The socio-economic impacts of increased seafood consumption in England

Executive Summary

prepared for the Seafood 2040 programme and Seafish

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In collaboration with

Full title: ***The socio-economic value of the impact of increased seafood consumption on Government and NHS budgets, the economy, and population health in England compared to maintaining current seafood consumption levels***

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Foreword from the Seafood 2040 Programme

The primary objective of the Seafood 2040 Strategic Framework[1] (SF2040) is to encourage England's population to consume two portions of seafood per person per week[2]. The health benefits of seafood such as protein rich and low calorie are well documented. However, what is not clearly understood is the estimated socioeconomic value of the impact of increased seafood consumption on Government budgets, the economy, NHS, and the population. There is a lack of reliable data for evidence-based decision-making and planning. The delivery of this research was in response to Recommendation 6 of the Framework[3] asking whether is it possible to estimate the potential value to society (via health benefits to the economy) if people were to eat more seafood.

By what margin would there be positive economic impacts on future Government spending and NHS budgets not to mention social and economic impacts on population health if there was an increase in seafood consumption? Would it be a large enough reduction that would save a significant number of lives as well as reduce future Government and NHS money spent on ill health and obesity? What is the connection and impact between increased seafood consumption and Govt and NHS spend and population health?

The approach to the investigation utilised a novel method to provide estimates.

1. Determining the health benefits to be gained from improving seafood consumption from currently reported levels to the target levels of SF2040 of two portions of seafood per person, per week; and
2. Estimating the financial quantification those health benefits as subsequent costs to society that such dietary changes may support.

Overall, the research provides some insight into what potential scale of benefits of increased seafood consumption to consumers in England – as well as the UK – could be.

The SF2040 Seafood Industry Leadership Group (SILG), which oversee the SF2040 programme and commissioned this research, have learned a great deal from this work, but it should be understood that this was a pioneering study that involved an approach to a technically difficult question. Therefore, it is a preliminary piece of work that provides interesting early indications of potentially substantial health benefits from increased seafood consumption. There is a lot of science, data and information in the public domain and making sense of it all is quite challenging. However, this is not unusual when determining outcomes for nutritional interventions.

[1] https://www.seafish.org/document/?id=98F10916-276C-414C-84E7-F6870F9CD417

[2] https://www.nhs.uk/live-well/eat-well/fish-and-shellfish-nutrition/#:~:text=A%20healthy%2C%20balanced%20diet%20should,of%20many%20vitamins%20and%20minerals.

[3] Recommendation 6 is on page 28.

This preliminary study was independently peer reviewed by two researchers and is an important first step and useful as a platform on which to build future work. These findings are likely to be of great interest to the relevant policy makers, but the results warrant further investigation to check validity of methods, data and assumptions. Some potential substantial savings to government are clear, but equally there are other potential positive impacts that were not investigated in this study, such as the benefits of seafood consumption to cardiovascular health. Some omissions may have been the result of the way the research question was framed, and this needs to be looked at from the perspective of ensuring that such an analysis is as comprehensive as possible for all potential benefits of eating seafood, especially since those health benefits can be so wide-ranging. The SF2040 SILG therefore regards this work as interesting, but preliminary, and an important first step in addressing this key question.

Further research is now required to validate the results of the first study and determine methods for the inclusion of additional health conditions. Equally important is the opportunity to address not just mitigation of disease, but to bring into analysis an overview of wellness indicators that also investigate the possibility of increased seafood consumption on quality of life indicators. The SF2040 SILG will be taking both of these aspects forward within a revised Recommendation 6 for the Framework and aim to fund and commission the subsequent research in 2021 and 2022.

This work is at the nexus of government policy and the seafood industry. If the estimates are found to be robust there are implications for government policy, and in relation to initiatives such as the National Food Strategy and any upcoming government obesity strategy. For those directly or indirectly working within the seafood industry the nutritional benefits of consuming wild catch and farmed fish and shellfish are strongly implied and there are good data to back up this position. The greater challenge comes in providing robust assessments for the value of those benefits, and that is a goal that the SF2040 SILG are working towards.

