

# Ireland Informed: A Characterization of Science Reporting in the Irish Media

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## Abstract

### Ireland Informed: A Characterization of Science Reporting in the Irish Media

(By Fiona McCluskey, under the supervision of Conor Kostick)

Science and scientific advancement has the capacity to be an exciting topic for the Irish news consumer. Public understanding of science and scientific advancement is important for informed policy making, legislating and funding. The purpose of this dissertation was to develop an understanding of the current landscape of science reporting in the Irish media and to assess if an adequate level of science coverage was achieved. The design of this research was both quantitative and qualitative, building on the research paradigm of Suleski and Ibaraki (2010). I identified and analysed the reporting of science news over a one month period in 2018, across two television news shows, namely *RTÉ News: Six One* and *TV3: 3News at 5.30*, one tabloid and one broadsheet newspaper, namely the *Irish Sun* and the *Irish Independent* newspaper and two radio news shows, namely *RTÉ Radio One: Morning Ireland* and *Today FM: The Last Word*. Using a set of defined guidelines, 82 examples of science news reporting were identified during the study period and a content analysis was performed.

It was found that 0.03% of science research published in peer reviewed journals reached the Irish media audience and there was an average of 1.7% science news coverage in Irish news content. The medical sciences received the most news coverage with an emphasis on cancer science. There was a focus on local relevance in the science news reports studied and although a tenancy toward negative news stories was anticipated, this was not observed. It was established that the level of science news coverage in the Irish media did not correspond to the appetite of the Irish news consumer and can therefore be deemed inadequate.

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## List of Abbreviations

BAI	Broadcasting Authority of Ireland
CNN	Cable News Network
IBM	International Business Machine
MMR	Measles, Mumps and Rubella
NASA	National Aeronautics and Space Administration
NCRI	National Cancer Registry of Ireland
RTÉ	Raidió Teilifís Éireann
UK	United Kingdom
US	United States
WHO	World Health Organisation

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## **Chapter 1: Introduction**

Scientific research has the capacity to be an exciting and engaging topic for public consumption. The public awareness and understanding of advancements in the scientific field is also critical for informed policy making, legislating and funding. However, in order for this research to be appreciated and understood, the information must be made available to the public in an easily digestible format. I therefore propose to investigate the landscape of science reporting in the Irish Media.

Ireland was ranked the tenth most innovative country in the world in 2017 (The Global Innovation Index, 2018). It was also recently reported that Ireland was ranked tenth in the world for the quality of scientific research produced. Even more impressively than this, it has also been announced that Ireland ranks first for research quality in the burgeoning nanotechnology industry and second in the more traditional animal and dairy science sectors (Science Foundation Ireland, 2017). In addition, the science industry is an important component of the Irish economy with the life science sector, (covering aspects such as the pharmaceutical and medical device industries) exporting over forty-five million euros annually and employing over fifty thousand people in Ireland (Enterprise Ireland, 2017).

Given Ireland's evidently valuable contribution to scientific research and advancement, one would hope that a correlation is observed in the scientific literacy and awareness of the Irish public. This is not the case. Under half of the Irish public feel informed about current research and advancements in science. This survey conducted by Science Foundation Ireland also concluded that the majority feel these topics are too specialized for them to comprehend. There is however, an overwhelming appreciation for scientific research, with the majority agreeing that it is valuable to society and the economy (Science Foundation Ireland, 2015). Given this level of awareness, it could be argued that there is an appetite for science news and reporting in Ireland. If Ireland's global position of scientific innovation is to be sustained, further public engagement is required.



The scientific community publish their findings in reputed peer reviewed journals in order to ensure credibility. However, they are reliant that their findings are disseminated by the mass media in relatable terms to ensure public understanding of these scientific and technological developments. The research conducted by Science Foundation Ireland implies that this mechanism of dissemination is failing.

In order to understand how the Irish media can engage the public on this topic, it is important to understand the current landscape of science reporting in Irish media streams. This dissertation aims to characterise Irish science news coverage over a one month period in 2018 and deduce if this coverage is adequate given the appetite of Irish news consumers for science news. In order to achieve this, it must be established if published science research is being communicated in the Irish media. If it is being communicates, the amount of coverage must be quantified and characterised. In order to deem if the level of coverage is adequate, the Irish demand for science news must be established.

These aims can be described by five research questions:

1. Have scientific papers, published in peer reviewed journals reached the Irish media audience?
2. What percentage of papers was represented in the Irish media?
3. What percentage of Irish media programming is dedicated to science?
4. How has Irish Media coverage portrayed science as newsworthy?
5. Does the Irish Media adequately communicate scientific messages?

## Chapter 2: Literature Review

### 2.1 Global Appetite for Science News

There is a public appetite for news and information on science. For example, late in 2017 it was widely reported that when Stephen Hawking's Cambridge doctoral thesis, *Properties of the Expanding Universe*, was made available for free download online to celebrate Open Access Week 2017, the website crashed as the server was overloaded with 60,000 downloads in the first 24 hours (Busby, 2017).

In the United States, US, a 2014 study found that four out of every ten Americans are very interested in new scientific discoveries and a further four out of ten were moderately interested. Six out of every ten were very interested in new scientific discoveries in medicine. Discoveries in the field of medicine was the area that is that is likely to garner the most interest. About a quarter of respondents were also very interested in areas such as agriculture, space exploration and international policy (National Science Board, 2016). It should be noted that interest in science can be influenced by the level of exposure the public receive to information on the topic (Slater et al., 2007).

The readership of the global edition of the magazine *New Scientist* is estimated to be 807,388 and the readership of the United Kingdom, UK edition is estimated to be 363,000 (New Scientist, 2018). *National Geographic* magazine estimate their reach to be 30,850,000 adults globally. They also report an audience growth of 6.6%, in 2017 adding nearly 1,900,000 readers (National Geographic, 2018). In 2016, they had a monthly UK print circulation of 180,295. To put this in perspective, the UK print circulation of *The Economist* was 155,817 and TV Choice had the highest UK print circulation of 1,219,097. *BBC Focus* is the best-selling UK produced science and technology publication with a monthly print and digital circulation of 58,368 (Oakes, 2017).

## 2.2 Irish Appetite for Science News

The 2017 Reuters Institute Digital News Report for Ireland has shown that the Irish news consumer is interested in news on science and technology. 47% of those surveyed were interested. Comparatively, 41% were interested in political news, 34% were interested in business and economic news and 34% of those surveyed were interested in sports news. The category to garner the most interest was regional, town, or city news with 64%. Interest in science and technology news had increased 1% since 2016. This may not seem like a large increase, but a downturn in interest was seen in areas such as political news, sports news, entertainment news, business news, lifestyle news and international news. Science and technology news was the only news area examined to see a rise in interest. Interestingly, the study observed no discernible difference in interest levels geographically across Ireland. Again, this might not seem of particular note, but it indicates that there is no difference in interest in science between rural and urban areas. For example, there is more interest in business and economic news in Dublin than the rest of Ireland. 57% of those interested in science and technology news were male so there is some gender bias present. However, there was no difference observed in the age profile. About half of those surveyed were under 35 and about half were over 35 (Reuters, 2017).

A 2015 Science Foundation Ireland study also observed the gender gap in interest levels in science. They also found a socio-economic influence with an almost twenty percent drop in interest from the most to the least affluent surveyed. This study linked interest levels in science with the pre-existing level of engagement and knowledge a person has.

They found that those least interested in science were what they termed the “young and disengaged” and “disenfranchised” portions of society. The “young and disengaged” group make up 7% of Irish society. They are aged 15-30 and have not engaged with topics such as science and maths academically after the Junior Certificate. 15% have interest in scientific discoveries and just 10% have interest in medical discoveries. Science Ireland view this group as a “lost cause” in regard to any attempt at future engagement with science as they don’t engage with the topic via any cultural channels such as the media. The “disenfranchised” portion of Irish society are aged 30-55 and make up almost one in five of the Irish population. The majority completed their education at secondary level. Their engagement with science

comes via pop culture references and their children's education. 52% have interest in medical discoveries and 28% have interest in scientific discoveries. Due to these interest levels, for Science Ireland, they are a group that may be converted and should be further engaged.

They also found that those most interested in science were what they termed the "super interested" section of Irish society. They account for 11% of Irish people. They are aged 30-55, with 57% being male. The majority have completed third level education. 94% are interested in scientific discoveries and 88% are interested in medical discoveries. This group are very supportive of the benefits of science and will likely back any governmental investment in science. The reach of their interest levels is beyond what is deemed newsworthy and they seek out information accordingly. Science Ireland identified another group that were very interested in science. They called this section of society the "parent/informally informed" group. They are parents aged 35-50 and make up 24% of 35-50 year olds in Ireland. The majority have completed third level education but their engagement with science have been provoked via their children's education. 82% are interested in scientific discoveries and 80% are interested in medical discoveries. It should be noted that only 6 in 10 of this group would say they feel very/fairly well informed about Science, Technology, Engineering and Mathematics. There is an observable gap between how interested they are and how much information they feel they are receiving on the topic (Science Foundation Ireland, 2015).

### **2.3 Global Consumption of Science News**

Public knowledge of science is largely obtained via the filter of mass media streams rather than via education, direct involvement or publication of academic scientific research. The scientific community therefore rely on and must engage with the mass media to ensure public understanding of scientific and technological developments. For example, a study by Bell in 1994, concluded that in New Zealand, the media was the only public source of climate change information. A study by Wilson in 1995 stated that the media, particularly television was the primary source of climate change information in the US (Wilson, 1995). A 1992 study concluded that the top sources of science news in the US were television, followed by newspapers, and then news magazines (Miller and Pifer, 1993). A 2001 study found similar results of science news sources, with television news remaining the main source. However, news magazines and newspapers both were the next most used source with 16% usage (National Science Foundation, 2002).

By 2006, the internet was the second highest source of science news (National Science Foundation, 2006). Although the internet is now a top public source of science news, in 2005 the main internet sources were professional news outlets such as *Yahoo News* and *Cable News Network, CNN*. The main media source of scientific reporting remained the responsibility of scientific journalists (Suleski and Ibaraki, 2010). The net neutrality of the internet means that the reach of science news has now increased beyond the more traditional news consumer and to audiences of many educational backgrounds.

### **2.4 Irish Consumption of Science News**

A study conducted by Science Foundation Ireland in 2015, concluded that the aspects of science that prompt public interest are medical discoveries, environment issues, new technologies, new science groups and science and technology issues. They also found that one in four people had actively pursued knowledge on science in the past year of their research. Of these actively seeking information, just over fifty percent used the internet, followed by television, newspapers, magazines and social media. This indicates that there is certainly an interest in science news. However, no data is available on the level of science reported in the Irish media or the level of engagement with science reported in the Irish media (Science Foundation Ireland, 2015).

The 2017 Reuters Institute Digital News Report for Ireland has provided a profile of Irish society's consumption of general news reporting in the Irish media. They found that at least 70% are very interested in news and the majority access news multiple times daily. 80% engage with the news at least once a day. It is worth noting that almost 60% have avoided the news on occasion and this was attributed to how negative the news was, the feeling that there was nothing to be done about the news reported or that the truth of the news was questionable. These findings could certainly be applied constructively to create more attractive and engaging content for the Irish news consumer. The most popular way to consume news is to read a news story or article. However, this method has dropped to 44% of consumers from 62% of consumers in 2015. The next most popular method is to scan news headlines and watch online videos. A method that is increasing in popularity is the use of news applications on tablets. The majority of Irish consumers of news continue to turn to the traditional media of newspapers, radio and television with only 23% solely using digital media such as smartphones, tablets and computers (Reuters, 2017).

## **2.5 Global Public Scientific Literacy**

Although the studies conducted in the US and New Zealand found that science was present in the mass media, this does not necessarily mean that the public have a high level of scientific literacy. Another 1992 survey of media consumers in the US found 55% of those surveyed believed that dinosaurs had coexisted with humans. In 2001, this percentage was 52% (Miller and Pfier, 1993). Interestingly studies performed in 1990 and again in 2001, both found that just 14% of the US public felt well informed about scientific developments (National Science Foundation, 2002).

Examples of how vital this scientific literacy is can be seen in what Corbett and Durfree describe as, "unobtrusive or invisible issues" (Corbett and Durfee, 2004). A hotter than average summer is experienced. Without media coverage connecting this anomaly to scientific evidence, the public may be unaware that this is a result of global warming. When a rise in obesity is observed, if other modes of education are not available, the media can inform the public of root causes such as artificial trans fats and high calorific content food as well as the potential impacts such as heart disease and diabetes (Saggy and Ameling, 2008).

## **2.6 Irish Public Scientific Literacy**

Science Foundation Ireland's 2015 survey found that just over half of the Irish public felt uninformed about science research and developments. The research indicated that the younger and middle class were more likely to feel informed whilst females and older people were more likely to feel uninformed. Those therefore most likely to be engaged and interested in scientific developments were males, aged 35-69. They concluded that whilst overall, the majority are interested, they feel a lack of confidence in their knowledge and ability to understand. Science Foundation Ireland recommended further public education and awareness to limit the academic, class-room associations and encourage the association of science with applications in every-day life (Science Foundation Ireland, 2015).

The mass media's tendency to focus on human angles in news reporting would align with this recommendation. It is important to explore if and how the Irish Media is currently presenting science to the public if the Irish Media is to better realise the recommendations of this survey.

A 2017 survey by Amárach, commissioned by Science Foundation Ireland, provided some insight into the level of scientific literacy in Ireland. They found that 69% of Irish people surveyed believed in global warming and climate change, and 68% agreed that this is as a result of human activity. It should be noted that of the Irish scientific community, these findings both rose to 92%. 43% of Irish people surveyed thought it unsafe to eat genetically modified foods. Amongst the Irish scientific community, just 14% thought this unsafe. The survey found that 64% of the public agreed with the use of vaccinations whilst 95% of the scientific community agreed. Of the Irish public surveyed 12% agreed that human evolution was guided by a supreme being. Comparatively, 92% of the Irish scientific community believed that human evolution is the result of natural selection. The survey has identified a disparity between the scientific understanding and literacy of the Irish public and the Irish science community. This could be attributed to scientific information being inaccessible or incomprehensible to the non-scientific Irish community (Kennedy, 2017).

Another interesting outcome of the survey by Amárach was the lack of knowledge around Irish scientific achievement. Given that the 2017 Reuters survey found that the type of news to garner most interest was regional news, it would follow that the science news most

reported would be of local interest such as local scientific achievements. The Amárach survey found that 68% of the Irish public cannot name any Irish scientist and 72% cannot name any Irish scientific accolade (Kennedy, 2017). Just two years prior to the survey, an Irish scientist, William Campbell had been awarded the Nobel Prize in medicine for his contributions to a new drug that treats the tropical disease prevalent in Africa, river blindness.

Irish communications lecturer, Dr. Declan Fahy, has discussed the reporting of this achievement in the Ireland media. The focus of the reporting in Ireland was the local dimension. William Campbell is from Donegal. The celebratory tone was also stressed. None of the news reports were by specialist science journalists. Only one article by The Irish Times examined the background of William Campbell's scientific work. Dr. Fahy concluded that this was reflective of Irish science journalism in general and that with few journalists dedicated to science reporting, there is a neglect in informative and critical content. This in turn impacts on how the Irish public comprehend and engage with Irish scientific developments and achievements (Fahy, 2017).

