Landman Economics

The economic impact of a smokefree United Kingdom – 2024 update: technical report

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Contents

1 Introduction

Smoking is associated with a range of costs to the economy in general and to the public finances, which arise due to the health risks associated with tobacco consumption and the associated increases in mortality and morbidity for the smoking population[1] (DHSC 2017). This report updates and extends previous work (Reed 2021a) which covered a particular aspect of the costs of smoking to the economy which had been somewhat neglected since the pioneering work of Buck, Godfrey and Sutton (1995). This is the economic impact of consumers switching from buying tobacco to buying other goods and services in the economy as smoking prevalence falls[2].

Consumption of goods and services in the UK economy has multiplier effects because of the derived demand for goods and services used by industries which supply goods and services for final consumption. For example, buying a new car creates demand for metals, electronic components and upholstery as well as marketing and showroom personnel and also petrol, diesel or electricity (depending on how the car is powered). Every pound spent on cigarettes or hand rolling tobacco is a pound not spent on something else in the economy. Therefore, the elimination of smoking consumption reduces demand for intermediate products used in tobacco manufacturing, distribution and retail, but increases demand for other goods and services which consumers buy instead (final demand) as well as the goods and services used to produce those products (intermediate demand).

This paper updates the previous estimates from Reed (2021a) of the economic impact of tobacco consumption falling to zero in the UK, using two metrics: (1) Gross Value Added (GVA – a proxy for Gross Domestic Product at the industry level) and (2) employment (measured as headcount and full-time equivalent). Estimates are produced for 2021/22 which is the most recent year for which data on patterns of consumption are currently available from the Living Costs and Food Survey (LCF).

In July 2019 the UK Government published a consultation document *Advancing our health: prevention in the 2020s* (Cabinet Office and DHSC, 2019) which announced a smokefree 2030 ambition (defined as smoking prevalence of below 5% of the adult population by 2030), and gave the tobacco industry an ultimatum to make smoking obsolete by 2030. The Labour Government elected in July 2024 is committed to passing the Tobacco and Vapes Bill which (among a range of measures) aims to

[1] there are also certain negative externalities associated with smoking which increase costs, for example passive smoking and fire costs.

[2] Previous work on the costs of smoking in the UK has focused primarily on the costs to the National Health Service (NHS) and the social care system (Reed, 2021b) and the negative effects of smoking on productivity due to a number of factors including smokers having greater higher working-age morbidity and greater employee absenteeism, resulting in lower economic output and lower tax receipts for the Exchequer (Reed 2010; Reed 2024). These costs are enumerated at a local level in the ASH smoking costs Ready Reckoner (ASH, 2024).

create a Smokefree Generation by making it illegal for anyone born in 2009 or later to purchase tobacco products.

The ambition to reduce smoking is a shared ambition across government, with HM Treasury aware that, if the ambition is achieved, the tax revenue stream from tobacco (just under £9 billion per year in excise duties in 2023-24, plus receipts from VAT on tobacco products[3]) will no longer exist in the long run. Given this policy context, this report is timely and relevant – although it should be noted that recent research by the author using the ASH Cost Benefit and Public Finances model of smoking (Reed 2025) suggests that, once the wider economic impact of smoking in terms of productivity losses and increased costs to public services (particularly the NHS and local authority-funded social care) is taken into consideration, smoking worsens the public finances by over £11 billion per year, even after taking tobacco duty receipts into account[4]. While the UK Government's Smokefree Generation policy should prevent new uptake of smoking, this is only one part of the economic and social harms of smoking; it is essential to encourage cessation among today's *current* smokers to fully realise the benefits of a smoke-free United Kingdom.

The structure of this paper is as follows. Section 2 outlines previous work on the economic impact of reductions in tobacco consumption from Buck *et al* (1995) as well as more recent work led by researchers at the Universities of Sheffield and Nottingham (Morris *et al*, 2024). Section 3 explains the methodology used in this paper in detail and explains slight revisions to the approach taken in Reed (2021a) due to changes in the data sources available for the analysis. Section 4 presents evidence on the expenditure patterns of households with non-zero tobacco expenditure ("smoker" households) compared to households with zero tobacco expenditure ("non-smoker" households) in the Living Costs and Food Survey data and also summarises evidence on alcohol consumption behaviour by individuals who quit smoking between waves of the Understanding Society panel dataset with those who carry on smoking, to assess whether a change in smoker status is associated with a change in consumption patterns. Section 5 presents the updated results for the estimated impact of a smokefree UK on Gross Value Added, employment and tax receipts based on the 2021-22 tax year (which is the year that the Living Costs and Food Survey data used in the consumption analysis in this report are taken from). Section 6 sets the new results in the context of the overall impact of a smokefree UK on the public finances including reduced costs to the NHS and social care system, and productivity improvements and longer life expectancy leading to higher tax receipts and lower benefit payments. Section 7 presents uprated estimates of the impact of a smokefree UK on GVA and employment which are used in ASH's Cost Benefit and Public Finances model of the cost of smoking (Reed

[3] Tobacco duty receipts taken from HMRC (2024); VAT receipts based on author's calculations.
[4] The ASH analysis of the overall public finance impacts of smoking includes tobacco duty receipts as a gain to the Exchequer but not VAT receipts on tobacco products, on the grounds that most other goods and services that smokers would buy instead if they were not buying tobacco products would be standard-rated for VAT, and so the net VAT impact of reduced smoking is negligible.

2025). Section 8 presents a regional breakdown of the estimated boost to employment from a smokefree UK. Section 9 offers conclusions.

2 Previous work on the economic impact of reduced tobacco consumption

2.1 Buck, Godfrey and Sutton (1995)

The first detailed attempt to model the economic impact of reduced tobacco consumption in the UK was by Buck, Sutton and Godfrey (1995) who used Office for National Statistics (ONS) data from 1990 (the most recently available data at the time) and estimated the impact on employment if tobacco consumption were reduced by 40%. The study used data from the Family Expenditure Survey (an earlier version of the Living Costs and Food Survey) to model different ways in which smokers who stop might re-allocate their released tobacco consumption expenditure. It also simulated two different possible government reactions to reduced revenue from tobacco taxation – an increase in VAT, or a reduction in public spending. Under the assumptions the author believed were most reasonable, the analysis projected that a 40% reduction in tobacco consumption would result in an increase in 150,000 jobs in the UK economy.

The methodological approach of the Buck *et al* study is discussed in more detail below when comparing their approach with the approach used here since the current paper is essentially an updated and modified version of their approach.

Other papers referenced by Buck *et al* perform similar calculations for other countries, for example McNicoll and Boyle (1992) for Scotland, and Warner and Fulton (1994) for the state of Michigan in the USA.

2.1 Morris *et al* (2024)

Morris, Gillespie, Dockrell, Cook, Horton, Brown and Langley (2024) use data from the Smoking Toolkit Study (STS) for 2014 to 2020 matched to income and smoking prevalence data for English local authorities to produce estimates for the ‘smoke-free dividend’, which they define as “the value that might be added to local economies each year through the money that people who smoke tobacco would save if everyone quit smoking”. The smoke-free dividend was calculated as 93% of spending on legal tobacco, which is the percentage estimated to leave the local economy, plus 100% of spending on illicit tobacco. The total smoke-free dividend for England was estimated to be £10.9 billion each year, equating to £1,776 per person who smokes. The estimated dividend is greater in areas with lower average income.

The Morris *et al* study is the first to attempt a local-level disaggregation of the economic impact of eliminating tobacco consumption in England. However, the study does not include multiplier effects.

3 Methodology

3.1 Overview

The methodology used in this report is similar to the method in Reed (2021a) (which was itself an updated version of the approach taken by Buck *et al* ,1995) with some changes due to improvements in some of the data from the Office for National Statistics used for the analysis.

Table 3.1 sets out an overview of the empirical approach. The remainder of this chapter explains the steps in more detail.

This paper uses data from a range of different data sources. We present estimates for the 2021-22 tax year because that is the most recent data year available for some of the data sources used (for example, the Living Costs and Food Survey, and ONS Supply and Use Tables). Other sources (for example HMRC tobacco duty receipts data) are available for more recent years but we have used 2021-22 for consistency across all data sources.

