Previous research has shown that many people who take up sports underestimate how much they will get out of playing before they give it a go. Engaging individuals beyond the higher socio-economic groups requires appropriate marketing and the promoting of low-cost opportunities to come along and try the game.

REFERENCES

- Ainsworth, B.E., W.L. Haskell, S.D. Herrmann, N. Meckes, D.R. Bassett Jr., C. Tudor-Locke, J.L. Greer, J. Vezina, M.C. Whitt-Glover and A.S. Leon (2011). '2011 Compendium of Physical Activities: a second update of codes and MET values'. *Medicine and Science in Sports and Exercise*, 43, 1575-1581.
- Coate, D. and J. Schwenkenberg (2013). 'Survival function estimates for champions tour golfers'. *Journal of Sports Economics*, 14, 656-663.
- Confederation of Golf in Ireland (2014). *2014-2020 Development Plan*. Available at: www.cgi.ie.
- Das, P. and R. Horton. (2012). 'Rethinking our approach to physical activity'. *The Lancet*, 380, 189-190.
- Fahey, T., R. Layte and B. Gannon (2004). *Sports Participation and Health Among Adults in Ireland*. Dublin: ESRI.
- Farahmand, B., G. Broman, U. De Faire, D. Vågerö and A. Ahlbom (2009). 'Golf: a game of life and death – reduced mortality in Swedish golf players'. *Scandinavian Journal of Medicine & Science in Sports*, 19, 419-424.
- Farrally, M.R., A.J. Cochran, D.J. Crews, M.J. Hurdzan, R.J. Price, J.T. Snow and P.R. Thomas (2003). 'Golf science research at the beginning of the twenty-first century'. *Journal of Sports Sciences*, 21, 753-765.
- Fujiwara, M., S. Asakuma, K. Nakamura, T. Nakamura, N. Yasutomi and T. Iwasaki (1995). 'Acute myocardial infarction during sport'. *Journal of Cardiology*, 26, 213-217.
- Gao, K.L., C.W.Y. Hui-Chan and W.W.N. Tsang (2011). 'Golfers have better balance control and confidence than healthy controls'. *European Journal of Applied Physiology*, 111, 2805-2812.
- Gosheger, G., D. Liem, K. Ludwig, O. Greshake and W. Winkelmann (2003). 'Injuries and overuse syndromes in golf'. *The American Journal of Sports Medicine*, 31, 438-443.
- Ipsos MRBI (2013). *Irish Sports Monitor 2011 Annual Report*. Available at: www.sportireland.ie.
- Kaplan, E.L. and P. Meier (1958). 'Nonparametric estimation from incomplete observations'. *Journal of the American Statistical Association*, 53, 457-481.
- Kohl, H.W., C.L. Craig, E.V. Lambert, S. Inoue, J.R. Alkandari, G. Leetongin, S. Kahlmeier and Lancet Physical Activity Series Working Group (2012). 'The pandemic of physical inactivity: global action for public health'. *The Lancet*, 380, 294-305.
- Kolt, G.S., R.P. Driver and L.C. Giles (2004). 'Why older Australians participate in exercise and sport'. *Journal of Aging and Physical Activity*, 12, 185-198.
- Kruger, J., H.R. Bowles, D.A., Jones, B.E. Ainsworth and K.W. Kohl (2007). 'Health-related quality of life, BMI and physical activity among US adults (>=18 years): National Physical Activity and Weight Loss Survey, 2002'. *International Journal of Obesity*, 31, 321-327.