Another Irish communications academic, Brian Trench has commented on science reporting in the Irish media. He concluded that the tendency was for the Irish media to focus on science in the context of the economy or achievements to be celebrated. Throughout his studies, he perceived the Irish media coverage framing science as something remote and unengaging. Of science reporting in Ireland he surmised that, "topics and terms so central to public policy discourses are marginal to media discourses." Brian Trench highlighted that one way to easily see when journalistic reporting of specialist subjects is successfully communicated to the public, is when the specialist language of the subject is merged with the everyday language of the public. An example of this is the widespread coverage of climate change in more recent times. Terms such as carbon footprint or global warming have been adopted into the everyday vernacular. They can be used in conversation without any need for further explanation. This is achieved through the assimilation of specialist terminology into journalistic language (Trench, 2009).



## **2.7 Representation of Science in the Media**

A 2001 study found that fewer than 0.4% of published scientific papers were represented in US television and magazine media. The majority of those depicted concerned health and medicine. Other fields only appeared at a rate of 0.005% (Suleski and Ibaraki, 2010).

It is felt by 75% of scientists, that media coverage of science prioritizes sensationalism over scientific evidence, alarming the public with exaggerated, negative impacts, and that coverage focuses on interesting, “trendy” discoveries instead of the foundation of research and development (Hartz and Chappell, 1997).

## **2.8 Representation of Science in the Irish Media**

I could find no data collected on the Irish Media’s science reporting which could be compared with the study conducted in the US. It would be interesting and worthwhile to answer the questions such as the below in order to create a comparable data set.

- If science is represented in the Irish Media, how often it is represented?
- What percentage of published scientific papers are represented in the Irish Media?
- What subjects or themes are deemed newsworthy?
- If the scientific evidence and messages are presented accurately?

## **2.9 How Best to Report Science in the Media**

Public knowledge on science is shaped by media framing, Framing is the emphasis of “aspects of a perceived reality...in such a way as to promote a particular problem”. Public perception is influenced by media framing and it therefore informs public action in response to issues related to scientific evidence (Entman, 1993).

Interestingly, in the case of science reporting in the mass media, it has been argued that balanced reporting can lead to a less accurate portrayal of scientific messages. The responsible scientific journalist must ensure that the scientific argument with the most supporting evidence is the message that is endorsed. To report on all avenues of research can give context to a topic but can dilute the conclusions of research and discovery. This concept is known as “false balance”. When news supported by scientific evidence is presented along

with other perspectives with little evidence, an incorrect impression of scientific uncertainty can be conveyed (Boykoff and Boykoff, 2004).

An example of this is the implication of a link between vaccines and autism. There is no scientific evidence to support the link but the theory is often presented in media reporting on vaccines. After the reporting of discredited research on the link in 1998, in the UK, the Measles, Mumps and Rubella, MMR vaccination coverage fell from 92% in 1998 to 80% in 2003 with a decrease of 30% reported in some areas. A measles epidemic was declared in the UK in 2008 with the first death by measles occurring in a decade (Dixon and Clarke, 2012).

However, arguments that a balanced approach to reporting is advantageous, include that by making diverse viewpoints available, the news consumer is released from the influence of news framing and can draw their own informed conclusions. This balance can ensure that any relevant information isn't kept from the media audience. The risk is that a journalist who lacks time or expertise will not ensure the validity of the scientific evidence and inadvertently contribute news with a "false balance". It is the journalist's responsibility to shape the readers understanding appropriately. Alternative perspectives must be represented in proportion to the supporting scientific evidence available (Smith, 2005).

Indeed, sociologist Dorothy Nelkin, has commented that an inherent issue with how science is portrayed in the media is the representation of scientist as the saviour, the sole voice of authority on the topic, instead of the journalist adopting the role of critical commentator, adding their journalistic objectivity. To create a mystique around the scientist, further distances the public from engagement with the science itself (Nelkin, 1995).

This concept was further bolstered by a study of television's framing of news around genetics and biomedical research, over thirteen years in Finland. Firstly, of interest was the very idea of how science was translated onto the screen. Television journalists often use the term "news stories" to describe the news items. Television news is often presented as a narrative story with a beginning, middle and end and agreed plot. To this end, they found that scientists on television were most often portrayed in five different roles; the expert, the healer, the hero, the prophet or the reassurer (Väliverronen, 2007). If Nelkin's suggestion that

the canonization of scientists in the media only serves to harm public engagement, then this is an alarming finding.

It has also been argued that the availability of scientific information online, can contribute to improving science literacy and avoiding narrowed viewpoints caused by media framing. However, search engine optimization and the influence of algorithms and audience metrics on the information provided to the news consumer must be considered. As the public are receiving a tailored selection of content, news framing is again in effect (Ladwig et al., 2010).

There have been many studies on how science is framed in the media and indeed, if key scientific messages of scientific research are being conveyed. No research studies have been conducted on how science is framed in the Irish media. There is also, a lack of research on how this framing and reporting, shapes public opinion and attitudes toward the scientific field.

## **Chapter 3: Methodology**

### **3.1 Research Questions**

Given the information available and surmised in the literature review, it is necessary to perform a comprehensive evaluation of the communication of scientific research in Ireland. This has not previously been undertaken. A number of aspects must be addressed in order to ensure that the research conducted is an informative and conclusive examination.

As mentioned in the introduction, the questions posed for further study are:

- Have scientific papers, published in peer reviewed journals reached the Irish media audience?
- What percentage of papers was represented in the Irish media?
- What percentage of Irish media programming is dedicated to science?
- How has Irish Media coverage portrayed science as newsworthy?
- Does the Irish Media adequately communicate scientific messages?

### **3.2 Identification of Science in Irish Media**

Academics, Caparlar and Dönmez defined and classified the nature of scientific research in their 2016 study as, "Research conducted for the purpose of contributing towards science by the systematic collection, interpretation and evaluation of data and that, too, in a planned manner" (Çaparlar and Dönmez, 2016).

They found there were many ways to classify scientific research, once identified. You could examine the data collection techniques employed, for example identifying the research as observational or experimental. Or perhaps by the application of the research, such as a clinical or laboratory setting. Another option is to classify the scientific research by its association with time, a retrospective, prospective or cross-sectional study. Whilst we can identify scientific research in Irish media reporting using the definition proposed by Caparlar and Dönmez, a different classification system of the scientific research reporting collected could prove informative. As previously discussed, Science Foundation Ireland had reported that the types of research that elicit public interest are medical discoveries, environment

issues, new technologies, new science groups and science and technology. It would therefore be of interest to investigate the proportional representation of these classifications of scientific research. Is the Irish media reporting those topics identified as most engaging to the readership and if not, from the editorial perspective, what is being deemed to be of interest?

With the science news examined in this study now defined and classified, it is also necessary to confirm how this study will identify when this defined scientific research is represented in the media. An influential study by Scandinavian academics, Johan Galtung and Mari Holmboe Ruge, sought to identify elements which impacted how likely it was that a topic would be reported in the media. They concluded that there were twelve recurring factors which made issues or events more likely to be covered by media outlets. This included considerations such as topics with a human focus, topics that relate to famous people and how relevant a topic is to the reader or topics that are easily understood by the reader. Interestingly, they found that negative stories are more likely to contain more of the recurring factors than positive stories. With this in mind, it is understandable that when scientific research appears in the media, it is rarely the primary topic of the media report (McGregor, 2002).

In 2010, researchers, Suleski and Ibaraki commented that research on science reporting in the media has often focused on media articles that specifically cover published science research. I instead propose to undertake a compilation of all articles that reference scientific research, a finding of research, a researcher or a study as per the research conducted in the US by Suleski and Ibaraki (Suleski and Ibaraki, 2010). This approach will identify for example, human interest stories that also communicate science to the reader. Given the influencing factors identified in news reporting, it is more likely that science is being communicated in the mass media with this framing.

Over a period of one month, I will analyse the media coverage given to this definition of science reporting in the Irish Media.

### 3.3 Sample Group Selection of Irish Media

In order to correctly characterize the representation of science in the Irish Media, it is important to identify the most commonly accessed media streams by the Irish media audience. The most recent Reuters Institute Digital News Report in 2017 for Ireland, indicated that the Irish consumer is interested in news and the majority of people seek out news multiple times over the course of their day. This interest increases with age. They broke down the Irish news consumer into two groups. Digitalist news consumers favour digital outlets on their phones, computers and tablets. Traditionalist news consumers access the news via newspapers, radio and television. The majority of Irish news consumers are traditionalists. Interestingly, the study observed a drop in digitalists by four percentage points compared with 2016 whilst the traditionalist methods further grew by two percentage points.

A comprehensive overview of scientific news reporting in Ireland would review these traditionalist news outlets preferred by the majority of news consumers. The traditionalist Irish media of newspapers, radio and television were evaluated to determine what Irish Media sources would best indicate science reporting reaching the Irish Media audience.

The national broadcaster *Raidió Teilifís Éireann, RTÉ* holds the biggest share of the Irish television market. *RTÉ One* has almost an 19% share of the market followed by *RTÉ2* and *TV3*. Of these television channels, the most watched news shows are *RTÉ News: Six One* and *TV3 3News at 5.30* (Television Audience Measure Ireland, 2017).

Whilst newspapers and radio were found to mainly appeal to the older news consumer, these television outlets also appeal to the younger news consumer. 85% of news consumers over fifty-five have watched television news in the last week as have 50% of those aged to twenty-five to thirty-four. *TV3* is the most trusted source of news on Irish television with 61% of news consumers trusting the brand. *RTÉ* television news is trusted by 57% (Reuters, 2017).

Seventy percent of Irish news consumers turn to newspapers as a news source. Currently, the *Irish Independent* is the daily broadsheet newspaper with the highest readership in Ireland. Twenty six percent of news consumers read the *Irish Independent*, (Reuters, 2017). The newspaper has a circulation of almost ninety-five thousand, (NewsBrands Ireland, 2017).

Although the difference in political inclination of the Irish news consumer is for the most part indiscernible, it has been noted that consumers of the online version of the Irish Independent have been found to be the most right-wing. Of the Irish broadsheets examined by the Reuters Institute Digital News Report in 2017, news consumers of the Irish Independent have moderate trust in the brand with 55% of those surveyed saying they trusted the newspaper as a source of news. The only broadsheet print newspaper to be more trusted was the *Irish Examiner* with 65%. Interestingly, Ireland's news consumers have higher levels of trust in the news media than the international average. 26% of consumers agree it is the best source of news for accuracy and 30% find it to be the best news outlet for understanding complex issues (Reuters, 2017).

The *Irish Sun* is the most read daily tabloid newspaper with a readership of over fifty-five thousand nationally, (NewsBrands Ireland, 2017). News consumers of the *Irish Sun* also have moderate trust in the brand with 60% of those surveyed saying they thought the newspaper a trustworthy source of news. This is comparatively low amongst the Irish tabloids with the *Irish Daily Mirror*, the *Irish Daily Mail* and the *Irish Daily Star* all ranking higher. It should be appreciated that the Irish newspaper readership tends to represent the older news consumer. 60% of news consumers over fifty-five have read a newspaper in the last week compared with 21% of those aged to twenty-five to thirty-four (Reuters, 2017).

More than three million people listen to Irish radio on a daily basis. The age demographic observed in Irish consumers of newspapers is mirrored in Irish radio consumption. Again 60% of news consumers over fifty-five have listened to the radio in the last week compared with 21% of those aged to twenty-five to thirty-four (Reuters, 2017). Of the 84% of Irish adults listening to the radio daily, more than half are listening to regional stations and 44% are listening to national stations (Ipsos MRBI, 2017).

In terms of national radio stations, RTÉ operated *RTÉ Radio One* and *2FM* have the highest reach, with nearly 30% of the market share. This is followed by *Today FM*. I propose to examine the main news and current affairs programmes of these stations.

*RTÉ* report their breakfast news show *RTÉ Radio One's Morning Ireland* has the highest listenership with over four hundred thousand listeners. Whilst local and community radio stations have been found to be the most trusted sources of radio news by the Irish news consumers the news on *RTÉ* radio is the most trusted national source, trusted by 56% of news consumers.

*The Last Word* is *Today FM's* dedicated current affairs programme. Listeners of *Today FM* have been found to be the most politically left wing of Irish radio news consumers. The news on *Today FM* is the less trusted, trusted by 50% of news consumers. Interestingly, the radio station, *Today FM* and the newspaper, the *Irish Independent*, are inextricably connected. Denis O'Brien's company, Communicorp own *Today FM*. He is also the second biggest shareholder of Independent News and Media who have the controlling share of the *Irish Independent* (Reuters, 2017).

### **3.4 Quantitative and Qualitative Analysis**

The method I will use to conduct this research project is that of a mixed methods approach, incorporating quantitative and qualitative content analysis. In addition to quantifying the amount of science news coverage given, a more in-depth content analysis will be conducted to elucidate how science is portrayed in the Irish Media. In the reference book, *Mass Communication Research Methods*, Anders Hansen advocates a holistic approach to content analysis. The addition of qualitative research to a quantitative method can build a broad picture giving depth to numbers with the inclusion of pictures and dialogue for example. They articulate this analysis as six steps (Hansen. 1998).

Please see below my interpretation of the steps to be undertaken:

1. Definition of the research problem  
Is science represented in the Irish Media and if so, how is it represented?
  
2. Selection of media and sample  
The aforementioned Irish Media streams of newspaper, radio and television will be examined in my study. The sampling period will last one month.



3. Defining analytical categories

As previously proposed, I will follow the research of Suleski and Ibaraki, in the identification of scientific reporting.

4. Constructing a coding schedule

I will collect information such as: the news outlet, the format of the article, duration of the article, what sector of science was covered, what research was represented. Qualitative questions will also be asked such as: is the topic depicted as beneficial or problematic, are the key scientific messages of the research communicated. Further qualitative analysis could potentially be conducted on images associated with paper and television reporting.

5. Piloting the coding schedule and checking reliability

A coding schedule will be constructed and piloted for a week prior to the analysis to ensure its adequacy. The pilot will last a week to ensure that a reliable number of news articles are available. The coding schedule shall be amended as required in produce a final coding schedule that will be used in the one month analysis.

6. Data-preparation and analysis

The required newspapers, television shows and radio shows will be collated over the one month period. I will then employ the coding schedule and critically analyse the data collected. I wish to produce qualitative data on the percentage of science reporting in Irish Media in more engaging graphs. Qualitative results could be represented in bubble graphs or word clouds to demonstrate themes observed on how science is represented in the media.

### **3.5 Potential Ethical Issues**

Every step of the research project must be conducted responsibly and with integrity. There are two main aspects to the ethics of the research. The first is that all conclusions reached are objective and evidence based. That is to say that there is no error or bias in the work. The second is in regard to working with research subjects. Those involved in the study must retain their rights and well-being. This covers obligations such as ensuring a subject is participating

voluntarily, has given informed consent, that their confidentiality and anonymity is retained and that they can leave the research project at any time.

Given that I will not have any research subjects, I will focus on the integrity of the research itself. Zina O'Leary outlined the questions to be used to challenge the research process in order to achieve credible work in *The Essential Guide to Doing Your Research Project*:

- Have subjectivities been acknowledged and managed?
- Has 'true essence' been captured?
- Are methods approached with consistency?
- Are arguments relevant and appropriate?
- Can the research be verified?