Table 3.1. Overview of empirical approach used in this paper

Part/Step	Brief description of method
Part I: expenditure	
1: Estimating initial level of total consumer tobacco expenditure	Uses HMRC data on tobacco duty receipts combined with data on average prices of consumer tobacco products, and estimates of the size of the illicit tobacco market
2: Assumptions about expenditure patterns of smokers who stop	Analysis and comparison of expenditure patterns of current smokers and non-smokers in Living Costs and Food Survey; analysis of alcohol consumption by continuing smokers vs people who quit smoking in the Understanding Society panel survey
Part II: Input-Output analysis	
3: Implications of.. for consumer demand at purchaser prices	Analysis of LCFS spending using COICOP expenditure categories and conversion to ONS Classification of Product Activity (CPA) categories
4: Implications of…for tax revenue from consumption	Analysis of the percentage of final expenditure accounted for as tax in the supply tables using CPA categories
5: Implications of … for consumer demand at basic prices	Subtracting tax revenue, imports and distribution costs from consumer demand at purchaser prices equals consumer demand at basic prices
6: Multiplier effects of reallocated consumer demand	Calculated using Type I Multipliers for GVA and employment in Input-Output tables (by CPA expenditure category)
Part III: Results	
7: "First round" GVA and tax receipt effects	Uses GVA Multipliers and estimates tax receipts from increased GVA
8: Employment effects	Uses data from the Annual Survey of Hours and Earnings (ASHE) on average wages by SIC code and estimates employee NICs liability and pension contributions within each industry to derive total costs of employment
9: Impact of increased employment on tax receipts	Calculation of additional revenue from income tax, NICs and VAT (from expenditure) for additional workers in each industry

10: Making up for the tax shortfall	Because tobacco is a heavily taxed product, eliminating tobacco spending leads to reallocation of spending towards lower-taxed products. This leads to a shortfall in tax receipts, which is filled by (1) tax revenues from additional output due to multiplier effects; (2) increased tax revenue from higher productivity; (3) reduced public spending due to reduced costs of smoking. The net public finance impact is calculated here, drawing on prior analysis published by ASH and others (e.g. DHSC (2017) on NHS costs of smoking; Reed (2021) on social care costs of smoking; and Reed (2024) on productivity costs of smoking.

3.2 Step 1: The initial level of consumer tobacco expenditure in 2021-22

The main body of this paper uses estimates for the 2021-22 tax year in estimating the total economic impact of a smoke-free United Kingdom and all the steps taken to produce those estimates, as shown in Table 3.1 above. This is because 2021-22 is the most recent year for which all the data sources used in the paper are available at the time of writing. The most recent version of the ASH Cost Benefit and Public Finances model of smoking (Reed, 2025) presents updated estimates of the economic impact of a smoke-free United Kingdom for 2024, derived by adjusting the impacts to take account of reductions in smoking prevalence since 2021-22. We present these updated estimates in Section 7 of the paper.

The estimate of total consumer expenditure on tobacco for 2021-22 used in this paper is made up of an estimate for legally purchased tobacco and an estimate for illicitly purchased tobacco, which are summed together.

Legally purchased tobacco

HMRC provides a time series of data on total tobacco receipts by tax year with the latest release including data from 1991-92 up to 2023-24 (HMRC, 2024). This was used to derive total consumer spending on tobacco for the tax year 2021-22 by using statistics on the average price of cigarettes and hand-rolling tobacco from that year. The detailed calculations for 2021-22 are shown in Appendix A of this report; Table 3.2 summarises the main calculations for legally purchased tobacco. Total legal consumer tobacco expenditure for 2021-22 is estimated at around £17.1 billion.

Table 3.2. Estimated consumer spending on legally purchased cigarettes and handrolling tobacco, 2021-22

	£bn		
	Cigarettes	**Hand-rolling tobacco**	**Total**
Excise duties	7.667	2.390	10.057
VAT	2.034	0.810	2.844
Total spending	12.202	4.859	17.061
Tax as % of total spending	79.5%	65.9%	75.6%

Data sources: Excise duty receipts: HMRC (2024a).

VAT calculated uses (i) average price data from ONS price comparison tool (ONS, 2024c) for September 2023 downrated to July 2023 using CPI time series for cigarettes (ONS identifier L7AQ) and other tobacco (ONS identifier L7AS).

Illicit tobacco

The estimate for the value of illicit tobacco purchased in 2021-22 is based on two sources:

i) Estimates for the volume of illicit cigarettes and hand-rolling tobacco (HRT) in 2021-22 are taken from the time series in HMRC's *Measuring Tax Gaps* publication (HMRC, 2024b).

ii) Estimates for the average price paid for illicit cigarettes and HRT are taken from surveys commissioned by Fresh (a tobacco control organisation in the North East of England)[5] of the price paid per pack of 20 cigarettes in the North East of England in 2023. These are the only surveys which asked about the unit price of illicit tobacco[6].

Overall estimate

Table 3.3 shows how the overall estimate of spending on illicit tobacco of approximately £1.2 billion is arrived at. Summing expenditure on illicit tobacco and legally purchased tobacco gives a total UK consumer tobacco expenditure figure for 2021-22 of approximately £18.3 billion. This paper models the economic impact of a reduction in tobacco expenditure from £18.3 billion to zero.

Table 3.3. Estimated consumer spending on illicit cigarettes and handrolling tobacco, 2021-22

	Cigarettes	**Hand-rolling tobacco**	**Total**
Price per unit	£4.68 per pack of 20 cigarettes	£20.44 per 100g pouch	
Illicit spending as percentage of total market	7.0%	3.9 million kg	
Implied volume of sales based on price per unit[7]	1.72 billion sticks	3.9 million kg	
Total spending (£m)	405	790	**1,195**

[5] www.fresh-balance.co.uk

[6] The 2023 illicit price estimates from Fresh are downrated to 2021-22 price levels using tobacco price indices to make them consistent with the same timeframe used for the rest of the estimates in this section.

[7] Note that these estimated volumes differ slightly from the volume of sales of illicit cigarettes and HRT given in HMRC (2024b). This is because we are using more up-to-date estimates of the price of illicit tobacco than the HMRC publication uses.

Data sources: Volume of sales from HMRC (2024b). Price per unit from Fresh (2023).

3.3 Step 2: Assumptions about expenditure patterns of smokers who stop smoking

Ideally this report would have modelled the expenditure patterns of people who quit smoking recently, but this is not possible because there is no one data source which features data on the full range of consumer expenditure *and* data on smoking history. The Understanding Society (USoc) panel survey has data on smoking history and tobacco expenditure but not a full range of other expenditure data, whereas the LCF has household expenditure data but no information on individual smoking status or smoking history. Therefore, this section uses two different methodological approaches. First, evidence is presented on the consumption patterns of smokers and non-smokers using cross-sectional data from the LCFS. This is useful in terms of showing overall consumption patterns for both groups, but has the limitation that we can't observe people who quit smoking and this effectively means that the LCFS analysis assumes that the pattern of spending for ex-smokers is the same as for non-smokers. Therefore, the LCFS analysis evidence is supplemented with data from the Understanding Society survey (USoc, also known as the UK Household Longitudinal Study) on the alcohol consumption patterns of people who quit smoking. It is not possible to look at other areas of consumption other than alcohol in the UKHLS as the data is limited. This gives a useful indication of whether people who quit smoking increase or decrease their consumption of alcohol compared to those whose smoking status is unchanged from wave to wave.

Evidence on the consumption patterns of smokers and non-smokers from the Living Costs and Food Survey

Data from the Living Costs and Food Survey for 2021-22 (the most recent wave of the survey currently available from the UK Data Archive at the time of analysis) are used to analyse the expenditure patterns of households with positive tobacco expenditure ("smoker" households) and compare them with expenditure for households with zero tobacco expenditure ("non-smoker" households). The LCFS is a repeated cross-sectional annual survey of expenditure for approximately 5,000 households per year. Most of the expenditure information (including expenditure on tobacco) is collected using expenditure diaries over a two-week period[8].

[8] The fortnightly diary information is supplemented by questions in the LCFS regarding regular payments over a longer time period (such as utility bills) which might not be captured within a 2-week window.