- Lee, I.M., E.J. Shiroma, F. Lobelo, P. Puska, S.N. Blair, P.T. Katzmarzyk and Lancet Physical Activity Series Working Group (2012). 'Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy'. *The Lancet*, 380, 219-229.
- Lunn, P., E. Kelly and N. Fitzpatrick (2012). 'Keeping them in the game: talking up and dropping out of sport and exercise in Ireland'. *ESRI Research Series, No. 33*. Dublin: ESRI.
- Lunn, P. and R. Layte (2008). 'Sporting Lives: An Analysis of a Lifetime of Irish Sport'. *ESRI Research Series, No. 2*. Dublin: ESRI.
- Lunn, P. and R. Layte (2010). *The Irish Sports Monitor: Third Annual Report 2009*. Dublin: Irish Sports Council/ESRI.
- Lunn, P., R. Layte and D. Watson (2009). *The Irish Sports Monitor: First Annual Report 2007*. Dublin: Irish Sports Council/ESRI.
- Murase, Y., S. Kamei and T. Hoshikawa (1989). 'Heart rate and metabolic responses to participation in golf'. *The Journal of Sports Medicine and Physical Fitness*, 29, 269-272.
- Murray, A.D., L. Daines, D. Archibald, R.A. Hawkes, C. Schiphorst, P. Kelly, L. Grant and N. Mutrie (2017). 'The relationships between golf and health: a scoping review.' *British journal of sports medicine*, 51, 12-19.
- Parkkari, J., A. Natri, P. Kannus, A. Mänttari, R. Laukkanen, H. Haapasalo, A. Nenonen, M. Pasanen, P. Oja and I. Vuori (2000). 'A controlled trial of the health benefits of regular walking on a golf course.' *The American Journal of Medicine*, 109, 102-108.
- Passmore, R. and J.V. Durnin (1955). 'Human energy expenditure'. *Physiological Reviews*, 35, 801-840.
- Petrick, J.F., S.J. Backman, R. Bixler and W.C. Norman (2001). 'Analysis of golfer motivations and constraints by experience use history'. *Journal of Leisure Research*, 33, 56-70.
- Quigley, F. (2000). 'A survey of the causes of sudden death in sport in the Republic of Ireland'. *British Journal of Sports Medicine*, 34, 258-261.
- The Scottish Government (2014). *The Scottish Health Survey 2014*. Available at: www.gov.scot/Publications/2015/09/6648.
- Sell, T.C., Y.S. Tsai, J.M. Smoliga, J.B. Myers and S.M. Lephart (2007). 'Strength, flexibility, and balance characteristics of highly proficient golfers'. *The Journal of Strength & Conditioning Research*, 21, 1166-1171.
- Sport Northern Ireland (2011). *The Northern Ireland Sport and Physical Activity Survey (SAPAS): A Baseline Report*. Available at: www.sportni.net.
- Tangen, J.O., A. Sunde, J. Sageie, P.C. Hagen, B. Kristoffersen, R. Istad, T. Lønnestad and I.L.E. Bergan (2013). 'In accordance with governmental recommendations – a study of golf and health'. *Journal of Sports Science*, 1, 15-25.
- Tsang, W.W.N. and C. W. Hui-Chan (2010). 'Static and dynamic balance control in older golfers'. *Journal of Aging and Physical Activity*, 18, 1-13.

APPENDIX A

Key Survey Questions from the Four Data Sources

A.1 Quarterly National Household Survey (QNHS) Sport and Physical Exercise Module - Q3 2006:

(i) In the last twelve months did you participate in any physical activities for exercise, recreation or sport (e.g. walking, swimming, playing basketball or golf)?

1. Yes
2. No.

(ii) What activities did you participate in?

- Respondents were given the option to list the three sports that they participated in most often, with the sports then ranked in order of how frequently the respondent participated in them
- If the respondent gave an answer that was not listed below, code 27 was entered for 'Other', and 'Other' was then coded by the data collection fieldwork staff.

10. Aerobics/Keep Fit
11. Basketball
12. Billiards/Snooker
13. Cycling
14. Fishing
15. Gaelic Football (includes Ladies Football)
16. Golf
17. Hurling (includes Camogie)
18. Jogging/Cross Country
19. Pitch & Putt
20. Soccer
21. Soccer 5-a-side
22. Swimming
23. Tennis
24. Ten Pin Bowling
25. Walking
26. Weight Lifting
27. Other Sport

A.2 Quarterly National Household Survey (QNHS) Sport and Physical Exercise Module – Q2 2013:

- (i) In the last month, did you participate in any other⁵ physical activities for exercise, recreation or sport (e.g. aerobics/keep-fit, swimming, cycling, golf, etc.)?

Do not include any teaching, coaching or refereeing.

1. Yes
2. No

- (ii) Which sport or physical activity do you participate in most often?

