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# The Cost of Smoking in Wales

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# Executive Summary

## Background and strategic context

Wales has made substantial progress in tobacco control over recent decades and has a strong policy commitment to achieving a smoke-free Wales by 2030. However, around one in seven adults still smoke, with smoking prevalence remaining significantly higher in more deprived communities. Smoking continues to impose substantial burden on health services, the economy, and the environment in Wales, yet the full cost of smoking is not routinely captured in one place. Existing Welsh evidence on the cost of smoking is outdated and often based on limited methods, reducing its relevance for current policy challenges. At a time of constrained public finances and persistent health inequalities, an up-to-date and comprehensive assessment of the costs of smoking is essential to inform policy, support prevention efforts and guide equitable action across Wales.

This work helps delivery of Public Health Wales' Long Term Strategy and Welsh Government policies, including the ambition of a smoke-free Wales. It provides a detailed breakdown of smoking-related costs across seven key domains: hospital admissions, outpatient attendance, GP services, prescription services, social care, productivity loss, and environmental impact. Costs are disaggregated by sex, deprivation quintile and local authority, providing valuable insights into scale, drivers, and distribution of smoking-related harms across Wales and strengthening the case for early prevention and targeted intervention. While the analysis focuses on tobacco smoking, further work could also examine the health and economic impacts of e-cigarettes and vaping, which can also cause harm.

## Key findings

### The overall cost of smoking

- **Smoking costs Wales £1.56 billion every year**, a substantial financial burden across health and social care, productivity, and environmental domains.
- The **annual cost of smoking** amounts to £499 per person, £622 per adult, and £4,661 for every adult who smokes in Wales.
- **Smoking-related annual costs** were estimated at £670.0 million for lost productivity, £241.2 million for environmental impacts, £210.2 million for hospital admissions, £196.2 million for social care, £94.0 million for prescriptions, £78.3 million for outpatient care, and £71.5 million for GP services.
- **The £650 million cost of treating and supporting smokers** who experience long term illness and disability represents **5% of Wales's health and social care budget**.
- Smoking results in an estimated **143,264 QALYs lost annually**, with the value of these quality-of-life losses estimated at **£2.86–£10.03 billion**.

### Smoking and inequalities

- Smoking in the most deprived areas (22.6%) is more than three times higher than in the least deprived (6.8%), reflecting broader socioeconomic inequalities.
- Nearly one-third of all smoking-related cost (£489.8 million; 31.4%) is concentrated in the most deprived fifth, compared with £169.4 million (10.9%) in the least deprived.
- Inequalities are observed consistently along the deprivation gradient across all cost categories, particularly for productivity losses and social care costs.
- Substantial variation is observed between local authorities with Cardiff having the highest total smoking-related costs (£171.4 million), followed by Rhondda Cynon Taf (£163.1 million) and Swansea (£111.7 million). Together, these three areas account for almost 29% of the total cost for Wales.
- Differences across authorities reflect variations in smoking percentages, population structure, deprivation, and wider social determinants of health.
- Males accounted for a slightly greater share of overall smoking-related costs (£807.6 million; 52%) than females (£753.7 million; 48%), with the greatest difference seen in hospital admission costs.
- The economic burden of QALY losses falls disproportionately on males and the most deprived communities, where losses are more than three times higher than in the least deprived areas.

## Implications for policy and practice

This report highlights that while smoking has declined in Wales to 13% of adults, the financial costs have not reduced proportionately, primarily due to enduring concentration in deprived communities and the recognition of broader societal and environmental costs. While health service costs are substantial, the dominant costs arise from productivity losses and social care, highlighting the need for comprehensive evaluations that extend beyond the NHS. A whole-of-society approach and cross-sector collaboration between the public, private and third sector, as well as across health and social care, is essential to mitigate losses and improve outcomes for workers and employers.

There is a critical need to reduce smoking-related inequalities driven by deprivation and geography in Wales. This is both a public health and a social justice challenge that demands urgent, locally tailored, environmentally conscious and equitable policies to reduce use and provide help for those who are trying to quit. Targeted support for communities most affected by smoking, such as access to smoking cessation services, is required to maximise health and economic gains, mitigate long-term harms, and reduce costs.