The main challenges which may impede my research project are:

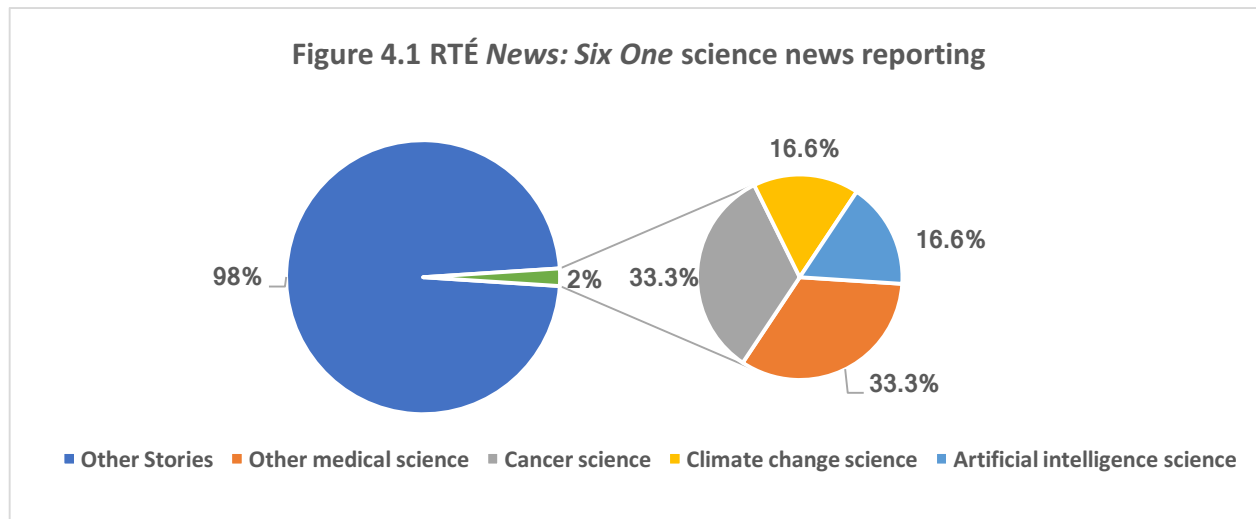
- There may be a lack of science news coverage in the Irish Media over the one month time period
- The data analysis may be time consuming
- The qualitative analysis, for example concluding if the key scientific messages are adequately conveyed in the science news coverage, may be subjective

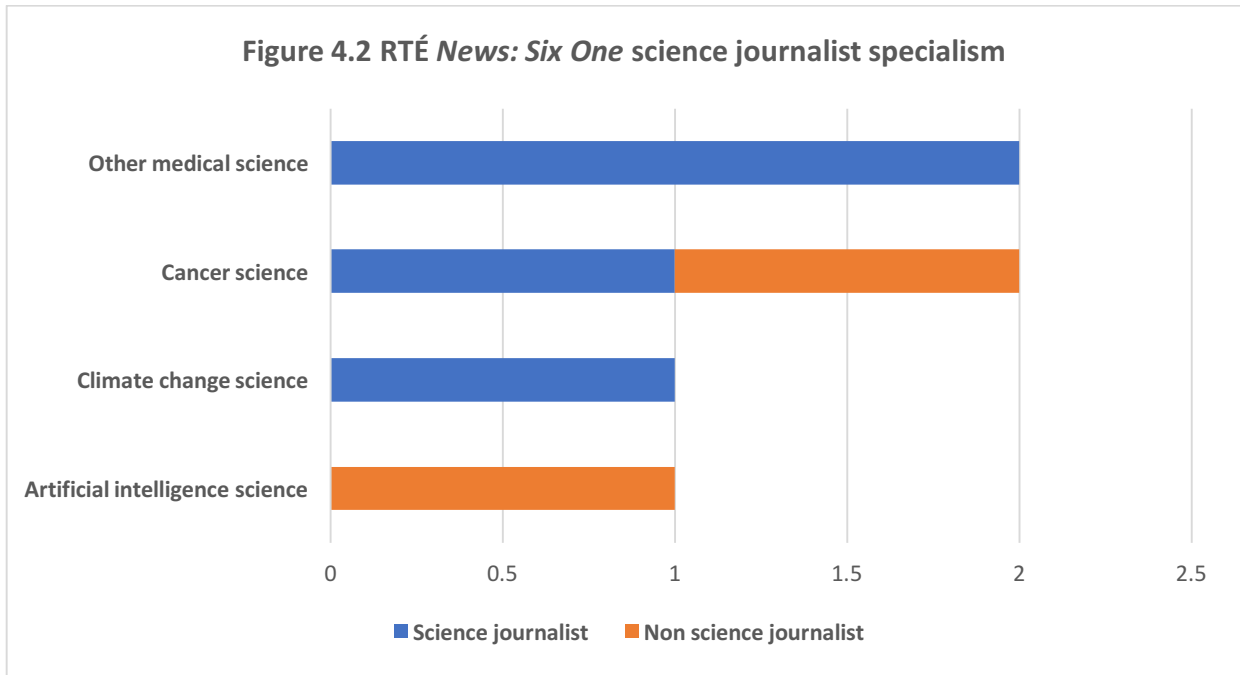
If there is a lack of science news coverage to analyse, this in itself is a finding of the research project and can be quantified and further analysed. I will employ the questions outlined by Zina O'Leary and challenge my methods with these throughout the process in order to produce objective data, analysis and conclusions (O'Leary, 2010).

## Chapter 4: Results

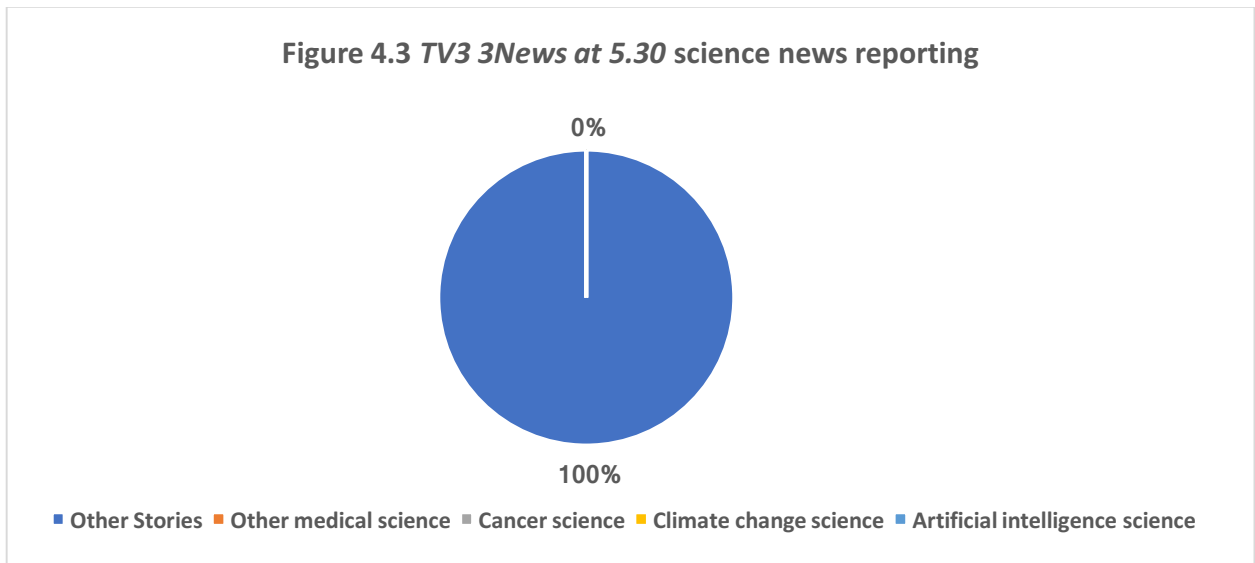
### 4.1 Irish television reporting of science news

Over the course of the one month period, 292 news items were reported on *RTÉ News: Six One*, equating to an average of 10 news items per news show. Of these 292 news items, 6 news items fell under our guidelines for identifying science reporting. There are the guidelines devised by researchers, Suleski and Ibaraki, and encompass any news item referencing scientific research, a finding of research, a researcher or a study. 2% of news reported by *RTÉ News: Six One* in the one month period was classified as science news. These science news items all featured on different days, so science news was reported on six days in the one month period. In 50% of cases, a science and technology correspondent reported on the news item with a general news reporter or correspondent of another specialism reporting on the news item in all other instances. 66.6% of the science news reported concerned medicine. 16.6% concerned climate change. 16.6% focused on artificial intelligence. Half of those medicine and health news items related to medical discoveries for cancers.





Turning to our second television sample, *TV3 3News at 5.30*. 218 news items were reported in the one month period. This equates to an average of 7 news items per news show. It should be noted that *TV3 3News at 5.30* has a duration of 30 minutes, in comparison to the 59 minute duration of *RTÉ News: Six One*. This accounts for the lower average number of news items per news show. Of these 218 news items, no news items fell under the identification guidelines for identifying science reporting.



The first science news item reported by *RTÉ News: Six One*, featured on June 3<sup>rd</sup>. It concerned a landmark global study that concluded that some forms of breast cancer don't require chemotherapy to prevent reoccurrence, with hormone therapy alone being effective. The reporter for the news item was a general reporter, rather than a science correspondent. An Irish consultant oncologist who is also the Chair of Cancer Trials Ireland provide a commentary during the news item and contextualised the findings for the viewer, explaining their significance. Toward the end of the news item, the reporter informed viewers that Irish women had partaken in the study, giving the news item local interest. The findings of the report were clearly laid out for the viewer, with bullet points appearing on the screen. The report did not reference where else the research was conducted, what research group had undertaken the study or where the findings had been published. There was no detail given on where viewers could seek further information. As well as footage of the reporter and the consultant oncologist, the footage used included close ups of MRI scans, hospital workers moving equipment, doctors wheeling patients through a hospital corridor and a close up of a hospital signs for an x-ray department.

The next science news item reported by *RTÉ News: Six One* occurred on June 5<sup>th</sup>. This focused on a group of doctors in Maryland who have announced that for the first time, a woman diagnosed with a terminal cancer had been cured using a new immunotherapy technique. The reporter for the news item was *RTÉ's* science and technology correspondent, Will Goodbody. The news item had an interview with the cancer patient who has the subject of the research. The interview was personal, she spoke of coming to the realisation that she was going to die from her cancer prior to the experimental treatment. The report informed the viewer of the lead researchers name and then played an interview with him, where he explained the significance of the finding and how this could be applied on a larger scale. The science and technology correspondent finished the news item, by adding caution, explaining that this new therapy couldn't be used on all cancer patients. Although the research group was cited in this instance, the viewer was not told where they could seek further information or where the research had been published, (*Nature* magazine). Footage used included current footage of the cured cancer patient canoeing, as well as photos of her undergoing treatment and MRI scans with arrows identifying tumours. There was also footage of the researchers in the laboratory, looking down microscopes. An animated graphic explained the mode of action

of the immunotherapy and the viewer saw the cancer cells recede.

On June 6<sup>th</sup>, *RTÉ News: Six One* had a science news item on the findings of a study on the optimum way to tackle in rugby, to reduce the risk of head injury. Again, the news item was reported by *RTÉ's* science and technology correspondent. The research group was referenced. They were an Irish based group. The lead researcher explained their findings whilst holding a printed diagram for assistance. Another researcher explained their conclusions, that is, the safest way to tackle whilst standing on a rugby pitch. The correspondent concluded the news item by relating the finding to the upcoming Irish rugby season. Other footage used that of a rugby game and the researchers in their office looking at simulated tackles on a computer screen.

On June 19<sup>th</sup>, a news item on artificial intelligence was reported. The report was on International Business Machine, IBM's artificial intelligence programme which had unveiled a computer capable of live debating with humans. The reporter was a general news reporter rather than a science or technology correspondent. Some of the research for the project had been carried out by IBM scientists in Ireland. Footage used had been provided by IBM. This firstly depicted the debate in action. The rest of the footage used was from an IBM research promotional video and depicted quintessential imagery associated with information and academics; equations on a chalkboard, books in a library and a lecture.

The next science news item was on June 23<sup>rd</sup>. This was on a regional climate change meeting which had taken place in Athlone. The news item was covered by *RTÉ's* agriculture and environment correspondent. A climate change researcher was interviewed with the focus on the event itself. The event was an open forum for experts and members of the public to discuss ways to combat climate change on an everyday level and a policy level. The news item was reported on the same day as the event was happening. Therefore, no main discussion outcomes or actions were reported. There was no follow up report on the subsequent day's news show. As the focus of the news item was on the event itself, the footage centred on scenes of the event.

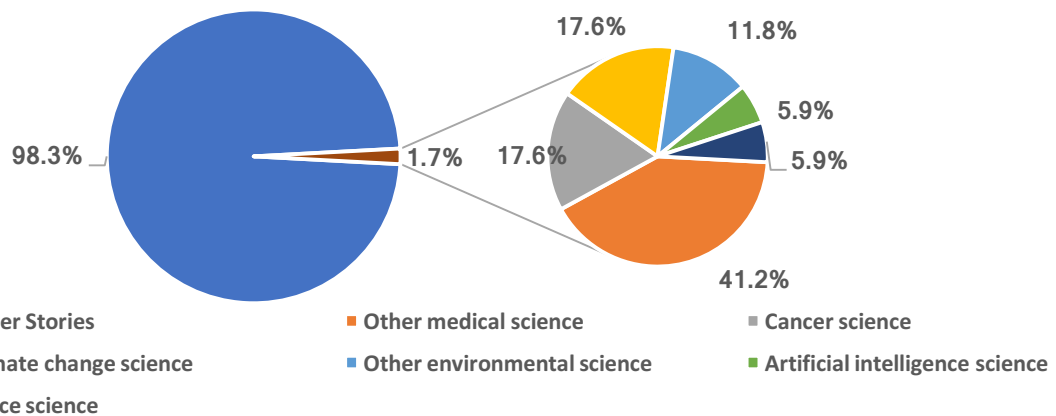
The last science news report observed in the one month period was a news item on the impact of the Chernobyl nuclear power plant disaster on Belarus and Ukraine, thirty two years on. This was again reported by RTÉ's science and technology correspondent, Will Goodbody. Interestingly, this news report had been funded by the Simon Cumbers Media Fund. The aim of the Fund is to promote quality news reporting on the theme of international development. Will Goodbody had been awarded funding to produce a series of three news reports on the impact of the Chernobyl disaster, with this report being the third. The previous reports were more human interest in nature. For example, one news item documented orphan children from the Chernobyl region arriving in Dublin airport for their holiday. After documenting the history of the disaster and visiting the exclusion zone, Will Goodbody then featured a leading researcher on the impact of the disaster and described some of his key findings on associated birth defects. He then interviewed the mother of a sick child. Footage for this news report was as you might expect. We saw the correspondent in the forests of the exclusion zone, interviewing the scientist in his laboratory and the mother in her home, sitting beside her sick child. Although he described statistical findings, no infographics or captions were used.