Expenditure patterns are analysed using the United Nations COICOP (Classification of Individual Consumption by Purpose) which breaks down expenditure into 12 categories and 35 subcategories (listed in Appendix B of this paper). The key objective is to establish how much difference there is between expenditure patterns for non-smoking households and smoker households, both across the whole sample and at different points in the distribution of total expenditure (we analyse expenditure by quartile). The results from this analysis are shown in Section 4. Overall, COICOP patterns of consumption for smoker households excluding tobacco are very similar to non-smoker households when analysed at the household level[9]. Accordingly, the reallocation of consumer expenditure from tobacco to other goods and services is modelled under three different assumptions:

- **Scenario 1** assumes that ex-smoker households' reallocated spending follows the same pattern as current non-smoker household expenditure patterns in the LCF.
- **Scenario 2** assumes that ex-smoker households' reallocated spending follows the same pattern as current smoker household expenditure patterns *excluding tobacco spending*.
- **Scenario 3** is a population-weighted average of scenarios 1 and 2 (i.e. assuming average expenditure patterns across all LCF households, excluding tobacco spending).

Note that we assume that the money that ex-smoker households used to spend on tobacco is allocated to other goods and services rather than being saved. So total expenditure for smoker households who quit is unchanged. The results from the LCFS expenditure modelling are shown in Section 5 of this report.

Comparing the alcohol consumption of ex-smokers with current smokers using Understanding Society data

Understanding Society is a panel survey (where individuals in the survey are interviewed repeatedly at annual intervals). This makes it suitable for looking at the behaviour of people who quit smoking between one wave and the next, compared to those who continue to smoke across waves (and those who are non-smokers across waves). Unfortunately, the USoc survey does not collect a full set of expenditure information. However, USoc does include information on alcohol consumption (measured as how frequently each adult respondent drinks alcohol, if at all) and so it is possible to look at alcohol consumption for people who quit smoking as well as

[9] Note that because this analysis is at household level, it is possible that there may be larger differences between adult smokers and non-smokers at the individual level which are not clear at the household level due to aggregation across smokers and non-smokers in households with positive tobacco expenditure. Without more detailed data on individual-level tobacco expenditure, it is difficult to analyse this possibility further.

continuous smokers and non-smokers. A summary of the results of this analysis are shown in Section 4.2; full details are in a separate forthcoming report (Reed, 2025b).

3.4 Step 3: Implications of reduction in tobacco expenditure for consumer demand at purchaser prices

The empirical analysis in this report uses the **Input-Output ("I-O") tables** published by the ONS to simulate the effect of a reduction in consumer tobacco expenditure on the economy[10]. I-O tables present a simplified model of the economy showing how each product in the economy relates to inputs of other products (or alternatively, how each industry in the economy relates to other industries). The Product-by-Product I-O tables show the combination of products used to produce a set quantity (say, £1,000 worth) of each product in the economy (in combination with labour inputs, i.e. employees plus self-employed workers). The Input-Output analysis in this paper proceeds across Steps 3 to 7 of the methodology. In Step 3, the patterns of expenditure across the 35 COICOP subcategories in the LCF are mapped to 103 categories in the ONS's Classification of Products by Activity (CPA) categories which are the inputs into the Product-by-Product I-O table. This mapping is published in the ONS's *Supply and Use Tables* publication (ONS, 2020a). For example, the COICOP category C05_3 (household appliances) maps on to CPA categories C27 and C28 (electrical equipment and machinery and equipment not elsewhere classified). This mapping is performed using LCFS expenditure information under each of the three scenarios for reallocation of consumer expenditure set out in Step 2.

3.5 Step 4: Implications of consumption patterns for tax revenue

The reallocation of consumer expenditure from tobacco products to other goods and services in the economy has consequences for the amount of expenditure tax revenue received by the UK Government. Tobacco is taxed heavily to dissuade use because of the negative consequences of tobacco consumption for health and wellbeing. Tobacco taxes comprise VAT and excise duties. The ONS publishes a **supply table** (ONS 2024a) which shows, for each of the 103 CPA categories of product in the UK economy, the following information:

- Total domestic output of products at basic prices
- Total imports of goods and services
- Distributors' trading margins
- Taxes minus subsidies

[10] For a more detailed explanation of I-O model that is accessible to non-specialist readers, see Howse (2017).

- Total domestic output of products at purchaser prices.

Purchaser prices – the prices paid by final consumers – include taxes minus subsidies, whereas *basic* prices – the prices used as inputs into the I-O tables – exclude them. The relationship between supply of products at purchaser prices and supply of products at basic prices is as follows:

Total domestic output of products at basic prices

Plus imports of goods and services

Plus distributors' trading margins

Plus taxes less subsidies on products

Equals total supply of products at purchaser prices.

In Step 4, the "net tax content" of each CPA product category – defined as taxes less subsidies as a proportion of total supply of products at purchaser prices – is calculated using the supply table information on taxes and subsidies to estimate the "net tax content" of each product category. The net tax content of each CPA product category is used to calculate tax revenue from spending in each category.

In 2021 (the year used for this part of the analysis, as it is the closest match to the 2021-22 Living Costs and Food Survey data) the net tax content of each CPA product category ranged from -22.8% on rail transport services (due to the fact that the UK government provided large-scale subsidies to the rail industry in 2021 during the second Covid lockdown and its aftermath, when passenger numbers dropped sharply) to 41.1% on alcoholic beverages and tobacco products. Specifically for tobacco, we know from the evidence on excise duties and VAT as a percentage of total tobacco spending presented in Table 3.1 above that tax as a percentage of consumer spending is still higher, at 75.6%. The overall average percentage of tax across all products was 4.9%. The implication of these results is that reallocation of consumer expenditure from tobacco to other products is likely to result in a reduction in government revenues from VAT and excise duties. The results in Section 5 below show that this is indeed the case and there is a substantial shortfall in tax to be made up – this is discussed further in Section 3.13 below.

3.6 Step 5: Implications for consumer demand at basic prices

Because the Input-Output table uses consumer demand at basic prices for each product category as the input rather than consumer demand at purchaser prices, it is necessary to use the supply table to convert demand at purchaser prices (from Step 3) into demand at basic prices. This is a simple exercise which involves re-scaling demand by a factor equal to (demand at basic prices divided by demand at

purchaser prices) for each product. For example, for dairy products demand at basic prices is £5.492bn, whereas demand at purchaser prices is £13.541bn, meaning that the re-scaling factor is

(5.492/13.541) = 0.406 (to three decimal places).

3.7 Step 6: Multiplier effects of reallocation of consumer demand

Step 6 of the modelling uses GVA multipliers to show the impact on economic activity of the reallocated consumer expenditure across the range of goods and services. GVA is a proxy for Gross Domestic Product (the most commonly used measure of economic output at the national level) derived by summing output at the industry level and then removing “intermediate” outputs which are used as inputs into the production process for other industries (to avoid double counting). Thus, the calculated GVA impacts are a good proxy for the impact of eliminating tobacco consumption on overall GDP.

The GVA multipliers are derived from the ONS’s Product-by-Product Input-Output table for 2020 (the most recent year for which this configuration of the I-O table is currently available – ONS, 2024b). They are used to estimate the change in Gross Value Added (GVA) and employment costs arising from the reallocation of consumer expenditure from tobacco to other goods and services under the three scenarios. So for example, for CPA category C19 (coke and refined petroleum products), for every £1 bn of consumer expenditure, £5.355m is spent on this category of products. The GVA multiplier for coke and refined petroleum products is 0.385, meaning that the total estimated increase in GVA as a result of reallocated expenditure in this product category is:

(5.355 x 0.385) = £2.061 million.

The employment cost multipliers (also derived from the ONS’s Product-by-Product I-O table) show the increase in employee gross earnings (plus employer National Insurance Contributions and employer pension contributions) arising from the hiring of additional workers to satisfy the additional product demand in the UK economy. In Step 7 (Section 3.10) below these are converted into estimates of additional employment. For the coke and refined petroleum products example above, the employment cost multiplier is 0.202, meaning that the total estimated increase in employment costs in this category is:

(5.355 x 0.202) = £1.082 million.

The net change in GVA is calculated as the estimated increase in GVA arising from the reallocation of consumer expenditure to products other than tobacco (in a “smoke-free UK” scenario), *minus* the estimated increase in GVA arising from tobacco expenditure (in the current scenario). The net change in employment is calculated in a similar way. The total increase in GVA is derived by summing the estimated increase in GVA across all product categories, and similarly for the total increase in employment costs. The results in Section 5 show the gross and net changes in GVA, employment costs and employment, to clearly illustrate the impact of the reallocation of consumer demand

3.8 Assumptions about positive and negative impacts of tobacco expenditure falling to zero

The analysis by Buck *et al* (1995) took into account the negative consequences for the economy of a reduction in tobacco expenditure as well as the positive consequences of increased expenditure across other product categories, using an Input-Output table for 1990 which featured tobacco as a specific product category. The product classification used in the I-O tables for 2020 (the most recent year for which full tables existed at the time of writing this report) uses an extensively revised set of product categories compared to 1990, and tobacco no longer appears as a separate category in the 2020 table. However, the product-by-product I-O tables do feature tobacco combined with alcoholic beverages as a particular product category[11]. While this will not produce results that are as accurate as Buck *et al*, it is the best that can be done with the data currently available.