This report highlights that the cost of smoking vastly exceeds the revenue generated by tobacco taxation, complementing evidence from England in 2025. A whole-of-government approach is essential, including full implementation of the Tobacco and Vapes Act. This provides new powers to regulate tobacco and vapes products and maximise public health impact, advancing 'tobacco endgame' measures as outlined in the Tobacco Control Strategy. Efforts should focus on prevention through strengthened universal tobacco control measures, such as taxation, smoke-free legislation, integration into wider strategies, and investing in public health and awareness campaigns.

Public Health Wales is supporting tobacco control across Wales by providing evidence and intelligence on the health, economic and inequality impacts of smoking. Through robust analysis, we support Local Health Boards, local authorities, Welsh Government and communities to inform decision-making and target action where the burden of smoking-related harm is greatest. Building on this work, further economic analyses will assess the costs, benefits and return on investment of smoking cessation interventions, including distributional cost-effectiveness analyses to understand their impact on health inequalities. Economic evaluation of tobacco retailer licensing policies will also provide evidence to inform future tobacco control policy in Wales. Together, this work will help strengthen tobacco control, improve population health, and reduce inequalities across Wales.

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# The Cost of Smoking in Wales

## Introduction

Tobacco smoking remains a major driver of preventable mortality, responsible for more than 8 million deaths globally each year (1). The global economic costs are estimated at over US$1.4 trillion annually (similar to the annual GDP of a large country like Turkey or Indonesia) due to health care expenditure and productivity losses (2). While smoking prevalence has declined in many high-income countries, reductions have been uneven across regions, socioeconomic groups, and genders (3).

In the UK, tobacco smoking remains one of the leading causes of preventable illness and death. It is responsible for around 76,000 deaths annually across the UK and contributes significantly to the burden of chronic disease, including cancers, cardiovascular disease, and chronic obstructive pulmonary disease (COPD) (4, 5). People often say they smoke to cope with stress, but the evidence is that smoking increases anxiety in the longer term (6).

In Wales, smoking prevalence has declined substantially over the past two decades but continues to pose a major public health challenge. Approximately 13.5 % of adults in Wales reported smoking in 2022, equating to over 340,000 people (4, 5). Smoking also represents one of the largest drivers of health inequalities in Wales, with prevalence rates markedly higher in more deprived communities compared to the least deprived (7). This social gradient in smoking contributes to persistent inequalities in healthy life expectancy between socioeconomic groups (8).

The economic and health system impacts are considerable. Smoking-related illness costs the NHS in Wales an estimated £300 million annually in 2013, alongside wider societal costs linked to lost productivity and social care (4). These impacts place a considerable burden on individuals, communities and public services.

In response, Wales has implemented a comprehensive tobacco control programme aimed at achieving a smoke-free Wales by 2030, defined as a smoking prevalence of 5% or less (7). This ambition is supported by a range of measures, including smoke-free legislation, tobacco taxation, public awareness campaigns and evidence-based cessation services such as Help Me Quit. The recently enacted ‘Tobacco and Vapes Act 2026’ (9), which applies in Wales and across the UK, introduces a Smokefree Generation by progressively raising the age of sale for tobacco products, making it illegal to sell tobacco to anyone born on or after 1 January 2009, and it has the potential to further accelerate progress towards achieving this goal. Understanding the current health, economic and societal costs of smoking is therefore essential for informing policy decisions, targeting interventions and monitoring progress towards Wales’s smoke-free ambitions.

# Methodology

Mid-year 2022 population estimates were obtained from the Office for National Statistics, while smoking prevalence data (2021–2023) were drawn from the National Survey for Wales, disaggregated by sex, deprivation quintile, and local authority. Evidence for parameter inputs required to estimate costs across the different smoking-related domains was sourced from a range of published literature.

The analyses focus exclusively on tobacco use and do not account for vaping. Estimates are derived from current smoking prevalence, rather than historical patterns, even though much of the present financial burden reflects the long-term legacy of past smoking behaviours. Consequently, these estimates do not capture how historical smoking rates - which often varied by sex, socioeconomic deprivation, and geographical region - continue to shape today's smoking costs.