#### **4.2 Irish newspaper reporting of science news**

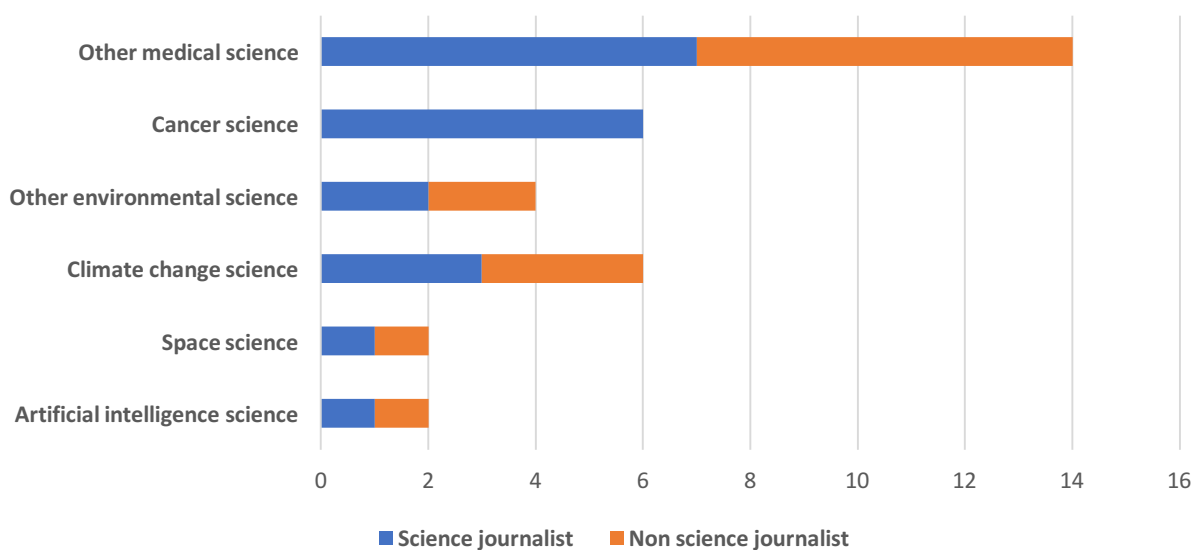
Over the one month period, 2000 news articles were reported in the *Irish Independent*. This is an average of 67 news articles per daily edition. Of these 2000 articles, 34 were within the guidelines for identifying science reporting. This equates to 1.7% of news reported in the newspaper in the study period. This coverage of science news was not evenly distributed, it occurred on 18 days during the study period, with the number of science news stories reported in a day ranging from 0 to 3. 53% of the science news articles were written by journalists with a science specialism while the remaining 47% were written by general news reporters. An image was published with 23.5% of the science articles identified. For comparative purposes, it was calculated that 55.7% of the total number of news articles carried an image in one newspaper examined in the study period. The most prominent subject matter was medicine. 58.8% of the science news articles identified concerned medicine with 29.9% of these specifically concerning cancers, (17.6% of the total science news articles found in the *Irish Independent* for the study period). 17.76% of the science news identified concerned climate change with the remaining news found to focus on other environmental subjects, space science and artificial intelligence. 58.8% of the science news identified was

written by journalists with a science specialism. 100% of science news reported concerning cancer were reported by journalists with a science specialism. Of science news items concerning other medical subject matter, 50% were reported by science journalists. In matters of climate change, 50% were also reported by journalists with a science specialism. In science news focused on other environmental topics, 50% were covered by science journalists. This ratio was also observed in the subjects of space science and artificial intelligence. There was no specific subject matter of science news reported which was more likely to have an image published alongside it.

**Figure 4.4 Irish Independent science news reporting**



**Figure 4.5 Irish Independent science journalist specialism**





2140 news articles appeared in the *Irish Sun* over the one month study period, equating to an average of 71 articles per daily edition. 30 of the 2140 articles fell within the guidelines employed to identify science news. Therefore, 1.4% of news reported by the *Irish Sun* is science news. Again, the coverage was not evenly distributed on a daily basis. As the journalist was not always credited for the science news articles identified in the *Irish Sun*, the proportion of journalists with science specialisms reporting on science news cannot be accurately ascertained. The journalist was named in 70% of the science news articles identified. Where the journalist was named, it was found that 57.1% of the articles were written by a journalist with a science specialism. An image was published with 70% of the science news articles reported. Comparatively, it was observed that 73.4% of the total number of articles were published with a picture in a full newspaper during the one month study period.

The number of science news articles included in the *Irish Sun* on a day in the study period, ranged from 0 to 5. Similarly, to the other media sources examined, the most frequent subject matter seen in the science news identified in the *Irish Sun* was medicine. 86.7% of science news found concerned medicine with 46.1% of this medical news focusing on discoveries around cancers, (40% of the total science news identified). The other science news stories concerned space science (6.7%), the environment (3.4%) and climate change (3.3%). There was no specific science topic that was found more likely to have an image published with it.

A t-test was performed on the amount of science news articles reported in the Irish Independent and the *Irish Sun*. No statistically significant difference was observed in the quantity of science news reported in each newspaper (t-test result p value of 0.6824 with 95% confidence interval). If the newspapers cater to different audiences with differing levels of interest in science news, this correlation between audience interest levels and reporting levels was not observed.

Figure 4.6 *Irish Sun* science news reporting

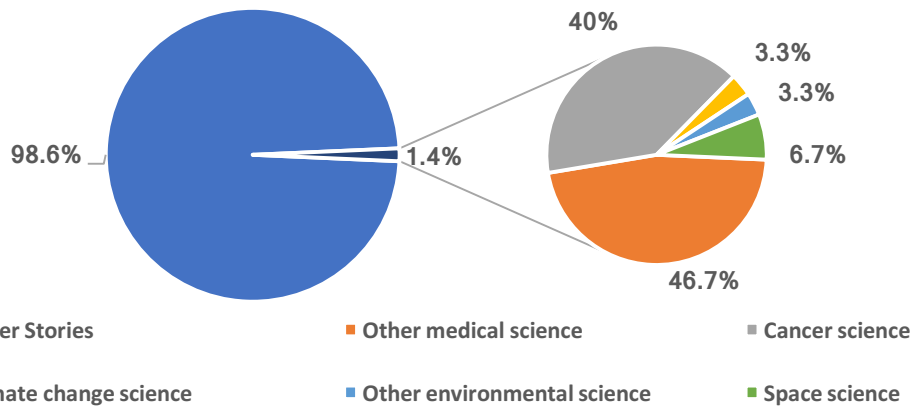
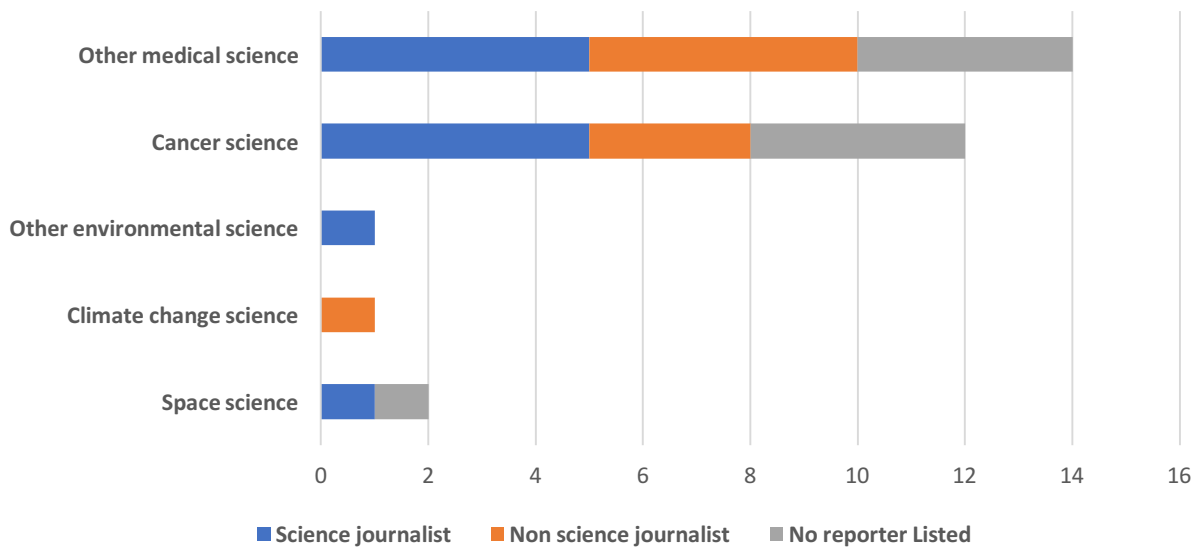


Figure 4.7 *Irish Sun* science journalist specialism



In order to demonstrate the difference in reporting styles between the two publications, I compiled a list of all repeated key words in all the headlines of the science news articles identified during the study period using a tool called Sporkforge, available at [www.sporkforge.com](http://www.sporkforge.com) which is owned by a US operated company called Sporkman. I input all the headlines into the Sporkforge tool and this produced a list of all words input and how many times they were input. I then input all key words that had been repeated into the Wordle tool, available at [www.wordle.net](http://www.wordle.net). Key words were considered any word that were not conjunctions, connecting sentences as well as the indefinite and definite articles. The Wordle tool is owned by Jonathan Feinberg, a software engineer. Both Sporkforge and Wordle were free to use. Wordle produced a word cloud with the size of words denoting how often they were used. I undertook these steps for the dataset produced by the *Irish Sun* and the data set produced by the *Irish Independent*. These word clouds illustrate the tone and complexity of words used by journalists in the publications and give an indication of the type of science media coverage to which the readers of these two newspapers are exposed.

**Figure 4.8 *Irish Independent* word cloud science news headlines**



Figure 4.9 *Irish Sun* word cloud science news headlines



In both newspapers, the key word observed most often was “cancer”. However, apart from this commonality, the keywords in the two newspapers were different in tone and content. The key words seen in the *Independent* are more specific and technical. Although a similar number of science news articles appeared in both newspapers, the headlines of the *Independent* were longer than that of the *Irish Sun*. As a result, more repeated key words were found in the headlines of the *Independent* and the resulting word cloud is much bigger. The word “study” was recorded so the science research itself was being credited in the news headline. Words like chemo and therapy are present. There is an expectation that the readers had an understanding of medical treatment. The science subject of the article was more likely to be stated in the headline. As a result, we see words such as “Alzheimer’s” and “Mars”. While both newspapers featured science news stories on Alzheimer’s, Mars, breast cancer, chemotherapy and wind energy, the associated key words were only observed in the *Independent*. Comparatively, the *Irish Sun* headlines were more basic. Words such as “bug” and “test” are used. No technical or science specific words were observed. The word “kids” and “coffee” is perhaps indicative of their target audience.

To compare the reporting of science across the Irish media streams, those science news items that were seen in television news were also examined in newspaper reporting.

As previously described, on *RTÉ News: Six One* on June 3<sup>rd</sup>, a news item was reported on a landmark study that had concluded that some forms of cancer do not require chemotherapy in order to avoid reoccurrence. This was reported in the *Irish Sun* on the June 5<sup>th</sup>. It was not reported in the *Irish Independent*. The *Irish Sun* journalist was not credited so it is unknown if they had a science specialism. It was a short article, just five paragraphs long. How the study was undertaken was not explained. The research group or where the research was published was not described. The focus was on national relevance. They described how many Irish women took part in the study and Cancer Trials Ireland's involvement. There was a quote about how the study will impact on the future of cancer treatment but this was not credited to anyone. The *RTÉ News: Six One* news item, described that the study conclusion as some forms of breast cancer don't require chemotherapy to prevent reoccurrence, with hormone therapy alone being effective. The *Irish Sun* article doesn't mention hormone therapy, stating, "70% of patients may be able to avoid chemotherapy after surgery". There were no images displayed with the article and the reader was not informed where to seek further information.

If we look at the *RTÉ News: Six One* reported on June 5th on a terminal cancer patient successfully cured with a new immunotherapy technique, this was also reported in the *Irish Independent* on the same day. Interestingly, the article was credited to an English newspaper where the article first appeared, *The Daily Telegraph*. The journalist, Henry Bodkin, is a science and health reporter for the publication. The research group and where the research findings had been announced were referenced. The research group, the lead researcher and the cancer patient were all quoted. The article was short with nine paragraphs and focused on explaining the mode of action of the immunotherapy and future applications. There were no associated photographs or diagrams. The reader was not informed where to seek further information.

In the *Irish Sun* on the same day, the story was also covered. It was a short article of five paragraphs in length. The article had been taken from the UK edition of the *Sun* and was written by their health and science correspondent. Although the research group was not

named, it was said that the findings were announced at a US conference though the conference was not specified further. The mode of action of the immunotherapy was explained succinctly, in layman's terms over two paragraphs. The research group and the lead researcher were not quoted though there was a quote from the cancer patient. There were no associated photographs or diagrams and again the reader was not informed where to seek further information.

The *RTÉ News: Six One* news item on June 6<sup>th</sup>, that concerned the findings of a study on the best way to rugby tackle to avoid head injuries, was reported in the *Irish Independent* on June 7<sup>th</sup>. It was not reported in the *Irish Sun*. The *Irish Independent* journalist has no specialty, with articles from the same time period ranging in topic from crime and foreign policy to agriculture and entertainment. It was a longer article, 15 paragraphs in length. The fact that the research group were Irish was quickly established in the first sentence of the article. The lead researcher was quoted, explaining the relevance of the findings as well as a second researcher who explained how their conclusions could be applied, describing the safest way to tackle. How the group conducted their research was not described. Two photographs of a tackle during a 2017 Irish international rugby game was shown beside the text.

An interesting example is that of the *RTÉ News: Six One* news item on June 23<sup>rd</sup>, that covered the regional climate change meeting occurring in Athlone on this date. This was approached differently in the *Irish Independent*. They first reported on the event on June 21<sup>st</sup>, with the Environment Editor, Paul Melia addressing it in 2 of the 25 paragraphs of his comments section. He described the aims of the upcoming meeting and included a description of why the Irish Minister for the Environment valued the event. Paul Melia then reported on the event again in 4 of the 20 paragraphs of his comments section on June 28<sup>th</sup>. He outlined the delegates that had attended the event, the discussions that had taken place and his impressions of the outcomes. There is no imagery displayed with the Environment Editor's comment section. The event was not covered by the *Irish Sun*.

A *RTÉ News: Six One* news item that did not fall under the guidelines for identifying science reporting devised by researchers, Suleski and Ibaraki, did fall under these guidelines when reported in the *Irish Independent* on June 19th. The item was included in the *RTÉ News: Six One* news on June 18th. It concerned an announcement from the World Health Organisation, WHO. They now classify an addiction to electronic gaming as a mental health disorder. The main news reader for the show covered the news item in studio, rather than the *RTÉ's* science and technology correspondent. The news reader relayed the WHO's announcement and then said that the, "gaming industry says evidence supporting that designation is inconclusive". The news anchor was then joined in studio by a psychotherapist, who spoke on general signs for identifying addicts, the stigma around addiction, advice for parents on regulating the amount of time their children spend on electronic games and the hope that the designation would lead to further funding and research in the area. The *Irish Independent* article concerning the same topic on June 19<sup>th</sup> was by a general news journalist who had published articles in the study period, on varying topics such as tourism, health, sport and crime. Similarly, to the television news item, an Irish mental health professional was quoted who advised on signs of gaming addiction in children. Much like the television news, she added a note of caution. On the television news, this cautionary note was that it had been suggested that there was inconclusive evidence. In the *Irish Independent's* newspaper article, the mental health professional advised against a "moral panic" and highlighted that the disorder would only impact a very small number of children. The director of the WHO's mental health department was also quoted, explaining why they felt the designation was justified, citing scientific evidence. The article described the recent results of a study by California State University that concluded that video games can have a similar effect on children's brains as drug abuse. It was not reported where the research had been published. The methodology of their research was explained. The Irish Department of Health's reaction to the announcement was also reported, with a quote describing their commitment to considering the designation in future policy making. A picture was displayed with the article, a scene from a video game referenced in the study by California State University that is played by Irish children.