Employment in tobacco manufacturing in the UK fell from about 40,000 workers to 12,000 between 1970 and 1991 (Buck et al, 1995) and since then has declined to zero, or a number very close to zero. There are some jobs in tobacco distribution, product research and marketing and lobbying, but the Tobacco Manufacturers Association claimed in 2017 that total direct employment in UK tobacco companies is "around 5,000" (TMA, 2017)[12]. This means that the negative impacts of reducing tobacco consumption to zero are likely to be small, even when multiplier effects are taken into consideration. Furthermore, it is likely that by now, in the mid-2020s, this is an over-estimate and the negative employment impact of the elimination of tobacco consumption would be considerably smaller than this. This report uses the employment multiplier on tobacco and alcohol expenditure combined, which results in a total estimate of current (full-time equivalent) employment supported by legal tobacco expenditure of just over £17 billion in 2021-22 (as shown in Table 3.2 above) of around 9,600 jobs. The results in Section 5 take this into account and show the net employment effects of reallocation of tobacco expenditure to other goods and services.

[11] Note that this is an improvement from the I-O tables for 2016 which were used in Reed (2021a), which used a more aggregated product classification where tobacco was combined with food and beverages. This made it necessary to convert between industry I-O tables (which featured a disaggregated classification where tobacco was in a separate category with alcoholic beverages) and product I-O tables. For this updated analysis, the modelling is simpler because only the product I-O tables need to be used. This is discussed in more detail in Section 3.16 of this report.

[12] It is not clear from TMA (2017) whether the quoted figure of around 5,000 jobs are all based in the UK or whether it includes personnel based offshore. To the extent that the latter is the case, the negative impacts on UK employment of reducing tobacco consumption would be even smaller.

3.9 Type I and Type II multipliers

The multipliers calculated by the ONS are included in the published input-output analytical tables ONS, 2024b). These are “Type I” multipliers – these include the **indirect** boost to GVA and employment costs arising from the supply chain for each of the products in the I-O table. “Type II” multipliers are a broader type of multiplier which includes indirect effects plus **induced** effects. Induced effects are “second round” effects arising from additional consumer spending from the extra people employed as a result of the indirect boost to employment. The additional employment in the supply chain gives rise to additional consumer spending because overall employment – and therefore the total amount of disposable income – in the economy has risen. Type II multipliers are bigger than Type I multipliers because they include induced effects as well as indirect effects.

ONS does not currently publish Type II multipliers for the UK economy because of concerns about the robustness of the induced effects (the assumptions underlying I-O analysis and Type I and Type II multipliers are explained in Section 3.12 below). Therefore, the multiplier effects included in this paper are based on Type I multipliers only, and should be viewed as a conservative estimate of the potential total effects of consumer demand reallocation arising from a smokefree UK.

3.10 Step 7: “First round” GVA and tax receipt effects

The Type I multipliers in the I-O tables are used to estimate the GVA impacts of the reallocation of consumer expenditure from tobacco products to other goods and services in line with the three scenarios outlined above. By combining the estimates for additional output of each product category with the estimates for the tax content of each CPA product category from Step 4, it is possible to derive estimates for the amount of additional indirect tax revenue collected by the government as a result of the extra expenditure on other goods and services. This has to be balanced against loss of expenditure tax revenue from the disappearance of tobacco consumption. As explained in Section 3.5 above, because tobacco is heavily taxed compared to most other goods and services, the reallocation of spending from tobacco to other goods and services results in an overall reduction in tax receipts even when multiplier effects on additional economic output are taken into consideration. However, “second round” tax receipts resulting from the additional employment generated by the reallocation of consumer expenditure also need be taken into account; this is covered in Step 9 (Section 3.12) below. There are also other (mainly positive) fiscal impacts of the end of smoking in the UK, which are discussed in Step 10 (Section 3.13).

3.11 Step 8: Employment effects

In Step 8, the estimates of additional employee remuneration and associated costs arising from the reallocation of consumer spending from tobacco to other goods and services (derived using the employment cost multipliers in Step 6) are converted into estimates for additional employment in the economy. Total costs of employment comprise gross earnings plus employer pension contributions and employer National Insurance Contributions (NICs)[13]. Each of the 103 CPA codes corresponds to an industry or set of industries identified using the SIC2007 industrial classification (the exact mapping between CPA categories and industries is shown in Appendix C).

Data on average earnings by industry are sourced from the Annual Survey of Hours and Earnings (ASHE) – a large scale survey of employees with a detailed industry breakdown using SIC2007 industry codes (ONS 2022a). Average pension contributions for each industry category are estimated using ONS published data on the distribution of employer pension contributions by industry, derived from the ASHE survey data (ONS, 2022b). Average employer NICs payments for each industry are estimated by the author using the parameters of the National Insurance system for the 2021-22 tax year. Adding together average earnings, average pension contributions and employer NICs to give total employer costs for each industry allows us to estimate the increase in employment arising from the reallocation of consumer spending from tobacco to other goods and services. To give a worked example, in the CPA category D352 (gaseous fuels, steam and air conditioning supply), the total estimated increase in employment costs per £1bn of expenditure reallocated from tobacco consumption to other goods and services is £2.268 million. The average cost of employment of workers in this industry (estimated from ASHE) is £56,710. This means that the total estimated number of additional jobs in this industry is:

(£2.268m / £56,710) = 512 jobs.

The employment effects estimated in this report are based on two different measures: (i) a headcount measure and (ii) a full-time equivalent (FTE) measure. According to the UK Labour Force Survey, around 27 per cent[14] of UK employment is part-time (defined as less than 30 hours per week) rather than full-time (30 hours or more per week). FTE employment estimates are lower than headcount estimates because they treat part-time jobs as fractions of full-time jobs and report a result for the increase in employment as if it were entirely composed of full-time employees. Currently the ONS does not produce regular estimates of FTE multipliers in its I-O

[13] Note that *employee* NICs and employee pension contributions are deducted from gross earnings, so these should not be included in the calculation as gross earnings is already included – to include them would lead to double counting. By contrast, employer NICs and employer pension contributions are separate from gross earnings.

[14] This statistic is based on the author's analysis of the Labour Force Survey for January-March 2024, using the SUMHR variable (total hours worked).

table publications. However, the analysis in this report constructs FTE multipliers using the SIC codes in the LFS microdata, adjusting the headcount employment multipliers to take account of the proportion of full-time employees in each industry.

3.12 Step 9: Impact of additional employment on tax receipts

The results from Step 8 for additional employment by industry are used to estimate additional tax receipts across four categories of tax: (a) income tax, (b) employee National Insurance Contributions (NICs), (c) employer NICs, and (d) VAT and excise duties. The revenue estimates for income tax and NICs are calculated based on average annual earnings of employees in each industry. The VAT estimates are based on assumptions from the House of Commons Library (2012) about the marginal propensity to consume earnings from additional employment across the economy and the implications for indirect tax receipts.

The estimates in this paper for additional tax revenue arising from extra employment will be biased downward for two reasons:

(1) The combined income tax and NICs schedule is progressive, with marginal rates rising as income increases. This means that using average earnings in each industry will understate the average additional tax receipts arising from increased employment in that industry.
(2) The analysis does not take into account reduced expenditure on Universal Credit (or tax credits for claimants still on the legacy tax credit system) due to increased gross earnings. This will result in a reduction of spending on these transfer payments leading to higher *net* tax revenues.

The reason both of these factors are not taken into account in the modelling is due to the technical complexity of accounting for non-linearities in the tax and NICs system and modelling the means test for Universal Credit and tax credits. The use of additional tax revenue estimates that are downward biased means that the results from this paper are likely to be a conservative estimate of the potential gains to the public finances from achieving a smokefree UK.