- Respondents were given the option to list the three sports that they participated in most often, with the sports then ranked in order of how frequently the respondent participated in them
- As with the 2006 module, respondents were given a list of sports to select from (walking excluded); and if the sport that the respondent participated in was not on this list then 'Other' was recorded, with the data collection field staff subsequently coding 'Other'
- If the answer given by the respondent included any of the five sports in the table below, the fieldwork staff had to ask the respondent for the type of sport concerned:

Football	Is that: GAA OR Soccer OR 5-a-side?
Golf	Is that: 18-hole OR Pitch & Putt?
Running	Is that: Athletics OR Cross-Country OR Jogging?
Rugby	Is that: Rugby Union OR Rugby League OR Tag Rugby
Cycling	Is that: Road/Track OR Mountain-Biking/Off-Road?

A.3 The Irish Sports Monitor (ISM):

- (i) I would like to ask you about any other physical activities⁶ you undertook in the past seven days for exercise, recreation or sport.

Please do not include physical activity for work, transport, or domestic work like gardening or DIY.

Please do not include personal exercise, such as swimming, dancing or jogging, as well as all forms of sporting activity, indoor or outdoor, whether undertaken in an organised setting or casually with family or friends.

⁵ Unlike in the 2006 QNHS Sport and Physical Exercise module, walking was asked as a separate question in the 2013 module, and it preceded this physical activity for exercise, recreation or sport participation question.

⁶ Walking was asked as a separate question in the Irish Sports Monitor.

So, in the past seven days, did you participate in any such activities?

1. Yes
2. No.

(ii) Please list up to three sports or activities, in the order in which you participated the most.

- As with the 2006 and 2013 QNHS Sport and Physical Exercise modules, respondents were given a list of sports to select from (walking excluded)
- If the answer given by the respondent included any of the six sports in the table below, the fieldwork staff had to ask the respondent for the type of sport concerned:

Football	Is that: GAA OR Soccer OR 5-a-side?
Golf	Is that: 18-hole OR Pitch & Putt?
Running	Is that: Athletics OR Cross-Country OR Jogging?
Cycling	Is that: Leisure OR Sport (Road, Mountain etc.)?
Bowling	Is that: Ten-pin OR Lawn OR Road?
Horse-Riding	Is that: Leisure OR Sport (Show-jump, Racing etc.)?

A.4 The Sport and Physical Activity Survey (SAPAS)

- (i) Can you please read through the list of sports and tell me which if any of them you have done over the last 12 months that is, since [\$month \$year]:

	Question:	Done in the last 12 months	Done in the last 4 weeks	On which days have you done [insert activity] in the last 7 days
	Scale:	Yes/No	Yes/No	Mon, Tue, Wed, Thurs, Fri Sat, Sun
1	American football			
2	Angling/fishing			
3	Badminton			
4	Basketball			
5	Bowls - indoors			
6	Bowls - outdoor / lawn			
7	Canoeing			
8	Camogie			
9	Cricket			
10	Cycling			
11	Darts			
12	Dance			
13	Exercise bike/running machine/spinning class/other exercise machines			
14	Football/soccer indoors			
15	Football/soccer outdoors (including 5-a-side)			
16	Gaelic Football			
17	Golf, pitch and putt, putting			
18	Gymnastics			
19	Hockey (exclude ice or roller)			
20	Horse riding (exclude polo)			
21	Hurling			
22	Ice skating (exclude roller skating)			
23	Jogging			
24	Keep fit, aerobics			
25	Martial Arts (include self (include self-defence, tai chi, taekwondo, judo and karate)			
26	Motor sports			
27	Netball			
28	Rugby (union or league)			
29	Shooting			
30	Skiing			
31	Snooker, pool, billiards			
32	Snowboarding			
33	Squash			
34	Swimming or diving			
35	Table tennis			
36	Tennis			
37	Tenpin bowling			
38	Track and field athletics			
39	Walking			
40	Weight training/lifting/body building			
41	Windsurfing/boardsailing			
42	Yachting or dinghy sailing			
43	Yoga			
44	Other 1 - specify			
45	Other 2 - specify			
46	Other 3 - specify			
47	Other 4 - specify			
48	None			

A.5 Survey of Sport and Physical Exercise (SSPE)

- Please tell me if you took part in any of the following activities during the last 12 months, even if it was in a casual or informal capacity?
- Please rank by frequency or participation "1" is most frequent, etc.