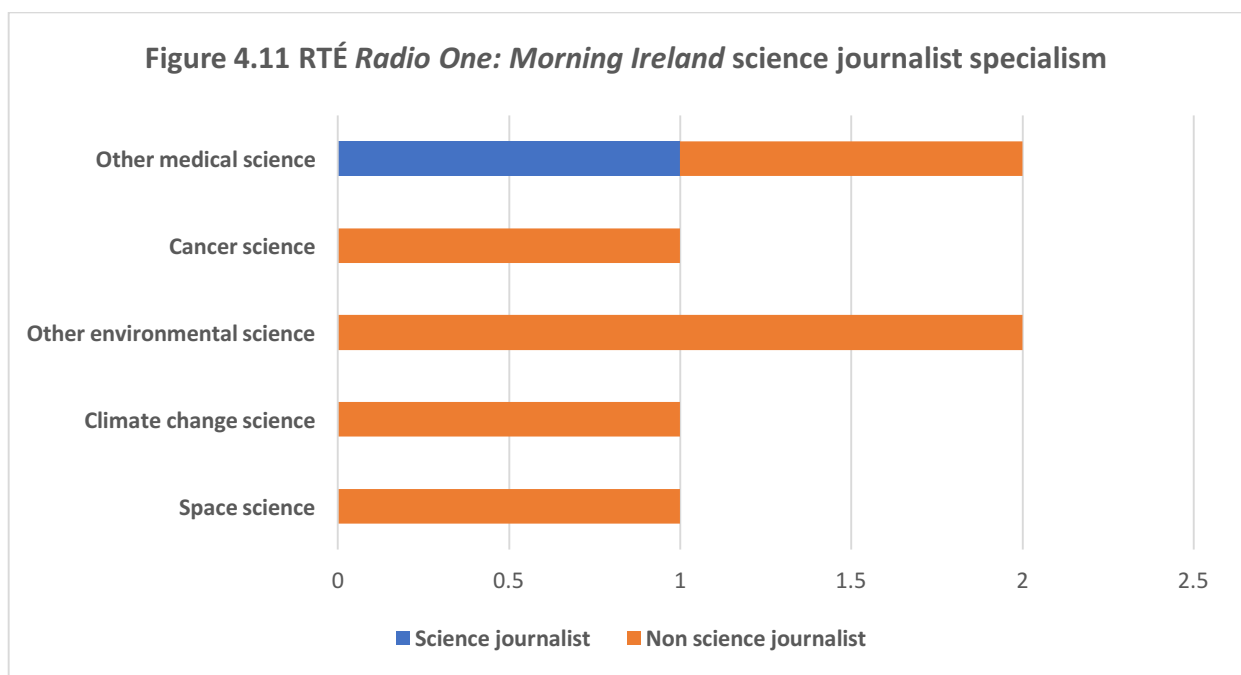
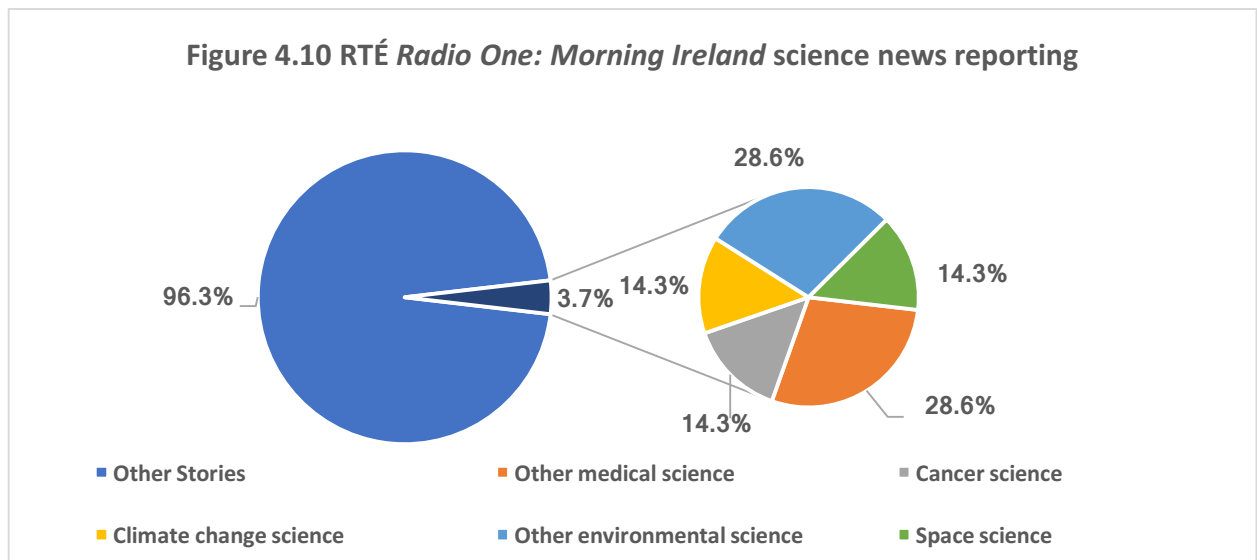
In addition to these news stories that appeared across forms of Irish media, other science news stories were identified in both newspapers, though not on television. This included a news story on June 15<sup>th</sup>, describing an announcement by McDonalds fast food restaurant chain, that they would discontinue the use of plastic drinking straws. A general reporter covered the story in the *Irish Independent* with a piece, 13 paragraphs in length. In the *Irish Sun*, the story was adopted from the UK edition of the newspaper, written by their environment correspondent. It was a short piece, just four paragraphs in length. The *Irish Independent* adopted a more formal and informative reporting style. The article covered the scientific justification for reducing plastic waste and related this to other Irish business efforts at plastic waste reduction. The Irish Minister for Communications, Climate Action and Environment was quoted and a small photograph of the straws in question was displayed. There were no details on where to seek further information. The tone adopted by the *Irish Sun* was more informal with a pun headline, “The last straw for the chipper”. No specific scientific justification for the announcement was reported. They describe the discontinuation to be the result of, “concerns over plastic pollution”. No one was quoted in the article and there were no details on where to seek further information on the topic. A photograph of the McDonalds restaurant sign is used.

#### **4.3 Irish radio reporting of science news**

Over the course of the one month period, 190 news items were reported on *RTÉ Radio One’s Morning Ireland*. *Morning Ireland* is broadcast from 07.00 to 09.00 daily, from Monday to Friday each week. This is an average of 9.5 news items per show. Of the 190 news stories featured, 7 of these were identified as science news as per the study guidelines. Therefore, 3.7% of the news items reported by *Morning Ireland* in the study period were science news items. Science news items were identified on 6 days during the study period with the amount of science news reported on these days ranging from 1 to 2 science news items. 85.7% of the science news items broadcast during the study period were covered by the general news presenter with 14.3% of the science news items reported by a science and technology correspondent. 42.9% of the science news items featured during the study period concerned matters of the environment and climate change with a further 42.9% covering matters concerning medicine, including cancer discoveries. Of these medical and health focused stories, one third related to cancer discoveries. The remaining science news items identified

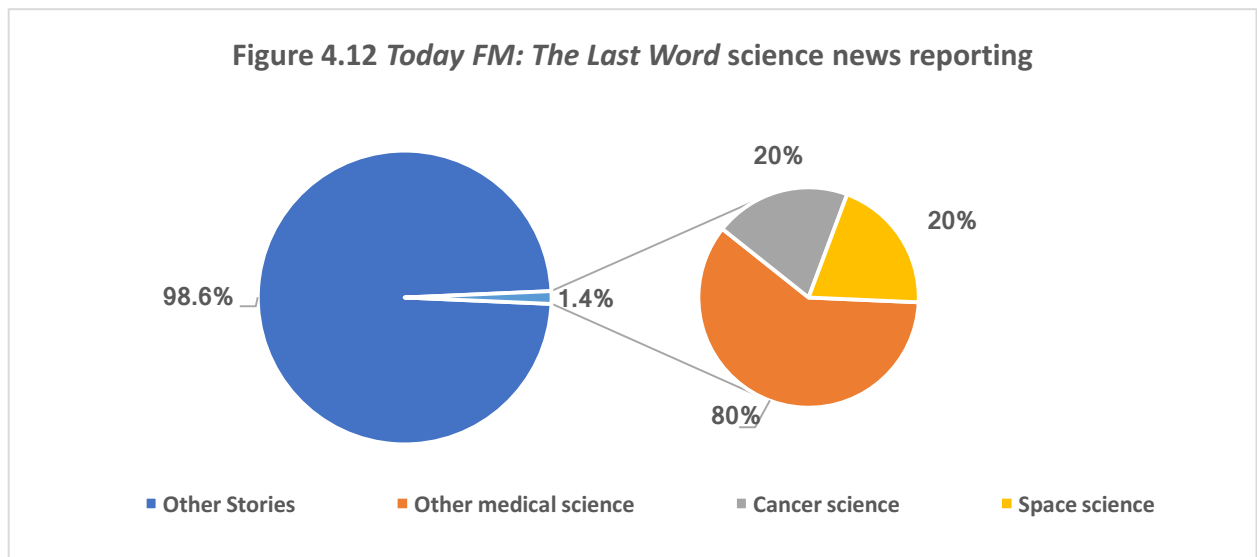


in the study period concerned space news. This accounted for 14.3% of the science news identified. There was no discernible subject matter that increased the likelihood that a reporter with a science specialism would report the science news story.



During the study period, 360 news items were reported on *Today FM's The Last Word*. The show is broadcast from 16.30 to 19.00 from Monday to Friday and 07.00 to 08.00 on Saturdays. An average of 15 news items per show was observed with 5 of these identified as science news under the guidelines of this study. This science news is 1.4% of the topics

covered on *The Last Word*. This science news was observed on four different days in the study duration. As per the show format, all of these science news stories were reported by *The Last Word* presenter, Matt Cooper, in conversation with experts. 80% of the science news stories aired, concerned medicine with 25% of those medical stories focused on cancer breakthroughs. The remaining story concerned space science.



Again, to enable a comparative study, those science news items heard on radio news that were also seen in other Irish media streams, were examined in further detail.

The science news story concerning the findings of a study on whether chemotherapy is required in order to prevent reoccurrence of some cancers that was reported on June 3<sup>rd</sup> on *RTÉ News: Six One* and in the *Irish Sun* on June 5<sup>th</sup>, was also heard on *Morning Ireland* on June 4<sup>th</sup>. The story was presented by the main news reporter, rather than the station's science and technology correspondent. The national relevance of the study was again highlighted, with the number of Irish women who took part described. The Irish investigator of the clinical trial was interviewed. The study objectives, research paradigm and finding were explained. The current standard of cancer care in Ireland and how this should change was discussed. The news item was given just over 8 minutes of airtime and the more information was provided than seen in the newspaper or television coverage. The radio coverage provided information on the testing process that will be applied to patients that will determine whether chemotherapy is required. This was not reported in the *Irish Sun* or *RTÉ News: Six One*. The

science news item on *Morning Ireland* did not reference where else the research was conducted, what research group had undertaken the study or where the findings had been published. This story didn't feature on *The Last Word*. However, it should be noted that this story first appeared in news streams on Sunday, June 3<sup>rd</sup>. The Last Word doesn't air on Sundays. It also didn't air the following day as it was a public holiday. A major Irish news story broke on the subsequent day, Tuesday, June 5<sup>th</sup> and much of the show was devoted to this.

The science news story on optimum rugby tacking to avoid head injuries broadcast on *RTÉ News: Six One* on June 6<sup>th</sup> and reported in the *Irish Independent* on June 7<sup>th</sup> was covered on *The Last Word* on June 6<sup>th</sup>. This was given roughly 8 minutes of coverage on *The Last Word* and the lead investigator of the study was interviewed. He spoke on his research methodology, the study findings and future applications. He also described how he was in discussions with Irish rugby authorities on how the findings could be incorporated into rugby training. A former Irish rugby international was also interviewed to give further context on the relevance of the findings. Although this was the most extensive reporting on this topic observed during the study period, where the research had been published or where the listener could seek further information was not described.

On June 8<sup>th</sup>, a science news story was featured in both the *Irish Sun* newspaper and on the radio show, *Morning Ireland*. The story concerned the findings of a study by the American agency, The National Aeronautics and Space Administration, NASA. The NASA study had concluded that organic molecules can be found on the surface of the planet Mars. Again, this science story was presented on *Morning Ireland* by the main presenter rather than their science and technology correspondent. They played a recording of NASA's astrobiologist discussing the findings of the study. During the recording, she impressed that the organic molecules were not evidence of life on Mars, that their origins on Mars were not known and that there were multiple plausible sources. The show presenter then interviewed a professor of Irish geography. She explained the science of the molecules and the possible origins of the molecules and the chemical processes that cause their formation. Although there was a strong focus on science education, the radio broadcast didn't explain the research methodology of the NASA study or where the study had been published. This science news item was given 4.5 minutes of airtime. A short eight paragraph article was published in the

*Irish Sun*. The reporter was a world news correspondent rather than a science journalist. The NASA astrobiologist was quoted explaining the relevance of the organic molecules and the possible sources of the molecules on Mars. However, the opening paragraph of the article contradicted this somewhat with “New findings by NASA mark some of the strongest evidence yet that Earth’s neighbour Mars may have harboured life.” Although the findings of the study were explained, the science news article did not explain process of the research study or where the findings had been published. A small photo of a small yellow planet was published with the article which was not identified in the text. This was presumed to be Mars.

On June 15<sup>th</sup>, the previously discussed story on the discontinuation of plastic drinking straws by the McDonalds fast food chain, that was observed in both the *Irish Independent* and the *Irish Sun* was also recorded on *Morning Ireland*. The topic was given just over 2 minutes of airtime and This again was reported by the main presenter, rather than the show’s science and technology correspondent or their environment correspondent. He interviewed a spokesperson for a campaign to reduce plastic. She was a scientific academic. She explained the scientific process of plastic degradation and the associated environmental impact. There were no further details on where to seek additional information on the topic. Interestingly, this science news story was also covered on *The Last Word* on *Today FM*. The show presenter Matt Cooper, spoke on the topic with a different representative of the plastic reduction campaign. However, this coverage did not fall under the research project guidelines for the identification of science news. No scientific research, a finding of scientific research, a researcher or a study was referenced during the coverage of the story on *The Last Word*.

*The Last Word* did report a science news story on June 18<sup>th</sup> and again on June 19<sup>th</sup> that was seen in the *Irish Independent*. This was the previously described classification of gaming as a mental health disorder by the WHO. On June 18<sup>th</sup>, the topic was reported in the *Five at Five* segment during the show which outlined the top five news stories of the day. It was given just over 1 minute of airtime. A recording of an Irish professor with an addiction specialism was aired. It was cursory coverage, in keeping with the news bulletin style of the radio segment. However, *The Last Word* returned to the story the following day and explored it in further detail with their technology correspondent. The story received almost 7 minutes of airtime on this second visitation. They explored the implication of the classification and how public

healthcare systems will treat the disorder, citing a research study on patients in the UK. The technology correspondent described the history of the disorder, causes and symptoms of the condition and possible preventative measures. They were objective, describing the findings of another contradictory research study. The research group of the study in question was named however, the publication of the study findings was not disclosed. The show presenter and the technology correspondent competently debated the point. The argument that research had concluded that just 4% of gamers were at risk of the disorder was countered with a finding that 2.6 billion people globally can be classified as gamers. The format of *The Last Word*, with the show presenter talking through each topic with an expert, or appropriate correspondent in this instance, enabled the most balanced and informative coverage of this science news story observed in the selected sample group over the study duration. As the listeners had the option to tweet and text during the show, listener reactions and insights on the topic were also aired. No advice was provided on where listeners could seek further information on the matter.