## Prevalence of smoking in Wales

We retrieved National Survey for Wales (NSW) 2021-22 – 2022-23 data from UK data service (10). We employed a generalised linear regression model to estimate the prevalence of current smoker, ex-smoker and never smoker, adjusting for age, sex, marital status, education, ethnicity, local authority and deprivation levels. Results are disaggregated by sex, WIMD quintile and local authority. The NSW has limitations in estimating smoking prevalence at highly disaggregated levels, such as local authority and deprivation quintile. Small sample sizes and uneven representation across subgroups may reduce precision and increase sampling variability, leading to differences in prevalence estimates across survey years that may reflect methodological limitations.

## Smoking-related annual hospital admissions costs in Wales

Elective and emergency hospital admissions in Wales for 2022/23 were analysed to estimate costs attributable to smoking. The whole population patient-level hospital admissions data and Healthcare Resource Group (HRGs) reference costs were collected from Digital Health and Care Wales (DHCW) data warehouse and Finance Delivery Unit, NHS Wales. The analysis focused on episodes where a primary diagnosis had a defined smoking-attributable fraction (SAF), using ICD-coded conditions known to be linked to smoking, such as various cancers, cardiovascular, and respiratory diseases (11-15). Each episode's cost was derived from DHCW's HRG reference cost 2018-19 for elective and emergency inpatients and day cases, and the proportion attributable to smoking was calculated by multiplying the episode cost by the relevant SAF. The costs were then inflated for price year 2022 in GBP. The analysis was carried out in SQL.

The results are stratified by local authority, deprivation quintile, and patient sex, allowing for insights into geographic, socio-economic, and sex-related variations in the smoking-attributable hospital burden. For each subgroup, the total number of episodes, the total elective and emergency cost, and the estimated smoking-attributable cost are reported. This provides a detailed picture of how smoking contributes to healthcare costs across different populations in Wales.

## Smoking-related outpatient attendance costs in Wales

The methodological approach for estimating smoking-related outpatient costs in Wales in 2022/23 was conducted using R Studio (version 20.1). First, demographic and smoking prevalence data were loaded and prepared, calculating population counts for current, former, and never-smokers by local authority, deprivation quintile, and sex. A base-case cost model was then constructed using evidence-based parameters, including a unit cost per outpatient attendance (16), smoking-attributable fractions for current and former smokers (17), and a base outpatient attendance rate (17). This incorporated demographic modifiers to predict area-specific attendance rates based on local authority, deprivation levels and sex.

The results were aggregated and summarised by key demographics - local authority, deprivation quintile, and sex - to identify cost patterns. The annual total cost estimates were compiled into summary tables and visualised in a series of charts for interpretation and reporting.

## Smoking-related annual GP services cost in Wales

Annual smoking-attributable GP costs in Wales for 2022/23 were estimated using population and smoking prevalence data stratified by local authority, deprivation quintile, and sex. The total GP expenditure for Wales was £650.1 million in 2022/23 (18). A smoking-attributable fraction of 11% was applied to this total to estimate the overall smoking-attributable GP cost, consistent with previous estimates for GP consultation costs (17). Costs were allocated proportionally to the number of smokers in each subgroup, and average cost per smoker was calculated. Analysis was conducted in R Studio (version 20.1).

## Smoking-related annual prescriptions cost in Wales

We estimated smoking-attributable prescriptions cost in Wales for 2022-23 using a population-based approach. Adult population data (18+) and smoking prevalence were obtained from national sources, stratified by local authority, sex, and deprivation quintile (19). The number of current and ex-smokers were calculated by multiplying the prevalence among current smokers and ex-smokers by the adult population in each subgroup. Ex-smokers were assumed to incur 50% of the prescription costs of current smokers (20).

Total prescription expenditures in Wales (£673 million for 2022-23) was obtained from official NHS reports, and 14% was assumed to be attributable to smoking, consistent with prior UK estimates (21). The cost per smoking equivalent was calculated by dividing the total smoking-attributable cost by the sum of weighted smokers across all strata. Prescription costs were then allocated proportionally to each subgroup. Data collation and analyses were performed in R (version 20.1).