Indoor games	Yes	No	Rank	Water Sports	Yes	No	Rank		Yes	No	Rank
Badminton	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Canoeing/kayaking	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Cycling – for sport	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Basketball	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Rowing	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Cycling – for transport	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Billiards/Snooker	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Sailing / Yachting	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Equestrian	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
GAA Handball	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Sub Aqua	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Fishing	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Olympic Handball	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Surfing	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Golf	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Racquetball	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Swimming	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Hang gliding/Paragliding	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Squash	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Water Skiing	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Jogging /Cross Country	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Table Tennis	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Wind Surfing	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Motor Racing	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Tenpin Bowling	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Gym based activities				Mountaineering/Rock Climbing	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Volleyball/Netball	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Aerobics/ Keep Fit	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Orienteering	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Field games				Boxing	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Pitch & Putt	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Baseball/Softball	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Martial Arts/Judo/Karate	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Roller Blading /Skating	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Cricket	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Weight lifting	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Shooting - Rifle & Pistol target	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Rugby	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Wrestling	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Shooting - Clay Pigeon	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Hockey	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Gymnastics	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Tennis	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Gaelic Football	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Outdoor pursuits				Triathlon	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Gaelic Hurling	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Archery	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Tug-of-War	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Ladies Football	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Athletics	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Walking – to work	<input type="checkbox"/> ₊	<input type="checkbox"/> ₂	
Camogie	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Bowling – Lawn	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Walking – recreational	<input type="checkbox"/> ₊	<input type="checkbox"/> ₂	
Soccer	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Bowling – Road	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂					
Soccer - 5-a-side	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Cycling – for leisure	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂		Winter Sports	<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	
Other (Please specify) _____									<input type="checkbox"/> ₁	<input type="checkbox"/> ₂	

APPENDIX B

Overview of Estimation Methodology

The models for participation in golf are based on the QNHS (Appendix B) and ISM data (Appendix C).

The dependent variable in the QNHS 2006 model is whether or not the individual participated in golf in the last year, while in the QNHS 2013 data the dependent variable captures whether or not the respondent participated in golf in the last month. In the ISM data it is participation in the last seven days.

The independent variables that we include in our model, which are the factors that we examine to identify if they have a statistically significant individual impact on whether or not someone participates in golf, are: gender, age, disability status,⁷ educational attainment, nationality, marital status, household type/family type/family person type/detained child age information,⁸ location,⁹ region, economic status (QNHS only), occupation (QNHS only) and income (ISM only).

We use probit regression and calculate marginal effects to identify i) whether or not the independent variable (e.g. age, gender, etc.) has a statistically significant impact on an individual participating in golf (use of *, ** and *** symbols), and ii) the size of this effect (the number presented beside the asterisk symbol). Specifically, for the independent variables that we include in our models, the marginal effect tells us the size of the effect that a unit change in the variable has on someone's likelihood of playing golf or not. For example, based on the results presented in Table B.1, being male increases an individual's chances of playing golf by 6.4 percentage points compared to being female (which is the reference category); or in relation to educational attainment, having a third-level degree increases a person's likelihood of participating in golf by 6.9 percentage points compared to someone with a Lower Secondary qualification.

⁷ Information not available in the QNHS 2013 data.

⁸ Household, family type and children information collected in each survey varies: see specific models (Appendix Tables B.1 and B.2 and Appendix Table C.1) for which variables are included in each model.

⁹ Information not available in the QNHS 2013 data.