Interestingly, a science news report seen on *RTÉ News: Six One* was also adapted for *RTÉ Radio One's Morning Ireland*. *RTÉ's* science and technology correspondent, Will Goodbody presented a report on the impact of the Chernobyl nuclear power plant disaster on June 29<sup>th</sup>. He also reported on this topic on *Morning Ireland* on the same day. The story was given about 5.5 minutes of airtime on *Morning Ireland*, about 2 minutes more than that broadcast on *RTÉ News: Six One*. Again, the Simon Cumbers Media Fund were credited with funding. The report was more detailed with the reporter describing the scenes he observed in Belarus, in the absence of the footage broadcast on the television news. Similar to the television report he described visiting the exclusion zone and then featured an interview with a leading researcher on the impact of the disaster and described some of his key findings on associated birth defects. This was a longer and more detailed version than that seen on television and the reporter references other published studies that corroborates the researcher's findings. Again, he then played the interview with the mother of a sick child. Unlike the television report he added an interview with an Irish immigrant from the Chernobyl region. Although the findings Chernobyl impact study were described in detail and corroborating studies were referenced, the listener was not informed where the findings had been published or where they could seek out further information.

#### 4.4 Irish reporting of science news across the media

As illustrated in figure 4.10, the *RTÉ Radio One* show, *Morning Ireland* gave science news the most coverage in the study period with 3.7% of news reported in that time concerning science news stories. This was followed by *RTÉ News: Six one* which devoted 2% of their news coverage to science stories. This was followed by the *Irish Independent* with 1.7% and the *Irish Sun* and *Today FM's* show, *The Last Word* with 1.4%. The other media outlet examined, *TV3's* main news show, *News at 5.30* did not have any coverage of science news during the study period. The average amount of science coverage across the media outlets examined was 1.7%. It should be noted that the highest levels of coverage were observed in news outlets operated by the state broadcaster, *RTÉ*.

In *RTÉ's* statement of strategy for 2015-2019, they presented the key points of their mission statement. One of these key points is to broadcast quality content that appeals to the full range of their audience. They also outlined an objective to broadcast more ambitious and engaging science content (*RTÉ*, 2015). This concept was further delineated in their documentation on quality. *RTÉ* state that they aim to provide a range of science content that is appealing to both educators and funding partners. They also say that the role of their news and current affairs programming is to, "hold those in authority to account and host the national conversation" (*RTÉ*, 2015). Evidence of their endeavour to appeal to funding partners was observed for example in their science and technology correspondent's series of news stories on the Chernobyl legacy. This was funded by the Simon Cumbers Media Fund with stories broadcast on both *RTÉ News: Six One* and *RTÉ Radio One's Morning Ireland*. During the study period, three news stories were observed on the topic on both *RTÉ News: Six One* and *RTÉ Radio One's Morning Ireland*. However, just one of the three fell under the study guidelines for identification of science reporting

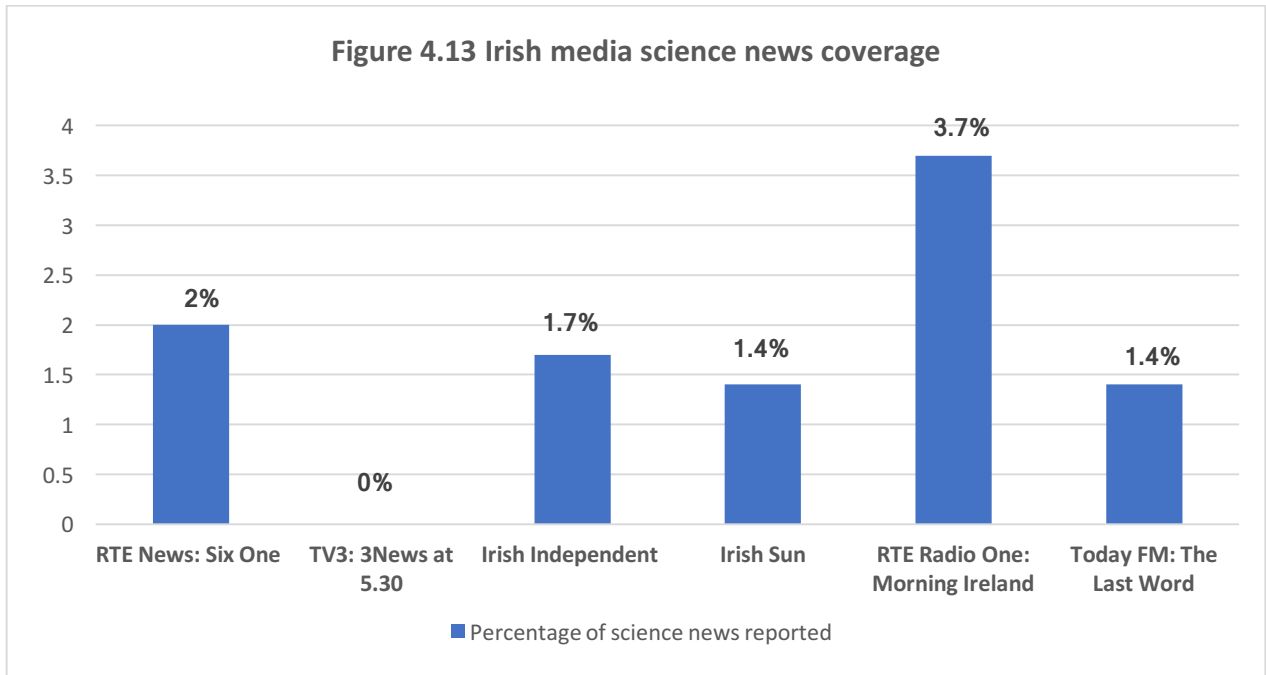
No other science sponsorship initiative of this nature was found. The Mary Mulvihill Award is a science journalism, financial bursary awarded annually. This is awarded after the science news story has been produced and only students are eligible. There is no requirement that the monies awarded should be used to create scientific news content (*Mary Mulvihill Association*, 2018).

During the research undertaken, no mission statement similar to that of *RTE*, was found for television station, *TV3*. However, they do offer guidelines on their brand and commissioning, in which *TV3* state that their core objective, is to broadcast quality content to their audience demographic of 15-44 year olds. In regard to commissioning, they advise that their interest lies in documentary and lifestyle themes and that they aim to offer unconsidered insights and undiscovered areas. They also state that traditional subject matters or traditional treatment of issues would not be considered for the channel. Science is not referenced in these guidelines (TV3, 2013). No information is available to the public on *Today FM's* objectives or guidelines around the reporting of science news. They describe themselves online as, “broadcasting a mix of broad contemporary music alongside a strong mix of current affairs, sport and comedy” (Communicorp Media, 2018).

The television and radio stations examined in this research project have all been granted their broadcasting licences by the Broadcasting Authority of Ireland, BAI and must adhere to the terms of the BAI. However, the BAI do not specify what, if any, amount of science news coverage is advised. Science is not discussed in their strategy statement for 2017-2019 (BAI, 2017). In their code of programme standards, they do however state that “Broadcasters are encouraged to inform audiences of current developments in respect of environmental matters in a manner that gives due weight to the balance of contemporary scientific knowledge” (BAI, 2017).

No formal mission statement was found for the *Irish Independent* or the *Irish Sun*. The *Irish Independent* do state on their website that their “mission is to be the most relevant and trusted central point in every community we serve.” (Irish Independent, 2007).

The two media outlets with the highest science coverage observed in the study, had a clearly stated objective around science news coverage in their official strategy document and had also documented their commitment to quality reporting. It could be argued that the incorporation of science into the broadcaster mission statement as well as the strategic decision to create science content that is appealing to external funding bodies has resulted in a higher level of science coverage than the other popular Irish mass media streams.



#### 4.5 Representation of science in the Irish media

As previously discussed, the amount of news coverage devoted to science news in the Irish media outlets, ranged from *TV3's 3News at 5.30* with 0% coverage to *RTÉ Radio One's Morning Ireland* with 3.7% coverage. On average, the Irish news media studied, devoted 1.7% of their coverage to science news. Although this is indicative of how much science news is reported in the Irish media, it is important to appreciate how much science news is available for reporting. An estimation of the amount of published science research being filtered through the Irish media to the Irish audience would perhaps enable an assessment of the adequacy of the science news coverage levels.

Although figures are not yet available for 2017, the amount of science research published has been documented prior to this. The amount of science research published has grown steadily in the last decade with a 56% increase observed from 2006 to 2016 and the 5 institutions that produce the most science publications increased their publications by 20% in the year 2015 alone. Interestingly, the biggest growth in these years was in publications regarding energy, followed by medicine. In 2016, 2,159,921 scientific papers were published. Research from the United States resulted in 481,546 of these papers and Chinese research accounted for 393,831 publications (American Journal Experts, 2017). As the most recent data on global science publishing is from 2016 and steady growth has been observed, it can be concluded



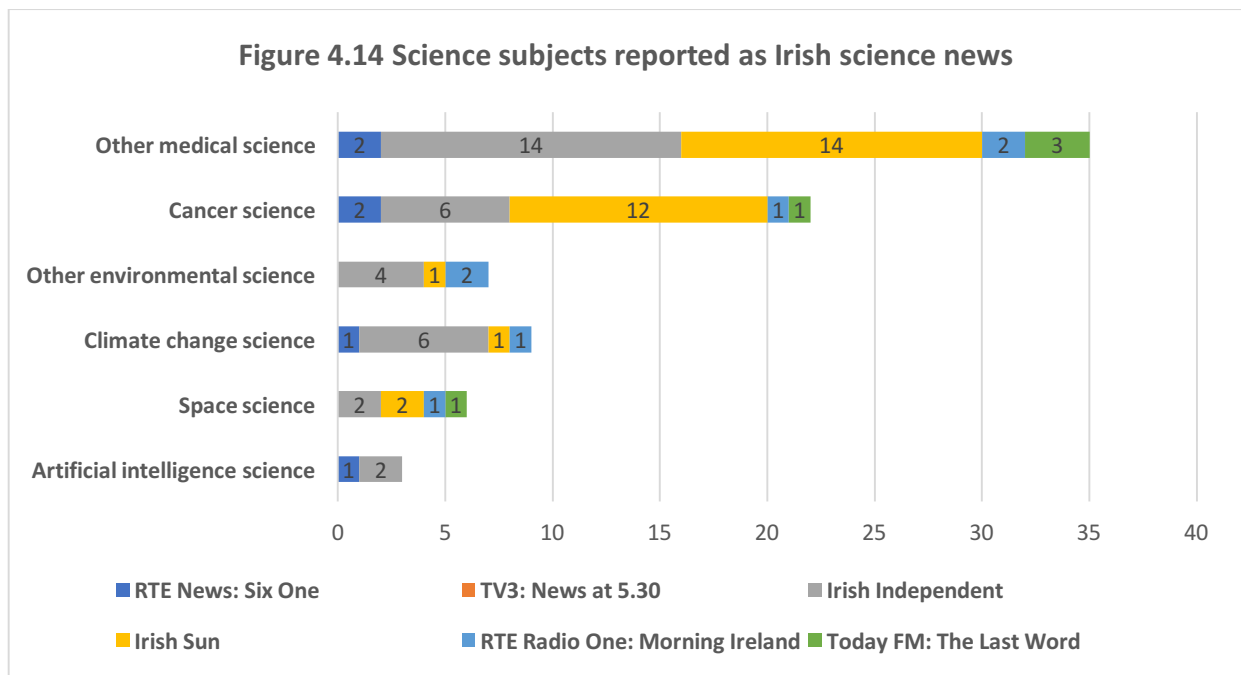
that any calculations made based on these figures, should be considered conservative estimates.

55 different science news stories were identified across the sample group over the study duration that can be attributed to 55 different published research studies. Some appeared more than once in each media outlet or across several of the media outlets examined. By extrapolating this finding, it is estimated that 669 published research studies will appear in the Irish media in the course of the year. Based on the number of research study findings published in 2016, it was estimated that the 0.03% of published scientific research appears in the Irish media. This corroborates the findings of Suleski and Ibaraki. They estimated that between 0.13% and 0.34% of published science research appeared in American news sources in 2001 with medical papers receiving the most attention (Suleski and Ibaraki, 2010). While their estimations were higher than those found in this study, this could be attributed to the previously described increase in science research publication. While the publication of science research grows, the presence of the published science research in mass media news streams, does not.

#### **4.6 Science subjects reported as science news across the Irish media**

As seen in figure 4.14 below medical matters were the most covered science topic during the study period composing 66.6% of *RTÉ News: Six One's* science programming, 58.8% of the Irish Independent's coverage, 86.7% of the *Irish Sun's* science reporting, 42.9% on *RTÉ Radio One's Morning Ireland* and 80% on *Today FM's The Last Word*. Across the Irish media outlets examined that reported science news, on average 67.7% of the science news coverage was devoted to medical science. It can therefore be deduced that Irish news media outlets deem science stories around medicine to be the most newsworthy, specifically cancer science which accounted for 38.6% of all medical science coverage. This corroborates the findings that medicine receives the most science news coverage in the US (Suleski and Ibaraki, 2010). It also directly correlates with the amount of medical science research published. Medical research had the largest share of science publications in 2016, with 26.3% of publications falling under this category (American Journal Experts, 2017). Interestingly, although the largest growth area for science publications was energy, this was not reflected in the science

news reporting observed in the Irish media during the study. Just 2 energy stories were covered.



#### 4.7 Influencing factors for science subjects reported as science news across the Irish media

The concept of what makes a story more likely to be reported in the mass media, that is to say, how newsworthy it may be considered, has been explored at length in journalism theory.

Galtung and Ruge’s (1965) twelve factors defined the conditions present to heighten the probability that a given event would become news. J. Galtung and M. Ruge published a seminal analysis on this matter in 1965 that is still referenced today. They concluded that there were twelve factors which would influence the likelihood that something would be reported in the media as news. These included eight general considerations, such as the frequency of the event, how unexpected it was, how unambiguous and how meaningful. Meaningfulness was considered on factors such as culture and relevance. For example, something may only be meaningful to a news audience because it is geographical relevant, such as a local event. The other considerations were around the elitism of society. So, for example, if the story concerns an elite western country, it will be more likely to garner attention from the media. Their study concluded that an incident must reach a threshold of these twelve factors in order for it to be reported in the media. They also noted that negative

stories were more likely to reach the threshold than positive stories. Given these conclusions, one would have expected to observe a bias toward negative science news stories that are relevant to the media audience and are easily understood (Nelkin, 1995).