3.13 Step 10: Estimating the overall impact of a smokefree UK on the public finances

As shown in the results in Section 5 below, the high tax content of consumer spending on tobacco means that there is a substantial shortfall in tax arising from the elimination of tobacco spending in the UK. This is partly offset by additional tax revenue from consumer spending on other goods and services (taking multiplier

effects into account) as well as the increased receipts of income tax, NICs and expenditure taxes estimated in Step 9. However, this still leaves a revenue gap of approximately £9 billion according to the results in Section 6.

One response to the resulting shortfall in the public finances arising from the elimination of tobacco consumption in the UK would be to raise other taxes to fill the gap. This is one option explored by Buck et al (1995) who model an increase in VAT rates (and the consequent multiplier effects arising from reduced demand at basic prices, i.e. after tax) to restore fiscal balance. However, achieving a smokefree UK would have a number of other benefits to the public finances, including:

- Savings to the NHS because it would no longer have to bear the costs of treatment for a range of health conditions related to smoking (DHSC, 2017);
- Savings in local authority expenditure on social care (Reed, 2021);
- Increased tax revenue arising from higher employment and earnings for ex-smokers (Reed, 2023);
- Increased tax revenue arising from lower probability of premature mortality for working age employed people (Reed, 2024);
- Lower benefit payments for chronic ill-health arising from premature morbidity caused by smoking (Reed, 2024).

Set against this, longer life expectancy arising from the elimination of smoking would lead to higher state pension payments (Reed, 2024).

Section 6 contains detailed calculations of the overall impact of achieving a smokefree UK on the public finances. To summarise the results, taking all these public finance impacts into account, we find that the savings to the Exchequer from eliminating smoking in the UK are more than enough to close the tax gap arising from the absence of tobacco duty receipts. This also fits with the UK Government's longer-term strategy of phasing out reliance on tobacco receipts by 2030 (Cabinet Office/DHSC, 2019).

3.14 Limitations of input-output modelling

It is important to note that input-output modelling has significant limitations as an approach to modelling the economic impact of changes to consumer behaviour. In particular the I-O framework assumes (a) fixed prices for goods and services, and (b) a fixed production technology. These may be reasonable assumptions in the short run (e.g. one or two years) but they become increasingly inaccurate over longer time frames. However, there is no other currently available methodology for modelling the economic impacts of consumer expenditure shifts across a whole set of different

product categories (due to the complexity involved in relaxing the fixed-price and fixed-technology assumptions)[15].

3.15 Steady-state analysis

It should be noted that the methodology for this report models the impact of moving from annual expenditure of £18.3bn on tobacco to zero as two "snapshots" – in other words we do not try to model the dynamics of the transition to a smokefree UK or how long it would take, or which smokers would quit first, what the mechanism would be, etc. If the transition path to a smokefree UK were modelled using a dynamic approach this would probably produce different a different pattern of results in each time period, but a dynamic modelling strategy would be much more complex to implement.

3.16 Methodological changes in this update

There are two changes to the methodology in this report compared to the previous analysis of the economic impacts of a smokefree UK in Reed (2021a), which are driven by changes in the published ONS data used in the analysis. These are as follows:

1. ONS now publishes the product-by-product input-output table using the 103-category CPA breakdown rather than the more aggregated 64-category breakdown it used previously. This means that it is no longer necessary to convert expenditure at basic prices from the CPA category breakdown to the 64-category breakdown, nor do we need to use industry-by-industry I-O tables; the modelling can be completed using product-by-product I-O tables only. This considerably simplifies the methodology required in Step 6.
2. The new analysis no longer uses data from the Annual Business Survey (ABS) because the ONS's summary of the ABS data by industry no longer reports average earnings by industry. Instead, the new analysis uses average earnings data by industry from the ASHE data and estimates total costs of employment by industry using the ONS's analysis of employer pension contributions by industry and our own estimate of employer NICs payments by industry (as explained in Step 8 above. This methodological change is likely to improve the accuracy of the results because the ABS breakdown was only published at 2-digit SIC level whereas the ASHE breakdown is at 4-digit SIC

[15] Alternative models which allow for flexible prices and/or forecast changes in technology to exist (e.g. Dynamic Stochastic General Equilibrium models) but these models normally assume that the consumption aspect of the economy is a single, undifferentiated and homogeneous product.

level (which is important for manufacturing industries in particular where the CPA industry mappings are quite detailed).

4 Expenditure patterns of non-smoker and smoker households in the Living Costs and Food Survey

4.1 Overall expenditure

Table 4.1 shows the expenditure patterns for “non-smoker” households (those with zero expenditure on tobacco) and “smoker” households (those with positive expenditure on tobacco) in the 2021-22 Living Costs and Food Survey. The expenditure patterns *exclude* tobacco purchases (which are an average of 6.3% of total expenditure for smoker households); rather, the aim is to establish the extent to which expenditure patterns for smoker and non-smoker households are similar, when tobacco expenditure is discounted. The COICOP categories in the Table are listed in order of share of total expenditure for non-smokers, ranging from food (10.8%) to hospital services (0.0%).

Table 4.1 shows that for most of the 35 COICOP expenditure categories, average expenditure for smoker households as a proportion of total (non-tobacco) expenditure in the LCF is within 1 percentage point of non-smoker households. The exceptions are as follows:

- Rental payments for households who rent their home (11.0% of expenditure for smoker households compared to 8.8% for non-smoker households).
- Imputed rental payments for households who own their own home (either outright or with a mortgage)[16]; 4.9% of expenditure for non-smoker households compared to 3.7% for smokers).

With these two exceptions, the expenditure profile for smoker and non-smoker households looks fairly similar and can justify the approach taken here of using three different expenditure scenarios for how ex-smokers allocate the spending power that is freed up when they quit smoking. These scenarios correspond to the three columns of the table as shown in the bottom row of Table 4.1. (The rightmost column, corresponding to scenario 3, shows a weighted average of the non-smoker and smoker household expenditure patterns. Approximately 17 per cent of households in the LCF have positive tobacco expenditure, so scenario 3 is closer to scenario 1 than scenario 2).

[16] Treatment of housing payments for owner-occupiers is complicated by two factors. One is that mortgage repayments involve an element of saving as well as consumption (due to the house being an asset as well as a consumption good). The other is that households who have paid off their mortgage (i.e. outright owners) are consuming housing services even though they do not make any explicit payments to do so. Therefore, the COICOP classification includes an imputation of rental payments for owner-occupier households as a component of total consumption.

Table 4.1. Breakdown of overall expenditure by COICOP category, non-smoker and smoker households (excluding expenditure on tobacco products for smokers), Living Costs and Food Survey 2021-22

		Percentage of total spending		
COICOP Code	**Description**	**Non-smokers**	**Smokers**	**Weighted average**
C01_1	Food	11.6%	12.0%	11.7%
C07_2	Operation of personal transport equipment	9.4%	10.0%	9.5%
C12	Miscellaneous goods and services	8.8%	7.8%	8.7%
C04_1	Actual rentals for households	8.8%	11.0%	9.0%
C11	Restaurants and hotels	7.4%	7.0%	7.4%
C07_1	Purchase of vehicles	6.7%	6.5%	6.6%
C04_5	Electricity, gas and other fuels	5.5%	5.7%	5.5%
C04_2	Imputed rentals for households	4.9%	3.7%	4.8%
C05_1	Furniture, furnishings, carpets etc	3.9%	3.5%	3.9%
C09_3	Other recreational equipment etc	3.6%	3.6%	3.6%
C09_4	Recreational and cultural services	3.2%	3.0%	3.2%
C03_1	Clothing	3.1%	3.0%	3.1%
C09_6	Package holidays	2.3%	1.8%	2.2%
C04_4	Water supply and miscellaneous dwelling services	2.3%	2.0%	2.2%
C04_3	Maintenance and repair of the dwelling	2.2%	1.4%	2.1%
C08_3	Telephone and telefax services	2.1%	2.7%	2.2%
C02_1	Alcoholic beverages	1.9%	2.8%	2.0%
C05_6	Goods and services for household maintenance	1.4%	1.4%	1.4%
C01_2	Non-alcoholic beverages	1.2%	1.6%	1.2%
C10	Education	1.1%	1.1%	1.1%
C07_3	Transport services	1.1%	1.0%	1.1%
C06_1	Medical products, appliances and equipment	1.0%	0.8%	1.0%
C06_2	Outpatient medical services	0.9%	0.6%	0.9%
C09_5	Newspapers, books and stationery	0.9%	0.9%	0.9%
C09_1	Audio-visual, photo and info processing equipment	0.9%	1.3%	1.0%
C09_2	Other major durables for recreation and culture	0.9%	0.7%	0.9%
C05_3	Household appliances	0.7%	0.7%	0.7%
C05_5	Tools and equipment for house and garden	0.6%	0.8%	0.6%
C03_2	Footwear	0.4%	0.5%	0.4%
C05_2	Household textiles	0.4%	0.5%	0.4%
C05_4	Glassware, tableware and household utensils	0.3%	0.2%	0.3%
C08_2	Telephone and telefax equipment	0.2%	0.4%	0.2%
C08_1	Postal services	0.2%	0.1%	0.2%
C06_3	Hospital services	0.0%	0.0%	0.0%
	Total consumption	100.0%	100.0%	100.0%
	Expenditure patterns correspond to scenario:	**1**	**2**	**3**