TABLE B.1 PROBIT MODELS DISPLAYING MARGINAL EFFECTS FOR THE PROBABILITY OF PARTICIPATION IN GOLF

	Basic Specification	Economic Status Specification	Occupation Specification
Gender (Ref: Female)			
Male	0.064*** (0.002)	0.064*** (0.002)	0.065*** (0.003)
Age (Ref: Age 35-39)			
Age 15-19	0.013** (0.006)	-0.001 (0.006)	-0.001 (0.006)
Age 20-24	-0.016*** (0.003)	-0.018*** (0.003)	-0.018*** (0.003)
Age 25-29	-0.015*** (0.003)	-0.015*** (0.003)	-0.015*** (0.003)
Age 30-34	-0.008** (0.003)	-0.008** (0.003)	-0.008** (0.003)
Age 40-44	0.011*** (0.004)	0.011*** (0.004)	0.011*** (0.004)
Age 45-49	0.022*** (0.005)	0.022*** (0.005)	0.021*** (0.005)
Age 50-54	0.021*** (0.005)	0.022*** (0.005)	0.021*** (0.005)
Age 55-59	0.036*** (0.007)	0.036*** (0.007)	0.035*** (0.007)
Age 60-64	0.032*** (0.007)	0.029*** (0.007)	0.027*** (0.007)
Age 65-69	0.044*** (0.009)	0.035*** (0.009)	0.033*** (0.009)
Age 70-74	0.037*** (0.009)	0.027*** (0.009)	0.024*** (0.009)
Age 75-79	0.011 (0.008)	0.003 (0.007)	0.002 (0.007)
Age 80-84	-0.011 (0.007)	-0.015** (0.006)	-0.016*** (0.006)
Age 85 and above	-0.013 (0.010)	-0.016** (0.008)	-0.017** (0.008)
Disability Status (Ref: None)			
Disability	-0.024*** (0.002)	-0.021*** (0.002)	-0.021*** (0.002)
Educational Attainment (Ref: Lower Secondary)			
Primary or Less	-0.025*** (0.002)	-0.023*** (0.002)	-0.023*** (0.002)
Upper Secondary	0.030*** (0.003)	0.029*** (0.003)	0.027*** (0.003)
Post-Secondary	0.017*** (0.004)	0.017*** (0.004)	0.015*** (0.004)
Third-level Non-Degree	0.052*** (0.006)	0.051*** (0.006)	0.046*** (0.006)
			<i>Contd.</i>

TABLE B.1 *CONTD.*

	Basic Specification	Economic Status Specification	Occupation Specification
Educational Attainment (Ref: Lower Secondary)			
Third-level Degree	0.069*** (0.006)	0.067*** (0.006)	0.056*** (0.006)
Education Unknown	0.006 (0.009)	0.006 (0.009)	0.005 (0.009)
Nationality (Ref: Non-Irish)			
Irish	0.023*** (0.002)	0.022*** (0.002)	0.021*** (0.002)
Marital Status (Ref: Single)			
Married	0.028*** (0.003)	0.027*** (0.003)	0.026*** (0.003)
Separated / Divorced	-0.000 (0.005)	-0.001 (0.005)	-0.000 (0.005)
Widowed	0.023*** (0.008)	0.021*** (0.008)	0.021*** (0.008)
Household Type (Ref: Household, No Children)			
Household with Children ¹	-0.011*** (0.002)	-0.011*** (0.002)	-0.011*** (0.002)
Location (Ref: Rural)			
Urban	0.017*** (0.002)	0.017*** (0.002)	0.017*** (0.002)
Region (Ref: Dublin)			
Border	-0.004* (0.003)	-0.004 (0.003)	-0.004 (0.003)
Mid-East	0.006** (0.003)	0.006** (0.003)	0.006* (0.003)
Midlands	-0.001 (0.003)	-0.001 (0.003)	-0.002 (0.003)
Mid-West	-0.010*** (0.003)	-0.010*** (0.003)	-0.010*** (0.003)
South-East	-0.009*** (0.002)	-0.009*** (0.002)	-0.009*** (0.002)
South-West	-0.012*** (0.002)	-0.012*** (0.002)	-0.012*** (0.002)
West	-0.006* (0.003)	-0.005* (0.003)	-0.005* (0.003)
Economic Status (Ref: Working)			
Unemployed		-0.016*** (0.003)	-0.015*** (0.005)
Student		0.016** (0.006)	0.017** (0.008)
Home Duties		0.002 (0.003)	0.006 (0.006)
Retired		0.005 (0.004)	0.009 (0.007)
Other		-0.022*** (0.003)	-0.021*** (0.004)

Contd.