The suggested need for geographic relevance in Irish science news was corroborated by the 2017 Reuters Institute Digital News Report for Ireland. They found that the type of news to garner most interest was regional news. This emphasis on local relevance was seen in several science news stories during the study period. The news story on the global study finding that some forms of breast cancer don't require chemotherapy to prevent recurrence was reported on *RTÉ News: Six One*, the *Irish Sun* and *RTÉ Radio One: Morning Ireland*. Although this was a global landmark study of considerable scientific significance, the local element was highlighted in all coverage. In the television and radio coverage an Irish investigator from the clinical trial was interviewed rather than the research group that lead the global study. The research group that had undertaken the global study, the other countries involved or where the findings of the study had been published were not stated in any of the three examples observed of science news reporting. This suggests that the science news story was deemed newsworthy as a result of this geographic element. This could also be concluded in 5 of the 6 science news stories observed on Irish television over the study period. The news story on June 6<sup>th</sup> on the study of optimum rugby tacking to avoid head injuries was reported on *RTÉ News: Six One*, the *Irish Independent* and *Today FM's The Last Word*. In all instances, it was highlighted that it was a Dublin based research group. Where the findings were published was not disclosed. The news story on June 19<sup>th</sup> on *RTÉ News: Six One* covered artificial intelligence developments by IBM. There was no information on the developmental process or where to seek information but it was again highlighted that some of the work for the project had been conducted by scientists in Ireland. The next science news story observed on Irish television covered climate change on June 23<sup>rd</sup>. It centred around a regional climate change meeting that was taking place in Athlone. This was also covered in the *Irish Independent*. It could also be argued that the science news report on Chernobyl recorded on *RTÉ News: Six One* and *RTÉ Radio One: Morning Ireland* was also deemed newsworthy as a result of local relevance rather than scientific significance. Chernobyl Children International is an international charity that was founded in Ireland. It provides more funding to the redevelopment of Belarus and the care of those affected, than any other single contributor. Under the organisation of the

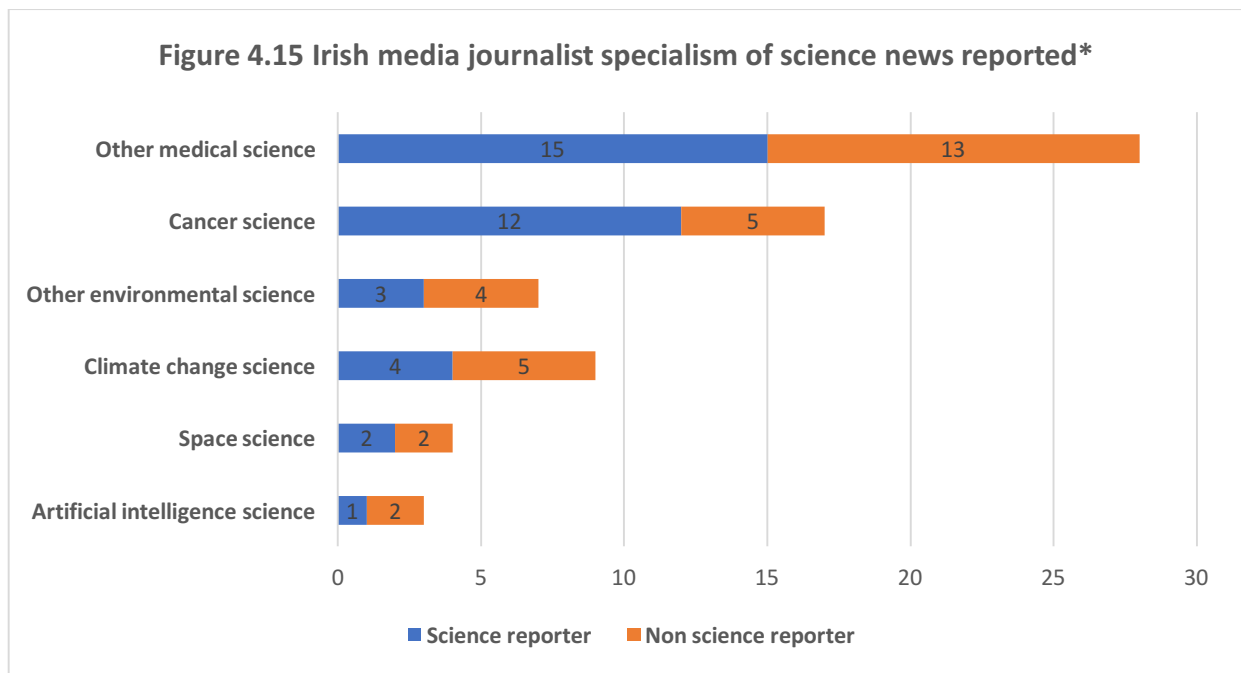
charity, children from Belarus come to Ireland every year for their summer holidays, hosted by Irish volunteer families (Chernobyl Children International, 2016).

In order to understand why medical science news, especially cancer news is the most newsworthy science news, the twelve factors proposed could be further explored. Medical science is certainly relevant to the Irish media audience with the National Cancer Registry of Ireland, NCRI, reporting that by 1 in every 2 Irish people will develop cancer in their lifetime by 2020 (NCRI, 2018). Given its prevalence, Irish people are familiar with cancer, the differing forms and traditional treatment options. Therefore, it meets another of these factors. It is unambiguous. It could be considered that as the general population are less familiar with other science sectors, they are therefore less relevant and therefore less likely to be reported in the mass media. Indeed, as they are not given as much coverage, the news audience are unfamiliar with them and they are more ambiguous. This in turn, makes these stories less newsworthy. The higher coverage given to medical science is echoed in matters of public policy and funding. In 2013, an index of the top 100 charities in Ireland was compiled. Voluntary hospitals were found to be one of the biggest recipients of public funding. They found that St Vincent's Health Care was the highest earning Irish charity (Finn, 2013).

Another reason for the prevalence of cancer science news in Irish science news reporting may be the ease of access to information on the topic. A study in the UK which examined medical reporting in British newspapers, found that cancer was one of the most likely science topics to be communicated in press releases in addition to women's health and reproduction (Bartlett et al., 2002).

As shown in figure 4.15, a significant proportion of science news stories identified during the study period were credited to journalists that did not have a listed specialism in science journalism. 45.6% of science news stories with a credited journalist were the work of a journalist that did not have a science specialism. It is plausible that if the journalist is not knowledgeable in a specialist subject, they would not mine complex scientific publications for new study findings that have newsworthy values, and would instead, rely on more comprehensible press releases. As per the previously described findings in the UK, the bias

toward cancer in press releases, could therefore reach mass media reporting (Bartlett et al., 2002).



\*Science news reporting identified during the study period where a journalist was named was counted. Science news identified on *Today FM's The Last Word* was not included as the programme format does not allow for an external journalist to present the news reporter. The show's presenter covers all topics programmed on the show.

Although this distinction, between journalists with and without science specialisms, may not seem relevant. The study by Wilson in 2000 on climate change reporting, made some important points on the specialism of journalist in science reporting. They found corroborating evidence that the level of knowledge a journalist had on the topic directly related to the sources they employed. Journalists with more knowledge were more likely to rely on scientists as primary sources of information for their news reports. They argued that quality science coverage depicts the consensus of the research as well as giving accurate coverage to opposing views of merit. In instances where journalists had less knowledge on the topic, they were more likely give emphasis to the debating arguments to the detriment of the consensus. This misrepresentation of scientific debate was also correlated with an inaccurate representation of the correct scientific terminology. For example, reporters examined in the study thought that greenhouse effect and global warming had the same meaning and were incorrectly using them interchangeably (Wilson, 2000). This incorrect style

of reporting breeds confusion in the news audience. As discussed previously, when there is ambiguity around a topic, it is deemed less newsworthy and is therefore less likely to be reported in the mass media. This raises an important question. If journalists without a science specialism were not permitted to cover science news, then almost half of the science news observed during this study would not have been reported. However, if the science news covered by journalists without a science specialism is making the topic seem ambiguous, then will the topic ultimately be deemed less newsworthy in the future and therefore not enter the mass media news streams?

Another factor anticipated in the science news identified in this research project, was that there would be a prevalence of negative news stories. A study of tabloids and broadsheets in the UK found that there was a significantly higher number of negative articles in tabloids than in broadsheet newspapers. For example, they calculated that 40% of news articles on the topic of health in the UK edition of the *Sun* newspaper, were negative news stories about individual doctors and that an anti-doctor sentiment was observed through the tabloid newspapers they examined (Ali et al., 2001).

It could be argued that the presence of other factors, such as geographic relevance seems to have negated this condition. Although a thorough content analysis was not conducted of all science news identified in this study, those stories that were detailed in this dissertation were not negative. There was an emphasis on medical advancements with attention paid to research produced or aided by Irish influence. This is corroborated by the word clouds of science news article headlines that were identified during the study. Figure 4.8 captures key words in science news headlines seen in the *Irish Independent*, with the size of the word correlating with how often the word appeared. Given the study findings, it is understandable that the word “cancer” appeared most often. However, the second most common key word observed was “hope” which coupled with the frequently seen key word, “new” can be attributed to the focus on medical advancement. They are positive words, implying a tendency to look toward a better future, rather than dwelling on a negative past or present. Similarly, in the word cloud generated for headlines observed in the *Irish Sun*, key words such as, “best” and, “life” were observed. Again, these are seemingly positive. The keyword, “last” was also observed in the headlines of the *Irish Sun*. On further examination, the presence of

this word was due to a news story that Ireland had been ranked second last in Europe in its efforts to tackle climate change and the article on McDonald's discontinuing the use of plastic straws. The headline was a pun, "The last straw for chipper".

## Chapter 5: Conclusion

The conclusions to this study were similar to the findings of a study conducted in the US (Suleski and Ibaraki, 2010). Science news, based on newly published science research is present in the Irish media. A low number of science research published globally is presented to the public via the filter of the mass media. It was estimated that 0.03% of science research published in peer reviewed journals reached the Irish media audience. Programming devoted to science news varies from 0% to 3.7% coverage with an average of 1.7% coverage. The most programming given to science news was seen in *RTE* news outlets. This was attributed to their clear programming strategy where the broadcast of science content was specifically prioritised. By coupling this aim with the intention to appeal to funding partners, they were further incentivised.

To appreciate if this level of coverage is appropriate, the Irish media audience's appetite for science news must be taken into account. As discussed, a previous study found that 47% of Irish news consumers are interested in science and technology news (Reuters, 2017). If the Irish media's response to the news's consumers appetite for a news topic is appropriately measured, then media coverage of a topic is proportional to interest levels. The study finding that 47% of Irish news consumers were interested in news on science and technology, was reported with the finding that 34% of Irish news consumers were interested in sports news. Irish sports news receives more coverage than science news. All Irish media streams examined in this study devoting a fully segment or section to sports, guaranteeing that daily reporting of multiple sports news stories to the Irish news consumer. As more sports news than science news reached the Irish news audience via mass media streams and it has been found that the Irish news consumer is more interested in science news than sports news, it can be concluded that the Irish media's response to the news's consumers appetite is not appropriately measured.

Another Irish study found a socio-economic disparity in interest levels in science news exists, with a decrease in interest of almost 20%, from the most affluent to the least affluent surveyed (Science Foundation Ireland 2015). It has also been established that the readership of tabloid newspapers is more likely to be of a lower socioeconomic standard than that of the



readership of broadsheet newspapers (Chan and Goldthorpe, 2007). A tabloid newspaper, the *Irish Sun* and a broadsheet newspaper, the *Irish Independent* were examined in this study. There was no statistically significant difference observed in the amount of science news reported in the *Irish Sun* and the *Irish Independent*. If the amount of science news reported in the Irish media is reflective of the appetite of the news consumer and there is a significant difference in the science appetites of the tabloid and broadsheet reader, then a significant difference in the amount of science news should have been observed. As this was not the case, we can again conclude that the level of Irish science news coverage is not reflective of the Irish news consumers appetite for science news.

How science news was portrayed in the Irish media was examined and served as an indicator of how the Irish media deem science news to be newsworthy. Previous studies had indicated that medical science news was deemed more relevant to the news consumer and sensational news would be more likely to be reported via the mass media (Suleski and Ibaraki, 2010; Nelkin, 1995). Some of these findings were corroborated by this study, but not all. Overwhelmingly, science news was reported, that had local relevance. Science research linked with Irish researchers was seen throughout the science news identified in the Irish media. The main science area observed in the Irish science news identified was medicine. This correlates with the amount of medical science research published globally. However, a large amount of coverage was given to advances in cancer research. Again, this is an illness that is very relevant for the Irish news consumer, given that it is estimated that 1 in 2 Irish people will develop cancer in their lifetime (NCRI, 2018).

As previously described, it has been estimated that 75% of scientists feel that science news coverage in the mass media compromises the reporting of scientific evidence in the pursuit of sensationalism (Hartz and Chappell, 1997). It was also previously concluded that when science appears in the mass media it is likely to be a negative story, as negative stories contain more of the factors that deem them newsworthy (McGregor, 2002). Given the finding of other studies, one would have expected to see more negative or sensational science news stories in the Irish media. However, as it was local relevance that deemed the science news observed during the study period newsworthy, the need for negativity or sensationalism was negated.

In order to further elucidate and expand upon these conclusions, further content analysis is required. One research question requires further exploration. Namely, does the Irish media adequately communicate scientific messages? This could be achieved by identifying the key scientific messages of the 55 different scientific research publications that were communicated to the Irish news consumer during the study period. A thorough qualitative content analysis of the science news observed could identify if the key messages were adequately conveyed. The cursory analysis conducted during this research project noted that in the case of a news story regarding the need for chemotherapy to prevent reoccurrence of cancer, key findings of the science publication were not reported across all Irish media news streams examined. It was reported on television, on radio and in a newspaper. The newspaper did not describe how they ascertained when chemotherapy was not required or that in instances when chemotherapy was not required, hormone therapy was required. The television news did not describe how they ascertained when chemotherapy was not required. Only the radio coverage provided the key findings. The researchers had devised a test to identify when chemotherapy was not required. And in the 70% of instances found where chemotherapy was not required, the patient underwent hormone therapy to prevent reoccurrence of the cancer.

Further content analysis of the communication of key messages of published scientific research in the science news reported in the Irish media is required, if the adequacy of the reporting is to be fully ascertained.

## Chapter 6: Appendix

### Newspaper articles featured in Chapter 4: Results and Discussion

*Irish Sun*, June 5<sup>th</sup>, 2018



Cancer-free . . . Judy

# Immune cells cure for breast cancer

By **SHAUN WOOLLER**

A NEW treatment for cancer makes incurable tumours disappear by using breast cancer patients' own immune cells to target the disease. A US conference heard mum-of-two Judy Perkins, 52, was cancer-free after being given months to live.

Experts extracted immune cells from her blood and identified the best "warriors" to grow in a lab.

An army of 82 billion cells were injected back into her body and the tumours, which had spread to her liver, chest wall lymph nodes and abdomen, shrank two weeks after the jab and vanished within a year.

Judy, a mum-of-two said: "I was planning on dying. Now I have gone back to normal life." The adoptive cell transfer treatment has previously been used to treat bowel, cervical and liver cancer.

# Progress in cancer

HUNDREDS of Irish women with early stage breast cancer could avoid chemotherapy after a new major study.

More than 10,000 women worldwide, including 690 from Ireland, took part in a major trial that analyses the dangers of tumours.

Cancer Trials Ireland led the Irish arm of the study, which found 70 per cent of patients may be able to avoid chemotherapy after surgery.

The findings will lead to a "fundamental change" in the way the disease is treated.

Around 3,000 women across Ireland are diagnosed with breast cancer each year.

# Turbocharged breast cancer 'cure' provides fresh hope for patients

Henry Bodkin

A WOMAN with advanced breast cancer has been "cured" by an injection harvested from her own immune system in what scientists have described as an "extremely promising" world first.

Judy Perkins (52), a mother of two, was given months to live after seven types of chemotherapy failed and she had developed tumours the size of fists in her liver. She had undergone a mastectomy in 2003 after the cancer was first diagnosed, but it returned in 2013 and spread aggressively. There is no known cure for breast cancer which has spread so widely.

But Ms Perkins, an engineer from Florida, has been cancer-free for two years and leads an active life.

Using a technique called "adoptive cell transfer", scientists removed a tumour from her chest and determined which friendly immune cells within it were capable of recognising the harmful cancer cells. Over eight weeks, the team at the US's National Cancer Institute harvested and grew the cells in the lab into an army of 82 billion, then injected them back

into the patient, turbocharging her immune system against the cancer.

The method has been used with mixed success on patients with bowel, cervical and liver cancers. However, this is the first time it has been tried on someone with breast cancer.

Experts believe the case, discussed at an American Society of Clinical Oncology meeting, marks the start of a breakthrough for thousands of women who currently have no hope.

The institute said: "This fascinating and exciting study in a single breast cancer patient provides a major 'proof-of-principle' step forward, in showing how the power of the immune system can be harnessed to attack even the most difficult-to-treat cancer."