Source: Landman Economics analysis of Living Costs and Food Survey 2021-22 data

4.2 Savings rates for smokers and non-smokers

An important implication of the modelling assumptions used in this report is that ex-smokers switch their consumption from tobacco products to other goods and services while leaving their overall level of expenditure unchanged. Another possibility is that overall expenditure falls because ex-smokers save some (or all) of the money that they would have been spending on cigarettes, or use the money for repayment of debt. Table 4.2 shows average (mean) expenditure and income levels for non-smoker and smoker households in the 2021-22 LCF data. On average, non-smoker households' expenditure is equal to 72 per cent of their household income; the remaining 28 per cent is not spent (and so is saved, or used for paying interest on and repayment of debt). The corresponding figure for smoker households is expenditure equal to 78 per cent of income, with 22 per cent used for savings and debt interest and repayments. The overall savings rates for smoker and non-smoker households are reasonably similar, making us more confident in the assumption that ex-smokers' switch of spending from tobacco to other goods and services leaves their overall expenditure unchanged.

Table 4.2. Average expenditure and income for non-smoker and smoker households, Living Costs & Food Survey 2021-22

	Non-smoker households	Smoker households
Average weekly expenditure	£547	£532
Average weekly disposable income	£764	£686
Ratio of average expenditure to average income	0.72	0.78

Source: Landman Economics analysis of Living Costs and Food Survey 2021-22 data

It should be noted that the savings rates for the 2021-22 LCF are much higher than the equivalent savings rates for the 2018-19 FRS (which were around 15 per cent for non-smokers and 17 per cent for smokers). It is likely that this is a result of Covid-related lockdowns and restrictions in the early part of the 2021-22 financial year. Analysis of aggregate data on the household savings ratio from the Office for National Statistics for the years 2020-22 (ONS, 2025) show that the household savings ratio was around 6 per cent in 2019, 17 per cent in 2020, 13 per cent in 2021 and 6 per cent in 2022. Hence, Covid-19 seems to have had a substantial impact on the savings ratio, pushing it up. It is important to note that the aggregate savings ratio for 2021 is significantly lower than the LCF household savings rate for 2021-22. However, the LCF figures include debt repayments and interest paid on outstanding debts as well as savings, whereas the ONS figure is for savings only.

4.3 Comparison of alcohol consumption for smokers, non-smokers and people who quit smoking between waves in the Understanding Society data

This section summarises the results from an analysis of alcohol consumption for people who quit smoking between waves of the Understanding Society (also known as UK Household Longitudinal Study, or UKHLS) panel dataset, and whether quitters change their alcohol consumption behaviour compared with people who continue to smoke from wave to wave, or people who didn't smoke in either wave. The full analysis is written up in a separate report (Reed 2025).

The analysis use uses data from Waves 11, 12 and 13 of Understanding Society (with data collected in 2019-20, 2020-21 and 2021-22 respectively)[17]. The survey respondents for Wave 12 and Wave 13 are classified into four categories:

1) **Still smoking** – smoked in wave (t-1) and wave t
2) **Quitters** – smoked in wave (t-1), but not in wave t
3) **Starters** – didn't smoke in wave (t-1) but did smoke in wave t
4) **Still not smoking** – didn't smoke in wave (t-1) or wave t

Where "wave t" is wave 12 or wave 13 of UKHLS, and "wave (t-1)" is wave 11 or wave 12, respectively.

The question on smoking frequency in Waves 11, 12 and 13 of UKHLS asks adults in the survey how often they drank alcohol in the last year. The five possible responses are:

- Never
- Once a month
- 2 to 4 times per month
- 2 to 3 times per week
- 4 or more times per week.

The results show that abstention from alcohol increased across the two waves of UKHLS for three of the four groups – respondents whose smoker status did not change over the two waves, and quitters. The only group who were less likely to abstain in wave t compared to wave (t-1) were people who started smoking. This group were also more likely to drink twice or more per week (or four times or more per week) in the second wave, whereas for the other groups there was decreased frequency of alcohol consumption at this level. The quitters were more likely to decrease their alcohol consumption than any of the other three groups.

[17] Each wave of Understanding Society has a 2-year interview period.

Meanwhile, people who quit smoking between waves of Understanding Society are more likely to reduce their alcohol consumption than any other group. 28 per cent of quitters drank less frequently in Wave t of UKHLS compared to Wave t-1, compared to just under 20 per cent of those still smoking, just under 18 per cent of people who didn't smoke in either wave, and 16.5 per cent of starters. Meanwhile, only 13 per cent of quitters increased their drinking frequency across the two waves compared with between 15 per cent and 16 per cent of people whose smoking status didn't change, and over 23 per cent of starters.

The results from this analysis suggest that reductions in smoking prevalence are likely to be associated with reductions in alcohol consumption. Given that frequent consumption of alcohol is linked to economic costs (Institute of Alcohol Studies, 2024), this means that there are likely to be additional indirect savings from moving to a smokefree UK, as alcohol consumption is likely to decrease when smoking prevalence decreases. However, we do not attempt to model the cost savings from reduced alcohol consumption as part of this report.

5 Economic impact of shifting consumer expenditure from tobacco to other goods and services

This section shows the results from the main part of the analysis – the final economic impact in 2021/22 if expenditure were reduced to zero and consumer expenditure were shifted to other goods and services. To simplify this section we present only the results for Scenario 3 as set out in Section 3.3 – where expenditure patterns for ex-smokers are assumed to be a weighted average of expenditure for people who have never smoked and expenditure for current smokers (excluding tobacco).

5.1 Overall Impacts on GVA, employment costs and employment

Table 5.1 shows the estimated impacts on GVA, employment costs and employment after taking account of the indirect effects (steps 1 to 8 in Table 3.1). In all three scenarios, I assume that 100% of tobacco spending – estimated at £18.256 billion in 2021/22 – is reallocated to consumer spending. For each result, the table shows three columns, from left to right:

- Left hand column: the impact of tobacco expenditure on GVA, employment costs and employment in the **baseline** scenario (after taking the multiplier impacts of tobacco expenditure into account).
- Middle column: the impact of the expenditure reallocated from tobacco to other goods and services in the **smoke-free** scenario.
- Right hand column: the **net change** in GVA, employment costs and employment (equal to impact in the smoke-free scenario minus impact in the baseline scenario.

Table 5.1. Implications of a smokefree UK for Gross Value Added, costs of employment, and headcount employment (Scenario 3)

	£ billions		
Result	**Baseline**	**Smoke-Free**	**Net change (smoke-free minus baseline)**
Tobacco expenditure (gross)	18.256	0.000	**-18.256**
Expenditure on other services (gross)	0.000	18.256	**18.256**
Demand at basic prices (net of tax)	4.161	12.761	**8.600**
Financial Impacts (including multiplier effects)			
GVA impact	3.362	16.014	**12.652**
Employment cost impact	2.591	11.213	**8.622**
Employment impacts (including multiplier effects	**Number of workers**		
Employment impact (headcount)	11,158	305,813	**294,655**
Employment impact (FTE)	9,630	225,139	**215,509**

Source: author's calculations based on methodology in Section 3

The results from Table 5.1 show that the elimination of tobacco consumption in the UK is forecast to lead to a net increase in demand at basic prices of approximately £8.6 billion. Multiplier effects lead to a total increase in GVA of around £12.65 billion. This is equivalent to around 0.5 per cent of UK Gross Domestic Product for 2022. Meanwhile, the forecast net increase in total employment remuneration (i.e. the wage bill plus employer NICs payments) is around £8.6 billion. The forecast increase in the headcount employment total is approximately 295,000 workers. Measured as full-time equivalent employment, the estimated net increase is just over 215,000 workers.