Executive Summary

Background to the study

Risk & Policy Analysts (RPA) and Health Economics Consulting (HEC) at the University of East Anglia (UEA) were commissioned by the Seafood 2040 (SF2040) programme at the Sea Fish Industry Authority (Seafish[4]) to conduct this research. The programme was approved by the Fisheries Minister, George Eustice MP, in 2017 and is a shared strategy and action plan developed by stakeholders across the seafood supply chain to move England's seafood industry toward a thriving and sustainable future by 2040.

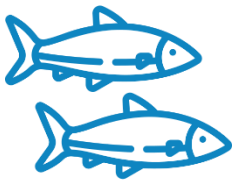
The study aims to show the health benefits of fish consumption and how these health benefits can be translated into net gains to the overall economy. This study also aims to assess the barriers and opportunities around seafood consumption growth.

Main findings

In a healthcare system faced with financial stress, diseases related to lifestyle such as cardiovascular disease and diabetes, have become increasingly concerning not only for the NHS, but also for the economy overall.

Diet is one of the modifiable factors that can influence susceptibility to such diseases. Eating a healthy diet can help to reduce obesity, which is believed to account for 80 to 85% of risk of Type 2 Diabetes (T2D) (Diabetes.co.uk, 2019[5]).

Eating a healthy diet can help to lose weight, reduce obesity, lower cholesterol levels and blood pressure and decrease the risk of type 2 diabetes



NHS guidelines recommend that 'a healthy, balanced diet should include at least two portions of fish a week, including one of oil rich fish'

Fish and shellfish are good sources of many vitamins and minerals. Oil rich fish – such as salmon and sardines – is also particularly high in long-chain omega-3 fatty acids, which can help to keep the heart healthy

The purpose of this research is to review available evidence on the population health and socio-economic benefits from increasing seafood consumption and determine the positive gains in population health and the potential reductions in government spend on ill-health as a result. Studies over several decades have suggested a link between fish consumption and reductions in ill-health. NHS guidelines recommend that '*a healthy, balanced diet should include at least two portions of fish*

[4]Seafish is a Non-Departmental Public Body (NDPB) set up to support the UK seafood industry.

[5]Diabetes.co.uk (2019): Diabetes and obesity, available at https://www.diabetes.co.uk/diabetes-and-obesity.html

a week, including one of oil rich fish' (NHS, 2019)[6]. However, household purchases of fish and fish products have fallen steadily since 2006 (Defra, 2018[7]). The current estimate for seafood consumption across England is half the recommended level, i.e. just over one portion a week (c. 140 g) (Defra, 2018).

A review of the potential benefit of fish consumption highlights that including fish in the diet produces several health benefits. These benefits stem mostly from weight control and reduced risk of being overweight, as fish is a lean source of protein with lower fat content.

The analysis suggests that the yearly socio-economic benefits from increasing seafood consumption are likely to far exceed the costs to the consumers from buying seafood. The benefits include both avoided NHS care costs and business savings from reduced work absenteeism. There will also be benefits to consumers linked to reduced ill-health and better quality of life. The benefits to individuals from reduced risk of ill-health (combined T2D and cancer) are valued between £80/week and £140/week respectively. The costs of buying seafood for an individual is not expected to exceed £1.70/week.

The net socio-economic impacts from increasing seafood consumption to one more additional portion a week across the English population can be valued at between £14.5m and £58.2m per week in benefits (from avoided cases of T2D and cancer).

Main health outcomes from increased seafood consumption

The literature has revealed that including fish in the diet produces several health benefits. The main health benefits from increased fish consumption as found in the literature are related to the Colorectal cancer; Lung cancer; Ovarian cancer; and T2D. The variation for specific health outcomes reflects some of the uncertainties with the modelling.

The largest impacts are expected to be in terms of reduced cases of T2D. These benefits stem mostly from weight control and reduced risk of being overweight, as fish is a lean source of protein with lower fat content, reducing also obesity. Obesity is believed to account for 80-85% of the risk of developing T2D, while recent research suggests that obese people are up to 80 times more likely to develop T2D than those with a BMI of less than 22 (Diabetes.co.uk, 2019[8]). The model used in this study takes account of BMI as a risk factor to develop T2D but the impacts due to this risk factor alone were not modelled separately to avoid double-counting. In other words, our modelling does take account of BMI as a risk factor of T2D too, but the contribution of obesity alone cannot be separated from others like physical activity, level of education, medical history, age, etc.