TABLE B.1 *CONTD.*

	Basic Specification	Economic Status Specification	Occupation Specification
Occupation (Ref: Manager)			
Professional			0.004 (0.004)
Associate Professional			-0.004 (0.003)
Clerical			-0.002 (0.004)
Craft			-0.006** (0.003)
Services			-0.008** (0.003)
Sales			0.008* (0.005)
Operatives			-0.009*** (0.003)
Other Elementary			-0.016*** (0.003)
Occupation Unknown			-0.007 (0.005)
Observations	41,275	41,275	41,275
Pseudo R-squared	0.169	0.172	0.175

Source: Quarterly National Household Survey, 2006.

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

1. For this variable, the age range of the children in the household is not specified by the CSO in the QNHS microdata: only that there are children in the household (versus a household with no children).

TABLE B.2 PROBIT MODELS DISPLAYING MARGINAL EFFECTS FOR THE PROBABILITY OF PARTICIPATION IN GOLF

	Basic Specification	Economic Status Specification	Occupation Specification	Additional Family Information Specification ¹
Gender (Ref: Female)				
Male	0.054*** (0.003)	0.052*** (0.004)	0.050*** (0.004)	0.052*** (0.003)
Age (Ref: Age 35-39)				
Age 15-19	0.018 (0.017)	0.011 (0.016)	0.010 (0.016)	0.001 (0.012)
Age 20-24	0.007 (0.009)	0.005 (0.009)	0.006 (0.009)	-0.004 (0.007)
Age 25-29	-0.008 (0.005)	-0.008* (0.005)	-0.008* (0.005)	-0.010** (0.004)
Age 30-34	-0.006 (0.004)	-0.006 (0.004)	-0.006 (0.004)	-0.006 (0.004)
Age 40-44	0.003 (0.006)	0.003 (0.005)	0.003 (0.005)	0.003 (0.005)
Age 45-49	0.017** (0.007)	0.018** (0.007)	0.017** (0.007)	0.014* (0.007)
Age 50-54	0.021*** (0.008)	0.022*** (0.008)	0.022*** (0.008)	0.015* (0.008)
Age 55-59	0.035*** (0.010)	0.034*** (0.010)	0.034*** (0.010)	0.025*** (0.009)
Age 60-64	0.039*** (0.011)	0.034*** (0.010)	0.034*** (0.010)	0.028*** (0.010)
Age 65-69	0.039*** (0.011)	0.022** (0.010)	0.021** (0.009)	0.028*** (0.010)
Age 70-74	0.062*** (0.015)	0.035*** (0.013)	0.034*** (0.012)	0.048*** (0.014)
Age 75-79	0.040*** (0.014)	0.018* (0.011)	0.018* (0.011)	0.029** (0.012)
Age 80-84	0.005 (0.010)	-0.005 (0.006)	-0.005 (0.006)	-0.000 (0.008)
Age 85 and above	-0.011 (0.008)	-0.014*** (0.005)	-0.014*** (0.005)	-0.013** (0.006)
Educational Attainment (Ref: Lower Secondary)				
Primary or Less	-0.014*** (0.003)	-0.013*** (0.003)	-0.013*** (0.003)	-0.014*** (0.003)
Upper Secondary	0.022*** (0.005)	0.019*** (0.005)	0.016*** (0.005)	0.022*** (0.005)
Post-Secondary	0.007 (0.005)	0.005 (0.005)	0.005 (0.005)	0.007 (0.005)
Third-level ²	0.025*** (0.005)	0.019*** (0.004)	0.015*** (0.004)	0.024*** (0.005)
Education Unknown	0.022 (0.016)	0.015 (0.014)	0.013 (0.013)	0.021 (0.016)

Contd.