5.2 Comparison with previous results

Compared to the previous results for GVA, costs of employment and headcount employment in the earlier version of this report (Reed, 2021), the results show an increase in initial tobacco expenditure of about 17% (in nominal terms) between 2018-19 and 2021-22. The estimated increase in GVA is around 3% lower than in the previous results, while the increase in employment renumeration is around 24% lower and the increase in headcount (and full-time equivalent) employment is around 35% lower. The smaller effects for employment costs and employment headcount are due to two factors. First, there are some methodological changes in the way the relationship between GVA and employment costs is calculated in the new version of this report, which reduces the estimated effect of an increase in GVA on employment

costs. Second, employment costs per worker increased between 2018-19 and 2021-22 in real terms, which has reduced the estimated headcount employment effect of a given increase in employment costs.

5.3 The impact on tax receipts

Table 5.2 shows the results from this analysis for the gross and net “tax gaps” arising from the disappearance of tobacco tax revenue if consumer expenditure on tobacco were to cease. The disappearance of tobacco tax revenue leaves a gross shortfall in tax revenue of just over £12.9bn, which comprises the disappearance of £10.1bn of tobacco duty receipts plus a £2.8bn fall in VAT receipts. Just under £800 million of this is filled by the additional indirect taxes arising from the reallocation of consumer spending to other goods and services. A larger sum of tax revenue – around £3.1 billion – is raised from increased income tax, NICs and indirect tax payments resulting from the additional employment shown in Table 6.1. This means that overall, around 30 per cent of the gross tax gap is recovered through reallocation of consumer expenditure and multiplier effects, leaving a remaining net tax gap of approximately £9 billion per year.

Table 5.2. Gross and net "tax gap" arising from reallocation of consumer spending from tobacco to other goods and services (£bn): Scenario 3

Gross "tax gap" from disappearance of tobacco tax revenue	12.901
Additional indirect taxes from reallocation of consumer spending to other goods and services	0.799
Increase in tax payments resulting from additional employment	3.059
Net "tax gap"	9.042

Source: author's calculations based on methodology in Section 3

6 The overall public finance impacts of a smokefree UK

The results in Section 5 show that when only the direct effects of consumers switching spending from tobacco to other goods and services are considered, there is a net tax gap of approximately £9 billion. However, if the UK were to become smokefree then there would be a range of other impacts on the public finances which are mainly positive (i.e. they would increase tax revenues and/or reduce public spending and pressures on public spending). Table 6.1 sets out estimates of these other public finance impacts for the same using the most up-to-date evidence for the UK. These costs are estimated using Version 2.3 of the ASH Cost Benefit and Public Finances model of smoking (Reed, 2025). The table starts with the net tax gap from Table 5.2 and subtracts the following other public finance impacts as follows:

- The total annual current cost of smoking to the NHS, estimated at around £1.8bn based on the estimate in DHSC's Tobacco Control Plan (DHSC, 2017), adjusted to reflect falls in smoking prevalence and estimates from Public Health England (2021) for hospital admissions attributable to smoking.
- The total annual cost of smoking to local authority social care budgets, estimated at just over £1.1bn based on work for ASH by Reed (2021) and updated to reflect falls in smoking prevalence.
- Increased tax receipts of around £6.5 billion per year due to improvements to productivity arising from higher employment and earnings of non-smokers compared to smokers, controlling for other factors which affect labour market outcomes (Reed, 2023).
- Increased tax revenue of around £400 million per year arising from lower probability of premature mortality for employed people of working age (Reed, 2024).
- Reductions in spending on social security benefits due to increased employment and reduced premature morbidity caused by smoking, as well as higher earnings (and hence lower earnings) for people in work. This is estimated at just under £2.2 billion per year, taking into account increased pension payments due to lower levels of premature mortality (Reed, 2024).

Table 6.1 summarises these public finance impacts of reducing smoking prevalence to zero. All figures are deflated to 2021-22 prices to make the estimates comparable with the results in Tables 5.1 and 5.2. Taking these impacts into account produces a gain of almost £12 billion per year to the public finances which more than offsets the £9bn tax gap, resulting in a net boost to the public finances of just over £2.9 billion. This suggests that a smokefree strategy is (more than) self-financing in the long run.

Table 6.1. Long-run estimate of overall long-run public finance impacts of a smokefree UK based on latest available data (scenario 3), £bn, 2021-22 prices

Item	Estimate
Starting net tax gap (from Table 5.2)	9.042
Public service impacts:	
Reduction in NHS costs	1.804
Reduction in local authority social care costs	1.131
Fiscal impacts of productivity improvements:	
Extra tax revenue from higher productivity (higher employment and earnings)	6.530
Extra tax revenue from reduced premature mortality	0.335
Reduced benefit spending due to higher employment and lower in-work benefit spending	2.167
Total public finance impacts (public service impacts plus fiscal impacts):	**11.967**
Starting net tax gap minus other impacts = Final tax gap	**-2.925**

Source: author's calculations based on methodology in Section 3

Data sources: as specified in main text

It is important to note that the public finance impacts in Table 6.1 will only be partially realised in the short run; if the rate of smoking prevalence declines to zero there will nonetheless continue to be costs to the NHS and social care systems, and productivity losses for ex-smokers, for some years to come, until these 'legacy' costs eventually disappeared. Therefore Table 7.1 has been labelled 'long-run estimate' to make it clear that these calculations do not include short-term and medium-term transitional and legacy effects.

Finally, it is worth noting that the reduced cost pressures on the NHS and social care systems arising from a smokefree UK are unlikely to result in 'bankable' savings in public spending because the cost pressures on health and social care spending are severe. Rather, it is more likely that resources will be freed up to spend more on other health and social care needs which are not smoking-related. However, this still represents an implicit improvement in the government's fiscal position because of a reduction in cost pressures on these services and productivity gains from improvements in population health.

7 Headline estimates for 2024

This section presents updated headline estimates for 2024 based on the latest calculations from the ASH Cost Benefit and Public Finances Model of smoking (Reed, 2025), which uses the calendar year 2024 as its current default timeframe. To update the estimates to 2024 levels, the 2021-22 estimates from Section 5 are adjusted in line with the estimated real-terms change in tobacco expenditure between the 2021-22 tax year and 2024 calendar year. Reductions in smoking prevalence and the amount of tobacco purchased per smoker means that total tobacco expenditure is forecast to reduce by around 23 per cent in nominal terms between 2021-22 and 2024[18]. This means that the estimates of net impact for 2021-22 (taken from Table 5.1 above) are scaled down as shown in the right-hand column of Figure 8.1 below. However, the estimated headline impacts of a smokefree UK for 2024 are still substantial; a GVA increase of just under £10 billion and an employment impact of just over 185,000 jobs (or 135,000 full-time equivalents).

Figure 8.1. Headline estimates of the impact of introducing a smoke-free UK in calendar year 2024

Result	Net impact (2021-22 tax year)	Net impact (2024 calendar year)
GVA impact (£bn)	12.652	9.719
Employment cost impact (£bn)	8.622	6.623
Employment impact (headcount)	294,655	185,762
Employment impact (FTE)	215,509	135,865

Source: calculations in Section 5, adjusted for change in smoking prevalence and price inflation between 2021-22 tax year and 2024 calendar year.

[18] The real-terms reduction in tobacco expenditure between 2021-22 and 2024, taking CPI inflation into account, is forecast to be around 37 per cent.

8 Regional breakdown of employment impacts

The estimates presented so far in this paper have been at the national (United Kingdom) level. This section presents regional breakdowns of the national employment impacts for 2024 shown in Section 7. Ideally, the methodology for estimating regional employment impacts of achieving a smokefree UK would mirror the methodology for national estimates, using regional equivalents of the data sources listed in Section 3. Unfortunately, this is not possible because the Office for National Statistics does not publish regional Input-Output tables[19]. As an alternative, this report uses estimates based on two different data sources for which regional breakdowns are available:

a) Total tobacco spending in the UK. The regional breakdown of tobacco spending is estimated using data from the Living Costs and Food Survey for 2021-22 (which has regional identifiers for each household in the survey).
b) Employment in the industries which benefit from ex-smokers switching expenditure from tobacco products to other goods and services. This is estimated by taking the pattern of employment impacts by industry (using the results from Step 8 of the methodology in Section 3) and disaggregating by workplace region using the data in the April 2021-March 2022 Labour Force Survey.