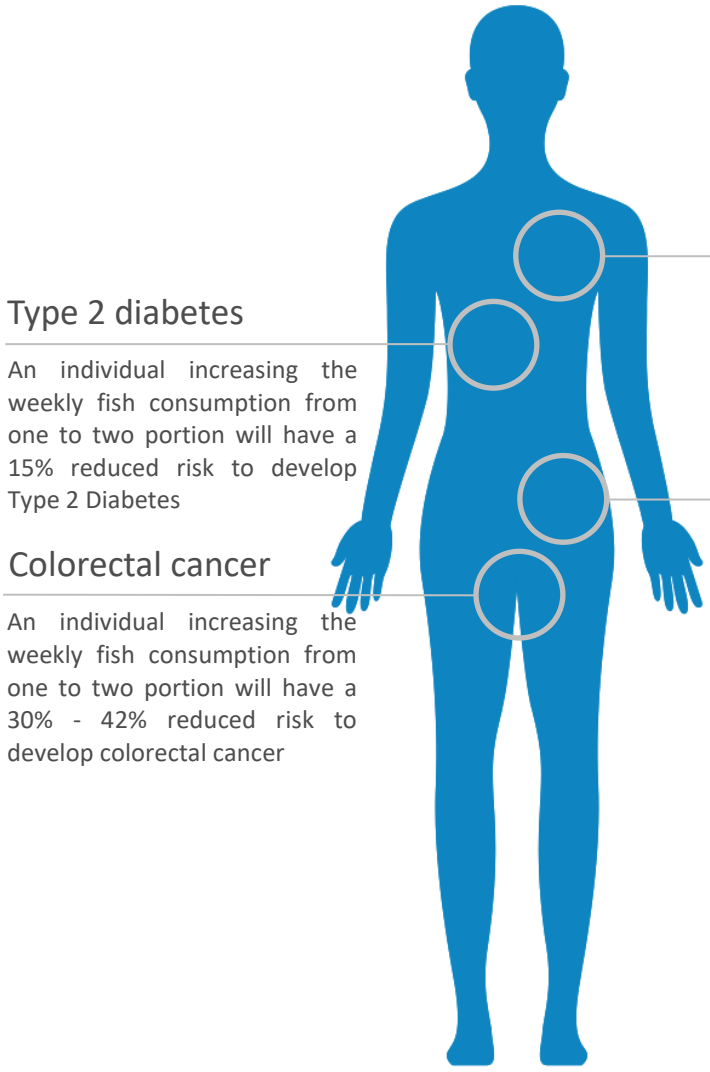
All cancers: 3,600 to 18,000 could be avoided per year if increasing seafood consumption to two portions a week (considering mortality rates, this will be equivalent to 1,700 to 8,500 lives saved).

[6]NHS (2019): Fish and Shellfish, Eat Well, available at: https://www.nhs.uk/live-well/eat-well/fish-and-shellfish-nutrition

[7]Defra (2019): Family Food 2016/17: Purchases, available at: https://www.gov.uk/government/publications/family-food-201617/purchases

[8]Diabetes.co.uk (2019); Diabetes and obesity, available at https://www.diabetes.co.uk/diabetes-and-obesity.html

Type 2 diabetes: 4,000 to 4,900 cases could be avoided per year if increasing seafood consumption to two portions a week (with the risk of dying prematurely).



Type 2 diabetes

An individual increasing the weekly fish consumption from one to two portion will have a 15% reduced risk to develop Type 2 Diabetes