TABLE B.2 *CONTD.*

	Basic Specification	Economic Status Specification	Occupation Specification	Additional Family Information Specification
Nationality (Ref: Non-Irish)				
Irish	0.016*** (0.002)	0.015*** (0.002)	0.014*** (0.002)	0.015*** (0.002)
Marital Status (Ref: Single)				
Married	0.005 (0.004)	0.003 (0.004)	0.002 (0.004)	0.009** (0.004)
Separated / Divorced	0.007 (0.006)	0.006 (0.006)	0.006 (0.006)	0.010 (0.006)
Widowed	0.013* (0.007)	0.009 (0.006)	0.008 (0.006)	0.016** (0.008)
Family Type (Ref: Couple, No Children)				
Couple, with Children	-0.010*** (0.003)	-0.009*** (0.002)	-0.008*** (0.002)	0.018*** (0.007)
Lone Parent ³	-0.017*** (0.003)	-0.015*** (0.003)	-0.015*** (0.003)	- -
Not in Family Unit	-0.014*** (0.003)	-0.013*** (0.003)	-0.013*** (0.003)	-0.012*** (0.003)
Region (Ref: Dublin)				
Border	-0.018*** (0.002)	-0.016*** (0.002)	-0.016*** (0.002)	-0.017*** (0.002)
Mid-East	-0.002 (0.003)	-0.002 (0.003)	-0.001 (0.003)	-0.002 (0.003)
Midlands	-0.013*** (0.003)	-0.012*** (0.003)	-0.012*** (0.003)	-0.013*** (0.003)
Mid-West	-0.008*** (0.003)	-0.008*** (0.003)	-0.007** (0.003)	-0.008*** (0.003)
South-East	-0.008*** (0.003)	-0.008*** (0.002)	-0.007*** (0.002)	-0.008*** (0.003)
South-West	-0.015*** (0.002)	-0.014*** (0.002)	-0.014*** (0.002)	-0.014*** (0.002)
West	-0.012*** (0.002)	-0.011*** (0.002)	-0.010*** (0.002)	-0.011*** (0.002)
Economic Status (Ref: Working)				
Unemployed		-0.015*** (0.002)	-0.015*** (0.003)	
Student		-0.000 (0.007)	0.001 (0.008)	
Home Duties		0.000 (0.004)	0.001 (0.005)	
Retired		0.011** (0.005)	0.012* (0.007)	
Other		-0.019*** (0.002)	-0.018*** (0.002)	

Contd.

TABLE B.2 *CONTD.*

	Basic Specification	Economic Status Specification	Occupation Specification	Additional Family Information Specification
Occupation (Ref: Manager)				
Professional			-0.008** (0.003)	
Associate Professional			-0.001 (0.005)	
Clerical			-0.006 (0.004)	
Craft			-0.011*** (0.003)	
Services			-0.017*** (0.002)	
Sales			-0.010** (0.004)	
Operatives			-0.012*** (0.003)	
Other Elementary			-0.012* (0.006)	
Family Person Type (Ref: Person part of Couple in Family Unit)				
Person is Lone Parent				0.001 (0.003)
Person is Child				0.020* (0.012)
Children Information (Ref: Couple with No Children)				
Child 0-4				-0.022*** (0.003)
Child 0-4 and 15+				-0.016*** (0.003)
Child 6-14				-0.019*** (0.003)
Child 6-14 and 15+				-0.020*** (0.002)
Child 15+				-0.017*** (0.003)
Observations	15,860	15,860	15,860	15,860
Pseudo R-squared	0.165	0.177	0.182	0.168

Source: Quarterly National Household Survey, 2013.

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

1. Additional family information that is not included in the 2006 specifications, as this information is not captured in the 2006 QNHS data.