Estimates (a) and (b) should be viewed as approximations of the true regional employment effects only. In the absence of regional I-O tables, they are the best estimates available. Table 8.1 shows the regional breakdown of employment impacts using regional tobacco spending from the LCF, which Table 8.2 shows the regional breakdown using regional employment from the LFS. There are some significant differences between the two tables. For example, the estimated employment impacts in Scotland, Wales and Northern Ireland are much larger in Table 8.1, whereas the estimated impacts in London, South East England and North West England are much larger in Table 8.2.

[19] The Scottish Government, Welsh Government and the Northern Ireland Statistics Research Agency (NISRA) publish I-O tables for Scotland, Wales and Northern Ireland respectively, but there is no equivalent data for the English regions.

Table 8.1. Regional breakdown of employment impacts of a smokefree UK, 2024: estimates based on pattern of tobacco spending

Region	Tobacco spend (£m)	percentage	employment impact (headcount)	employment impact (FTE)
England:				
North East	171.3	4.1%	7,544	5,518
North West	332.0	7.9%	14,619	10,692
Yorkshire and the Humber	320.6	7.6%	14,117	10,325
East Midlands	270.4	6.4%	11,906	8,708
West Midlands	494.8	11.7%	21,787	15,935
Eastern	288.2	6.8%	12,690	9,281
London	459.7	10.9%	20,241	14,804
South East	545.6	12.9%	24,024	17,571
South West	483.9	11.5%	21,307	15,584
Wales	251.1	6.0%	11,056	8,087
Scotland	463.0	11.0%	20,387	14,911
N Ireland	138.2	3.3%	6,085	4,450
Total	**4,218.8**	**100.0%**	**185,762**	**135,865**

Table 8.2. Regional breakdown of employment effects of a smokefree UK, 2024: estimates based on employment in industries affected by switch in consumer spending from tobacco to other goods and services

Region	employment percentage	employment impact (headcount)	employment impact (FTE)
England:			
North East	4.7%	8,701	6,364
North West	10.1%	18,847	13,785
Yorkshire and the Humber	8.5%	15,754	11,522
East Midlands	7.0%	12,956	9,476
West Midlands	8.6%	15,898	11,627
Eastern	4.3%	7,934	5,803
London	14.5%	26,964	19,721
South East	16.9%	31,341	22,922
South West	9.4%	17,539	12,828
Wales	5.2%	9,661	7,066
Scotland	8.4%	15,647	11,444
N Ireland	2.4%	4,521	3,307
Total	**100.0%**	**185,762**	**135,865**

9 Conclusions

Based on rigorous and commonly used input-output modelling techniques, combined with the most up-to-date available evidence on the costs of smoking, this report shows that reducing smoking prevalence in the UK to zero would deliver significant economic benefits. It is forecast that achieving a smokefree UK – in which smoking prevalence in the population was reduced to zero – in 2024 – would increase UK economic output (measured using Gross Value Added) by just under £10 billion per year, and increase employment by just over 135,000 full-time equivalent jobs.

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Appendices

Appendix A. Results from Sections 5 and 6 under three different assumptions about the consumption behaviour of ex-smokers

This Appendix shows the results from Section 5 and 6 for the three different presented for the three different scenarios representing different assumptions about how ex-smokers reallocate their expenditure (as set out in Section 3.3). **Scenario 3** – where expenditure patterns for ex-smokers are assumed to be a weighted average of expenditure for people who have never smoked and expenditure for current smokers (excluding tobacco) is the scenario used for the main results in Section 5 and 6.

A.1 Overall Impacts on GVA and employment

Table A.1. Implications of a smokefree UK for Gross Value Added, costs of employment, and headcount employment, all 3 scenarios

	Scenario		
	1	**2**	**3**
Initial Tobacco expenditure (2021-22) £bn	18.256	18.256	18.256
Reduction in spending on tobacco	100%	100%	100%
Increased spending on other goods and services (consumer prices)	18.256	18.256	18.256
Increased demand at basic prices (£bn)	8.618	8.465	8.600
Net increase in GVA (£bn)	12.655	12.627	12.652
Net increase in employment costs (£bn)	8.617	8.662	8.622
Net increase in number of people employed (headcount)	294,765	293,810	294,655
Net increase in number of people employed (full-time equivalents)	215,368	216,596	215,509

The results from Table A.1 show that the elimination of tobacco consumption in the UK is forecast to lead to an increase in demand at basic prices of approximately £8.6 billion (in Scenarios 1 and 3) and £8.5 billion (in Scenario 2). Multiplier effects lead to

a total increase in GVA of around £12.65 billion in Scenarios 1 and 3 and just over £12.6 billion in Scenario 2. Meanwhile, the forecast increase in total employment remuneration (i.e. the wage bill plus employer NICs payments) ranges from £8.6 billion to £8.7 billion. The forecast increase in the headcount employment total is approximately 295,000 workers in each scenario. Measured as full-time equivalent employment the estimated increase is just over 215,000 workers in each scenario.

A.2 The impact on tax receipts

Table A.2. Gross and net "tax gap" arising from reallocation of consumer spending from tobacco to other goods and services (£bn), all 3 scenarios

	Scenario		
	1	**2**	**3**
Gross "tax gap" from disappearance of tobacco tax revenue	12.901	12.901	12.901
Additional indirect taxes from reallocation of consumer spending to other goods and services	0.793	0.843	0.799
Increase in tax payments resulting from additional employment	3.056	3.088	3.059
Net "tax gap"	9.052	8.970	9.042

Appendix B. Estimate of consumer spending on cigarettes and handrolling tobacco for 2021-22

Table B.1 shows the estimate of total consumer spending on cigarettes and handrolling tobacco (HRT) for 2021-22 and how this is derived.

Table B.1. Derivation of estimate of total consumer spending on cigarettes and handrolling tobacco for 2021-22

	£bn	£bn	£bn	
	Cigs	**HRT**	**Total**	**Source**
Total legal spending	12.202	4.859	17.061	Calculations in Reed (2025) based on HMRC (2024a) and cigarette and HRT price data from ONS (2024c)
Total VAT	2.034	0.810	2.844	Author's estimate based on total legal spending
Total excise duty	7.667	2.390	10.057	HMRC (2024a)
Total spending (basic prices)	2.501	1.659	4.161	Total legal spending minus VAT and excise duties
basic price as % of total price	20.5%	34.1%	24.4%	
Tax as % of total spending	79.5%	65.9%	75.6%	
Total illicit spending	0.405	0.79	1.195	Estimated based on HMRC estimates of size of illicit tobacco market in HMRC (2024b)
Total spending (legal + illicit)			18.256	
LCF spending (2021-22), grossed			4.219	Author's estimates based on LCF 2021-22
multiplier			4.327	Total spending estimate divided by LCF spending estimate

Appendix C. COICOP expenditure categories

Table C.1. COICOP expenditure categories

Code	Description
C01_1	Food
C01_2	Non-alcoholic beverages
C02_1	Alcoholic beverages
C02_2	Tobacco
C03_1	Clothing
C03_2	Footwear
C04_1	Actual rentals for households
C04_2	Imputed rentals for households
C04_3	Maintenance and repair of the dwelling
C04_4	Water supply and miscellaneous dwelling services
C04_5	Electricity, gas and other fuels
C05_1	Furniture, furnishings, carpets etc
C05_2	Household textiles
C05_3	Household appliances
C05_4	Glassware, tableware and household utensils
C05_5	Tools and equipment for house and garden
C05_6	Goods and services for household maintenance
C06_1	Medical products, appliances and equipment
C06_2	Outpatient medical services
C06_3	Hospital services
C07_1	Purchase of vehicles
C07_2	Operation of personal transport equipment
C07_3	Transport services
C08_1	Postal services
C08_2	Telephone and telefax equipment
C08_3	Telephone and telefax services
C09_1	Audio-visual, photo and info processing equipment
C09_2	Other major durables for recreation and culture
C09_3	Other recreational equipment etc
C09_4	Recreational and cultural services
C09_5	Newspapers, books and stationery
C09_6	Package holidays
C10	Education
C11	Restaurants and hotels
C12	Miscellaneous goods and services

Appendix D. Mapping of industry codes in ASHE wage data to Input-Output product categories

This table is too large to fit comfortably in the report document. See companion spreadsheet “Appendix D”