Colorectal cancer

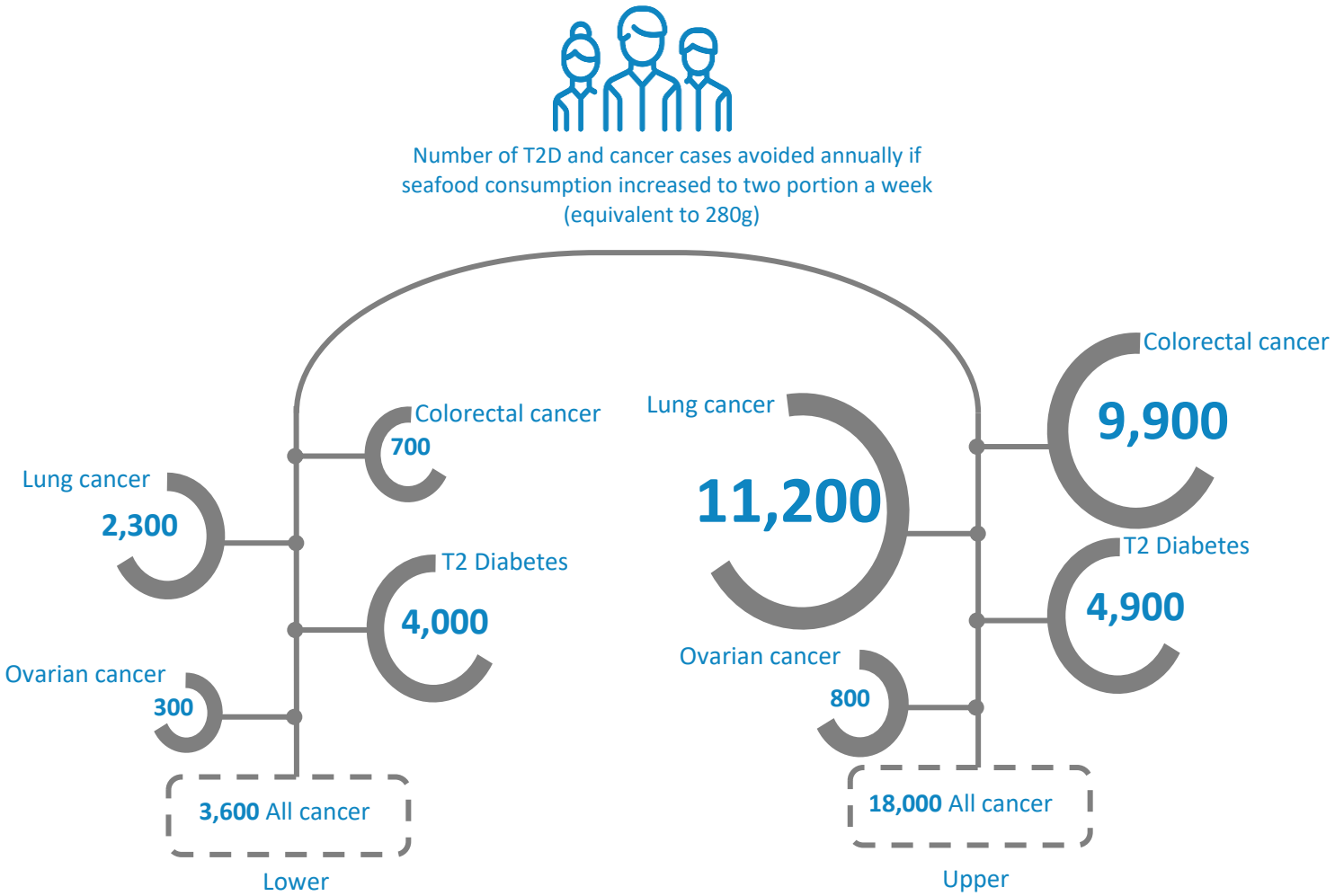
An individual increasing the weekly fish consumption from one to two portion will have a 30% - 42% reduced risk to develop colorectal cancer

Lung cancer

An individual increasing the weekly fish consumption from one to two portion will have a 40% reduced risk to develop lung cancer

Ovarian cancer

An individual increasing the weekly fish consumption from one to two portion will have a 42% - 44% reduced risk to develop ovarian cancer



'All cancer types' are included as a separate category and this includes different cancer codes (C00-C97). Modelling was possible for specific cancer types where evidence was more robust (lung, ovarian and colorectal). The modelling suggests that most cases avoided are expected for lung and colorectal cancer cases. Other modelling for other cancer types could not be undertaken due to scarcity of more robust data.

The number of cases avoided in England for T2D from increasing seafood consumption to two portions a week (280gr.) is estimated to range from 4,000 to 4,900 a year. Cancer cases will be reduced by 3,600 to 18,000 per year. The impacts will start in 2030, allowing a 10-year period for the effects to be noticeable and take into account the past trends in number of cases.