2. The combined effect of Non-Degree and Degree.

3. For 'Lone Parent' effect in specification 4, see 'Family Person Type' results.

APPENDIX C

TABLE C.1 PROBIT MODELS DISPLAYING MARGINAL EFFECTS FOR THE PROBABILITY OF PARTICIPATION IN GOLF

	2007-2009		2011-2013	
	Basic specification	Income specification	Basic specification	Income specification
Gender (Ref: Female)				
Male	0.072*** (0.003)	0.069*** (0.003)	0.061*** (0.004)	0.064*** (0.007)
Age (Ref: Age 36-45)				
Age 16-25	-0.013** (0.006)	-0.016*** (0.006)	-0.010 (0.007)	-0.005 (0.015)
Age 26-35	-0.019*** (0.004)	-0.021*** (0.004)	-0.006 (0.005)	-0.006 (0.010)
Age 46-55	0.011** (0.005)	0.008 (0.005)	0.012** (0.005)	0.023** (0.009)
Age 56-65	0.022*** (0.006)	0.025*** (0.006)	0.036*** (0.007)	0.046*** (0.012)
Age 66+	0.023*** (0.006)	0.038*** (0.008)	0.035*** (0.008)	0.047*** (0.013)
Disability (Ref: None)				
Disability	0.005 (0.007)	0.015* (0.008)	-0.004 (0.007)	-0.002 (0.013)
Disability prevents playing	-0.036*** (0.003)	-0.035*** (0.003)	-0.038*** (0.003)	-0.040*** (0.007)
Educational Attainment (Ref: Lower Secondary)				
Missing			0.001 (0.006)	
Primary	-0.010*** (0.003)	-0.007 (0.004)	-0.019*** (0.006)	-0.017 (0.012)
Upper Secondary	0.024*** (0.004)	0.022*** (0.004)	0.011* (0.006)	0.011 (0.011)
Higher	0.041*** (0.004)	0.030*** (0.004)	0.015*** (0.005)	0.016 (0.010)
Student	0.012 (0.009)	-0.009 (0.010)	0.003 (0.010)	-0.027 (0.017)
Nationality (Ref: Irish)				
Non-Irish			-0.036*** (0.010)	-0.077*** (0.026)
British	-0.017** (0.007)	-0.013* (0.008)		
Other EU	-0.042*** (0.007)	-0.043*** (0.008)		
Non-EU English-speaking	-0.023* (0.013)	-0.034*** (0.011)		
Rest of World	-0.040*** (0.006)	-0.043*** (0.007)		

Contd.

TABLE C.1 *CONTD.*

	2007-2009		2011-2013	
	Basic	Income	Basic	Income
Marital Status (Ref: Married)				
Cohabits	-0.021*** (0.007)	-0.020*** (0.007)	-0.010 (0.009)	-0.019 (0.016)
Formerly Married	-0.016*** (0.004)	-0.005 (0.005)	-0.013*** (0.005)	0.014 (0.012)
Single	-0.021*** (0.005)	-0.012** (0.006)	-0.014** (0.007)	-0.017 (0.013)
Household Type (Ref: Children 18+)				
No Children	-0.015*** (0.005)	-0.014** (0.006)	-0.028*** (0.007)	-0.018 (0.013)
Children 10-18	-0.013** (0.005)	-0.013** (0.005)	-0.024*** (0.007)	-0.024** (0.011)
Children < 10	-0.029*** (0.005)	-0.029*** (0.005)	-0.035*** (0.007)	-0.023* (0.013)
Location (Ref: City)				
Town	0.008 (0.005)	0.011** (0.005)	0.003 (0.005)	0.016* (0.009)
Village	-0.001 (0.005)	0.002 (0.006)	-0.002 (0.005)	0.005 (0.010)
Isolated Location	-0.018*** (0.004)	-0.017*** (0.005)	-0.004 (0.006)	0.007 (0.010)
Region (ref: Dublin)				
Rest of Leinster	0.002 (0.005)	0.006 (0.006)	-0.007 (0.005)	-0.016 (0.010)
Munster	-0.018*** (0.004)	-0.015*** (0.005)	-0.016*** (0.005)	0.021** (0.009)
Connacht/Ulster	-0.021*** (0.005)	-0.019*** (0.005)	-0.010* (0.006)	-0.003*** (0.011)
Income (Ref: <€300pw)				
€300-399		0.013*** (0.005)		0.023* (0.012)
€400-499		0.028*** (0.005)		0.033*** (0.011)
€500-749		0.029*** (0.005)		0.038*** (0.010)
€750-899		0.044*** (0.005)		0.031*** (0.011)
€900-1249		0.051*** (0.005)		0.039*** (0.011)
€1250+		0.062*** (0.005)		0.054*** (0.012)
Observations	25,792	21,998	17,939	5,566
Pseudo R-squared	0.132	0.148	0.121	0.134

Source: Irish Sports Monitor.

Note: Robust standard errors presented in parentheses; *** p<0.01, ** p<0.05, * p<0.1

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