## Smoking-related annual social care costs in Wales

Smoking increases the chances of needing social care support because it increases the risk of strokes, dementia and other disabilities. We estimated the annual social care costs attributable to smoking in Wales using local authority level data on smoking prevalence, stratified by deprivation quintile and sex. Smoking prevalence data were retrieved from National Survey for Wales (NSW) and demographic data were obtained from Office for National Statistics (ONS). Data preparation included selecting relevant variables (people aged 65+, current smokers and ex-smokers, and smoking prevalence) and aggregating values by local authority, deprivation quintile, and sex.

The number of smokers aged 65+ requiring care was estimated by applying observed smoking prevalence to the elderly population. The estimates reflect the social care needs within the smoking population and do not represent the additional care needs of smokers compared with non-smokers. Care needs were split into residential care and domiciliary care using Welsh-specific evidence on the proportion of smokers requiring institutional care (15%). Unit costs were based on 2022 NHS statistics of £800 per week for residential care and £20 per hour for domiciliary care (22). Average care needs were assumed to be 10 hours per smoker per week for domiciliary care (23). Annual costs were calculated separately for residential and domiciliary care and then combined to estimate total annual social care costs attributable to smoking. Results are summarised by local authority, deprivation quintile, and sex.

## Smoking-related annual lost productivity costs in Wales

We estimated smoking-attributable lost productivity costs in Wales in 2022/23 using a probabilistic modelling framework. Population and smoking prevalence data were obtained from the National Survey for Wales and ONS population estimates, stratified by local authority, deprivation quintile and sex (5, 19). Mortality inputs were derived from the Welsh national life tables published by the ONS (24). These data were combined to estimate the smoking-related productivity losses.

The analysis considered four main categories of productivity loss: smoking breaks, absenteeism, presenteeism, and premature deaths. Smoking breaks were valued as time lost during the working day (25). Absenteeism reflected additional days of work missed by smokers compared with non-smokers, based on evidence from systematic reviews (26). Presenteeism captured reduced productivity while at work due to smoking-related health effects (27). Premature mortality costs were estimated using the human capital approach, multiplying the number of working years lost from excess smoking-related deaths by the average value of a working life year (28, 29). Economic inputs, including the average hourly wage and employment rate for Wales, were taken from the Annual Survey of Hours and Earnings (30) and labour market statistics (31). All costs were expressed in 2022 GBP.

Key input parameters were informed by national statistics and published evidence, and uncertainty in these values were incorporated using truncated normal probability distributions for parameters such as breaks per day, absenteeism days, presenteeism fractions, years of working life lost, and smoking-related relative mortality risks. Results were summarised as mean annual productivity losses for each local authority, deprivation quintile, and sex.

## Smoking-related annual environmental cost in Wales

The analysis used multiple sources of data. Adult population figures (aged 18 and over) for 2022 were obtained from the Office for National Statistics (ONS) and stratified by local authority, deprivation quintile, and sex using the Welsh Index of Multiple Deprivation (WIMD). Smoking prevalence for the same year, disaggregated by local authority, deprivation quintile, and sex, was sourced from the National Survey for Wales.

Environmental cost parameters were derived from published research and administrative records to estimate per-smoker impacts across several categories. Litter and cigarette butt cleanup costs were based on cigarette consumption, littering rates, butt weights, and waste management costs. Fire-related costs were estimated based on the proportion of fires attributable to smoking, encompassing damages to property, livestock, and human life. Air pollution costs accounted for emissions of fine particulate matter ($PM_{2.5}$), nitrogen oxides ($NO_x$), sulphur dioxide ($SO_2$), and volatile organic compounds (VOCs), applying standard environmental cost factors (price year 2022) to quantify ecosystem degradation.

Environmental cost categories per smoker were derived from previous research and local authority expenditure records, which are presented in a table as follows.