Table 1: Number of T2D and cancer cases avoided annually if seafood consumption increased to two portion a week (equivalent to 280gr.)		
Type of cancer	**Lower**	**Upper**
Colorectal cancer	700	9,900
Lung cancer	2,300	11,200
Ovarian cancer	300	800
T2D	4,000	4,900
All cancers	3,600	18,000

Comparing the costs and benefits: summary of findings and recommendations

The economic benefits from the number of preventable cases as a result of increasing seafood consumption to two portions a week across the whole of England is estimated to exceed £24m/week or £1.3 bn per year under Approach 1, the most conservative approach. Under Approach 2, a higher estimate of £3.5bn per year, or £67m/week, are illustrative of the benefits of increasing seafood consumption. The benefits will accrue to both the NHS budgets and businesses from reduced absenteeism, because of reduced ill-health, but also to consumers in terms of reducing the risk of ill-health and better quality of life.

The costs to consumers across the whole of England will be expected to be of between £10 to £15m per week (across the whole of the population in England), or £1.65 per person per week on average.

The impacts from increasing seafood consumption in England

£270m-£600m savings to the NHS for preventable cases a year

- £196m-£241m savings to the NHS from preventable cases of T2D a year
- £72m-£360m savings to the NHS from preventable cancer cases a year

NHS will save £31,000 to £35,000 per patient over each patient's lifetime

- £70/week in benefits to patients from preventable cases of T2D linked to better quality of life
- £70/week in benefits to patients from preventable cancer cases linked to better quality of life

£1.65/week are the maximum weekly costs to consumers of buying more seafood across the whole of England, per person per week.

£160-£360m benefits to business from reduced absenteeism per year, linked to better health of workers eating 1 more portion of fish a week

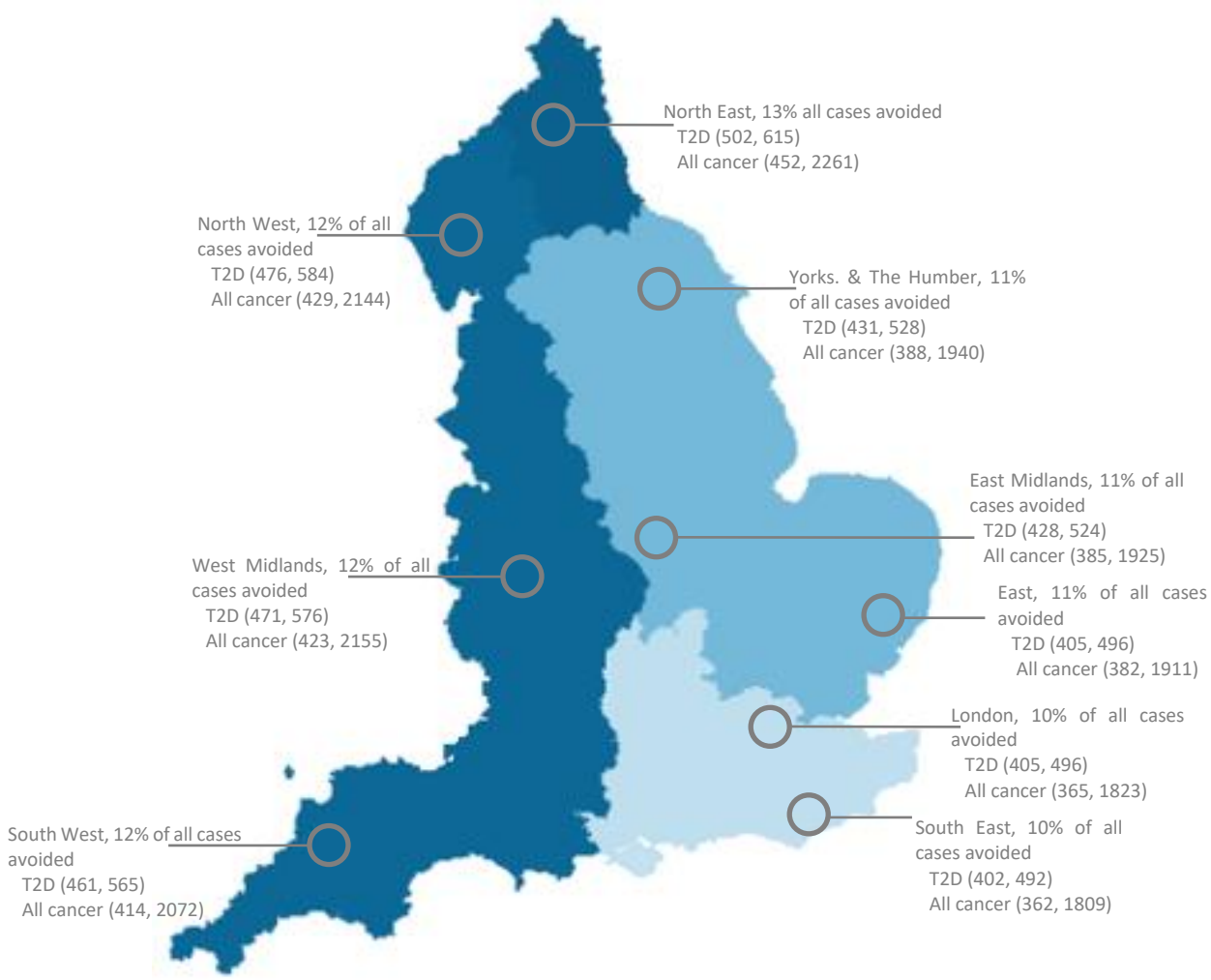
It is important to note that the benefits may not arise immediately and that they are only expected to accrue in the near future. This study assumes a 10-year timeframe for the benefits to arise[9].