By the time the new trial started, the cancer had spread to her liver, as well as lymph nodes in her chest wall and abdomen. Dr Steven Rosenberg, a member the medical team, said: "The important point is that this is using a patient's own cells to attack their own cancer."

Ms Perkins said: "Experts may call it extended remission, but I call it a cure." (© Daily Telegraph, London)

# Tackles to lower trunk can prevent rugby concussions

Michael McHugh

AN IRISH study has pinpointed the "safest" type of rugby tackles which they believe minimise the risk of head injuries.

Analysis by researchers from Trinity College, Dublin showed that tackling the lower trunk of the ball carrier's body was safer.

Nearly four-out-of-five tackler head injuries requiring assessment were caused by tackles to the upper trunk (47pc) and upper legs (30pc).

Concussion can be a serious danger to rugby players and has been a major issue for the youth game.

In 2014, Ireland international Johnny Sexton suffered four concussions and was told to serve a 12-week stand-down period.

Associate professor Claran Simms said: "The physical and high-impact nature of rugby union has made head



Johnny Sexton suffered four concussions in 2014 and was told to stand down for 12 weeks.



Jacob Stockdale is tackled by Joaquin Tuculet of Argentina as he scores for Ireland in the Guinness International series last year

injuries and long-term brain health a concern.

"Our findings have helped us better understand the mechanisms of head impacts in rugby union and resulted in these recommendations,

which we hope may guide prevention strategies and reduce head injury assessment risks for athletes."

Researchers identified easy-to-coach characteristics,

such as keeping your head up, eyes on the ball carrier and feet active, that can help reduce head injury assessment risk.

But they said: "Surprisingly, these characteristics are not always exhibited by elite players."

PhD researcher Gregory Tierney, from Trinity College Dublin's School of Eng

Bioengineering, said head injury prevention strategies should place emphasis on tackling lower-risk body regions such as the lower trunk.

He said: "The findings from this project provide an evidence base, at the elite level, for coaches to develop and implement technical-based concussion prevention strategies for players.

"Tackling at the upper trunk of the ball carrier should be discouraged.

"Instead, coaching strategies should place emphasis on tackling at lower head injury assessment risk body regions such as the lower trunk.

"Furthermore, there needs to be a greater focus placed on safe contact technique in the tackle."



App Store ntre for

# McDonald's to phase out plastic straws from September

**Kirsty Blake Knox**

**FAST-FOOD** giant McDonald's will begin the process of phasing out plastic straws in its Irish restaurants from September.

The company will be switching to paper straws in a bid to reduce plastic waste.

It comes after McDonald's moved all its plastic straws behind the counter to "put the decision for use in the hands of the customer".

A straw, which is used for only 20 minutes on average, can take more than 200 years to break down into smaller pieces and often does not fully disintegrate.

In America, 500 million plastic straws are used every day.

An increasing number of businesses are removing plastic straws from their operations in a bid to stem plastic waste which pollutes oceans and harms marine wildlife such as turtles and fish.

Last week, Ikea announced it aims to phase out all single-use plastic products from its stores and restaurants by 2020.

A new summer initiative in Westport, Co Mayo, and Killee, Co Clare, has resulted in business owners in both towns switching entirely to compostable packaging.

In May, the Restaurants Association of Ireland called on its 2,500 members to implement a ban on single-use straws.

TD Denis Naughten welcomed McDonald's environmentally conscientious decision.

He said the news was a "clear demonstration that large companies and organisations are taking their environmental responsibilities seriously".

Mr Naughten said McDonald's was "moving in the right direction by eliminating single-use plastics".

United Nations figures show eight million tonnes of plastic - bottles, packaging and other waste - enter the ocean each year.



Paper straws will be brought in



Paper drive . . . eatery

# The last straw for chipper

**BY EMILY BEAMENT**

McDONALD'S is to swap plastic straws for paper ones in all its Irish stores after a successful trial.

A roll-out of the paper products will begin from September, with the process to be completed next year.

The move comes as pressure grows on companies to reduce single-use plastic products and packaging, amid concerns over plastic pollution in the oceans where items such as straws end up harming wildlife like turtles and fish.

The scheme will also take place in the UK where the government has unveiled plans that could see straws as well as drinks stirrers and cotton buds banned.

# Compulsive gaming is a mental health condition, rules the WHO

■ But no need for moral panic – psychologist

Luke Byrne

COMPULSIVE playing of video games, such as the hugely popular 'Fortnite', now qualifies as a mental health condition under a new World Health Organisation (WHO) classification.

Yesterday the WHO, the United Nations body concerned with international public health, said classing Gaming Disorder as a distinct condition will serve a public health purpose for countries to be better prepared to identify this issue.

The move was welcomed by Irish psychologist Catherine Hallissey, who works with families where children struggle from compulsive gaming.

"This is a step in the right direction for helping those with a disorder," the Cork-based lecturer told the *Irish Independent*.

However, she cautioned against a "moral panic", pointing out just a tiny fraction of children were likely to have the disorder and most can play games as a hobby without showing problematic behaviour.

She also cautioned against stigmatising children with labels and said she couldn't advise as to how the Government might introduce programmes to



treat the condition. "It's too new and it's quite controversial," she said, adding more scientific study would have to be done.

"For the vast majority of people, it doesn't become a disorder."

Dr Shekhar Saxena, director of the WHO's department for mental health, said the

WHO accepted the proposal that Gaming Disorder should be listed as a new problem based on scientific evidence, in addition to "the need and the demand for treatment in many parts of the world".

The classification comes one week after a study released

by California State University showed how video games can have a similar effect on children's brains as drug abuse or alcoholism. MRI scans showed the impulsive part of the brain, known as the amygdala-striatal system, was not only more sensitive but also smaller in

excessive users so that it processed the stimuli of video games and social media faster.

The studies showed games such as 'Fortnite', which is now hugely popular with Irish children as young as six, evoke the same "reward" system in the brain as with other addictions.

'Fortnite' is a very popular game with Irish children as young as six years old

Ms Hallissey said signs to parents that their children may have a problem with gaming would include not sleeping at night, falling asleep in school, having relationships online that are more important than those in the real world, not eating and not going outside.

But the solutions are focused on changing a child's environment, rather than the games they are playing.

"The first thing I would do is look at family life, try to reduce stressors.

"Games are often stress blockers used to go into another world," she said.

"Number two would be build relationships with the child and three would be to expand the child's interests," she said.

Healthy outdoor activities and those that get the child to interact in the real world should be encouraged, she said.

The Department of Health said it was committed to supporting people to lead healthy and independent lives.

"This issue will be kept under active review in the department's policies and strategies to improve mental health and to promote rehabilitation and recovery from harmful addictions."

Comment

# Government must back up talk on climate change or it's all just hot air

**I**S THE State finally about to make a real effort to tackle climate change? The fact that five members of the Cabinet were at the launch of the 'Project Ireland 2040: Empowering Communities for Climate Action' conference in Dublin suggests the mood music is changing.

And in highlighting the projected €22bn spend over the next 10 years on steps to address climate change, Taoiseach Leo Varadkar admitted actions had to begin matching rhetoric and community buy-in was key.

"This is a step change in public investment in climate action, however, it will not be enough on its own," he said. "The transition to a low-carbon world will require profound changes in how we live our lives. That will only be possible with the support of communities and individuals. The Government does not underestimate the scale of the challenge. Earlier this year, I talked about the need for Ireland to be a leader in climate action, and I meant it."

Fighting words, but will they be matched by action? No new projects were announced, but the fact that under-fire ministers for transport, energy and agriculture were in the room, setting out their vision, is a first step.

And in a rare display of political candour, Mr Varadkar also highlighted more difficult policy decisions to be undertaken including a ban on smoky coal, due before the end of the year, but also hikes in carbon taxes imposed on petrol and diesel, home heating oil and briquettes.

This will affect people's pockets. There will be political fall-out. And there's also a suggestion of carbon pricing, where the more you pollute the more you pay. Excise on diesel is likely to be increased.

Taxation will be at the heart of this debate. If the State is providing grants for electric vehicles and charging points, it makes sense motorists are discouraged from petrol and diesel.

The latter in particular needs to be tackled, because it is manifestly unfair excise rates are lower than on petrol for the private motorist.

Members of the Government, both publicly and privately, are now stating taxation will be a tool to help tackle climate change, so at the very least the seeds of a debate are being sown.

Finance Minister Paschal Donohoe said he looked forward to the discussion at the National Economic Dialogue, as climate was

Paul Melia



an issue "in our national interest" but also a "moral obligation".

But there is conflict at the heart of policy. On the one hand, farmers are being told to ramp up food production. On the other, they must reduce emissions. We don't really talk about agriculture.

Climate Action Minister Denis Naughten is conflicted - he must tackle climate change, but he's also in charge of energy security.

"There are clashes right across the system," he admits. "Within the energy area, I have to prioritise the issue of energy security. We cannot secure indigenous investment or bring investment in here unless we can guarantee an energy supply."

"It has caused me huge difficulty in terms of offshore gas exploration. But renewable energy is not just about reaching our climate change targets. It's about energy security."

Government can write cheques and make funding available but it's only through leadership and ensuring action across the public and private spheres that real change will occur.

Even if people don't believe the science of climate change - and there are few enough of them - running households, businesses and public bodies more efficiently makes financial sense.

Few would argue retrofitting a building, making it warmer and cheaper to heat, is a waste of

money. Where reliable and affordable, many would choose public transport over private car. Lower running costs for electric vehicles are a definite attraction for those changing their car.

There are many positive examples of actions under way at community level which can be replicated across the country, starting the process of change.

Young people are engaged through Eco-Unesco and the Green Schools programme.

Community groups are upgrading old buildings. Community generation projects are in place or planned.

The State's challenge is to bring these groups into the mainstream and arm them with the tools needed to effect real change, including access to experts and information. If they are planning to upgrade a community centre, implement cycle-only areas or ramp-up recycling rates, they can see successful examples.

**C**RUCIALLY, there's a need to involve people in decision-making, in helping map out how their areas can move to a low-carbon future. That requires input into city and county development plans.

As part of this transition, more dialogue is needed. This Saturday, the first regional gathering under the National Dialogue on Climate Action takes place in Athlone. The idea is to share ideas, highlight issues and identify opportunities - the first step on a long road.

Mr Naughten says he hopes people come who haven't engaged with climate change before, who might be willing to do something but are facing difficulties. That kind of dialogue will help drive change. But as one speaker at the Project 2040 launch said: "Just because people know stuff, it doesn't mean they change. People don't often take that rational approach."

The trick for Government will be convincing them.

**Taxation will be at the heart of this debate. If the State is providing grants for electric vehicles and charging points, it makes sense motorists are discouraged from using petrol or diesel**

## Comment

# We're moving in the right direction on climate change, but not fast enough

**A**S THE world has warmed, our weather has changed. The highest temperatures recorded globally have been in recent years, and our climate is 0.8C warmer today than a century ago.

We have experienced the stormiest winters on record, while in the past 12 months alone the State has grappled with flooding from Storm Eleanor, the devastation of ex-Hurricane Ophelia and the big freeze of Storm Emma, which left communities cut off from vital services and many without water and power for days.

Today, a different challenge emerges, with householders grappling with water restrictions as levels in our rivers, lakes and aquifers fall – the raw water sources needed to supply the population. It's highly likely that more homeowners will be affected, as consumption continues to rise in the absence of rain.

While one dry spell, one storm or one flood doesn't prove the point, the science is very clear: climate change is real, it's already having an impact and it's affecting us all.

It doesn't matter what Donald Trump thinks, as many US states form part of a global movement towards a low-carbon future. What will determine our success is the pace of change. That will require a complete transformation in how we live our lives and it's going to be driven by information.

The work being completed by the Central Statistics Office, Met Éireann and Maynooth University in digitising ancient weather records will play a crucial role. Over time, the dataset will be capable of helping forecast the potential impact on communities and better planning of the emergency response.

Measuring how society adapts to incentives to invest in electric vehicles, more efficient appliances and energy upgrades across the residential and commercial sector will also help develop better policy. Will more carrots than sticks be needed? What motivates people to upgrade their homes?

However, we cannot use the enormity of the challenge as an excuse to do nothing. As chief executive of the Sustainable Energy Authority of Ireland (SEAI) Jim Gannon told a meeting of the Institute of International and European Affairs, there is a need to lead people. "I have a sense sometimes that Ireland will talk ourselves into failure," he said. "Martin Luther King didn't say 'I have a nightmare'."



**Paul Melia**

He added that setting out policies which outlined the benefits of changing behaviour, and risks of not doing so, were needed. The SEAI will shortly issue recommendations on using behavioural economics to drive change, which will prompt people when upgrading their homes, or putting their car through the NCT, about changes they can make.

The problem though is so many people feel the challenge is too great, and there's no point in Ireland doing anything because our global impact will be so small. But there's no reason why we cannot be world leaders in this space, developing new ways of doing business which can be exported across the globe. At the very least, we will end up with better places to live and an improved environment.

The Government is beginning to step up, committing almost €22bn to climate-action measures in the national development plan across public transport, home and business retrofits, incentives to buy electric vehicles and a €500m climate action fund. That commitment is a long time coming, and the trick will be to ensure that funding remains in place in the event of a downturn.

It's all welcome spending, but there's an education piece lacking. It's perhaps this lack of information which is preventing 'ordinary' people engaging in the challenge.

While initiatives such as Green Schools, the IFA's Smart Farming programme and Cool Planet Experience in Wicklow – which sets out the challenge, adaptation measures needed and benefits of change – all help, more are needed.

One new idea is the National Dialogue on Climate Action, a Government initiative that aims to get the wider public involved in the conversation. Its first public meeting was held in Athlone last weekend, with delegates from farming organisations, community groups, environmental NGOs and business. One of the most valuable outcomes was an exercise where people were asked to set out a 'day in the life' of a low-carbon Ireland.

There were no hardline positions outlined such as compulsory veganism or population control, which can crop up at these type of events. What was striking is people want choice, respect for the natural world, measures to improve air quality and better urban areas where people and not vehicles take priority.

On housing, it was suggested homes be energy efficient, not built in flood-risk areas and that homeowners be incentivised to generate their own power. On transport, a low-emission public transport fleet with more services, increased use of electric vehicles, bike and walking facilities and incentives to carpool were outlined. Ideally, delegates said, food should be locally sourced or grown at home and there should be less consumption of red meat. Trees should be planted and bog cutting ended to help provide carbon sinks and prevent flooding. A ban on single-use plastics and increased use of renewable energy were also mooted.

The suggestions were practical and sensible. Many are already official policy. The problem is the pace of change, and easily accessible information on measures which are in place, and working.

A paper by DCU academic Diarmuid Torney, 'Enabling decarbonisation: A study of energy sector governance in Ireland', makes the point that the narrative has to change, with challenges and opportunities highlighted and government departments and agencies taking a lead approach.

Key will be the need to plan our communities better, including combating urban sprawl, and recognising some people will lose out in the transition, such as those involved in peat extraction. There is also a need for short-term policies to drive change, coupled with more dialogue to secure public buy-in.

We are moving in the right direction, but it's too slow. The dry spell we're currently enjoying, just months after flooding, a hurricane and sub-zero big freeze, might drive home that global and national need for change.



Content Analysis Template

Media Outlet	Date	Number of overall news items	Number of science news items	Length/duration of science news	Science topic covered	Reporter science specialism	Image used (if applicable)	Research Group referenced	Research publication referenced	Further information sources referenced	Quoted sources	Newsworthy factors, other observations, etc.

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