Overall however, there will be net socio-economic gains, as the benefits from increased seafood consumption (in NHS budgets and business) will far exceed the costs to the consumers from buying what it can be a more expensive source of protein (although oil rich fish is considerably cheaper and affordable than other varieties).

As the current consumption levels are different by region and by age group however, the distribution of health outcomes, benefits and costs may be different across England. In particular:

- The average consumption of fish is higher in London and the South East and the smallest portions are on average consumed in the North East, North West and the West Midlands. The benefits from increasing consumption may be larger in these last few regions. The largest benefits will accrue in the North East where consumption is at its lowest;

Distribution of number of cases of T2D and cancer avoided by region in England per year



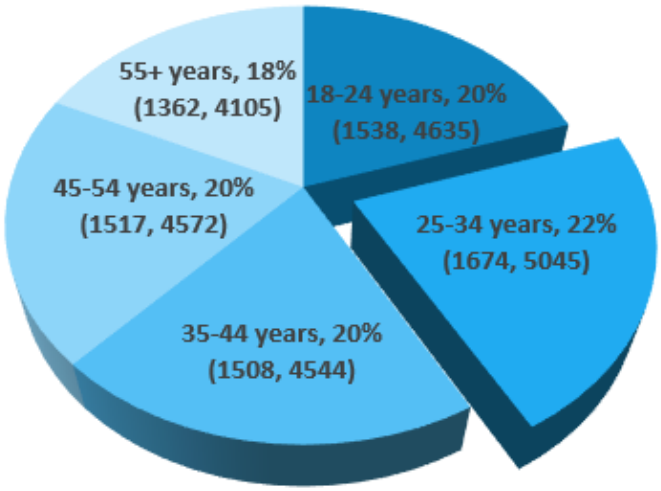
[9] It is thus expected that the benefits from eating one more portion of fish a week will accrue from 2030 onwards but the additional costs will accrue immediately. Over the lifetime of a person, the benefits are still expected to exceed the costs.

- younger groups are consuming less fish per week on average. Nearly half of the over 55 are already consuming 2 portions of fish a week. The following Figure shows the distribution of cases avoided by age group as % of total cases (T2D and all cancer) across all populations[10]. The cases avoided for each age group are given as a range in brackets. The figure shows:

    - ✓ 22% of all cases avoided (of T2D and all cancers) across all groups could fall on the 25-34 years age category. According to the model, this reduction would be equivalent to 1,674 to 5,045 cases avoided for that age group (preventable cases of T2D and all cancers; lower bound and upper bound respectively)
    - ✓ 18% of all cases avoided (of T2D and all cancers) across all groups could fall on the 55+ age category. This reduction would be equivalent to 1,362 to 4,105 of cases avoided for that age group (preventable cases of T2D and all cancers; lower bound and upper bound respectively).

As a result, the largest benefit will accrue to the 25 to 34 years group, currently consuming less fish than other age groups. This is important as such groups will be still within working age by 2030, when the benefits are expected to realise on a yearly basis.

T2D and all cancer cases avoided as a % of the total in England by age group (total by age group - lower and upper range - shown in brackets)



[10] Based on current consumption levels alone. The socio-economic model however takes account of the age at which the health impact may be diagnosed (refer to technical annex 1).