Table 1 Parameters to estimate environmental costs

| Category | Parameter | Value | Unit | Source |
|---|---|---|---|---|
| Litter & Cigarette Butt Cleanup | Cigarettes per smoker per day | 10.6 | cig/day | (32) |
| | $CO_2$ emission per cigarette | 0.014 | kg $CO_2$/cig | (33) |
| | $CO_2$ cost | 52.56 | £/ton $CO_2$ | (34) |
| | Butt weight | 0.25 | g | (35) |
| | Littering rate (butts) | 0.129 | proportion | (36) |
| | Cleanup cost | 6.81 | £/kg litter | (19, 37, 38) |
| Fire Damage | Smoking-attributable fire fraction | 0.08 | proportion | (39) |
| | Fire cost per adult | 43 | £/adult | (40) |
| Air Pollution & Ecosystem Degradation | PM2.5 per cigarette | 0.022 | mg/cig | (41) |
| | NOx per cigarette | 0.01 | mg/cig | (42) |
| | $SO_2$ per cigarette | 0.002 | mg/cig | (11) |
| | VOCs per cigarette | 83.29 | mg/cig | (43) |
| | Cost of PM2.5 | 74.77 | £/kg | (44) |
| | Cost of NOx | 8.15 | £/kg | (44) |
| | Cost of $SO_2$ | 16.62 | £/kg | (44) |
| | Cost of VOCs | 0.172 | £/kg | (44) |

Annual environmental costs of smoking were then estimated by calculating the number of smokers and multiplying this by the per-smoker costs across all categories, with results summed to provide total costs.

## Smoking-related QALY loss and associated costs in Wales

A population-level smoking burden model for Wales (2022) was developed in R using life tables for Wales (24), smoking-attributable fraction (SAF) (11-15), health state utility values for smokers and non-smokers (45), smoking prevalence data from the National Survey for Wales (NSW) 2021–2023 (UK Data Service) (10) and ONS population data for Wales (19) stratified by local authority, sex, and Welsh Index of Multiple Deprivation (WIMD) quintile. A generalized additive model (GAM) with a binomial logit link estimated mortality probability by age and sex. Smoking-attributable burden weights were derived from smoking prevalence, SAFs, and predicted mortality, and used to allocate Wales' 35,694 all-cause deaths in 2022 (46), assuming 14.5% were attributable to smoking (47). Years of life lost (YLL) were estimated using remaining life expectancy from Wales life tables (24). Quality-adjusted life year (QALY) losses included mortality and morbidity components, applying a 3.5% discount rate and utility values for smokers and non-smokers. Estimated QALY losses were monetised using £20,000, £30,000, and £70,000 willingness-to-pay thresholds per QALY. Results were summarised by sex, WIMD quintile, and local authority.

# Findings

## Summary

- Smoking prevalence was slightly higher among males than females (13.8% vs 13%), with a strong deprivation gradient (22.6% most deprived vs 6.8% least deprived) and substantial variation across local authorities (19.3% to 7.8%).
- The total annual cost attributable to smoking was estimated at £1.56 billion, of which productivity losses represented the largest share, amounting to £670 million.
- Smoking-related hospital admissions cost Wales £210.2 million annually, with higher costs among males (58%) and in the most deprived communities (£55.5m vs £36.2m), and the greatest burden seen in Rhondda Cynon Taf, Caerphilly and Cardiff.
- Smoking-related outpatient care cost Wales £78.3 million annually, with costs slightly higher among females and more than twice as high in the most deprived communities than in the least deprived (£22.6m vs £9.2m).
- Smoking-related GP service costs were £71.5 million annually, with little difference by sex but a strong deprivation gradient (£22.6m in the most deprived vs £7.2m in the least deprived).
- Smoking-related prescription costs were £94.0 million annually, with similar costs by sex but higher costs in the most deprived communities (£23.5m vs £14.1m).
- Smoking-related social care costs were £196.2 million annually, with no difference by sex but a stark deprivation gradient (£77.8m in the most deprived vs £11.1m in the least deprived).
- The costs of smoking-related productivity losses were £670 million annually, evenly split by sex but heavily concentrated in the most deprived communities (£211.8m vs £67.3m)
- Smoking-related environmental costs were £241.2 million annually, with similar costs by sex but more than three times higher in the most deprived communities than in the least deprived.
- Smoking-related mortality and morbidity resulted in 143,264 QALYs lost, valued at £2.86–£10.03 billion, with costs more than three times higher in the most deprived communities than in the least deprived.

## Prevalence of smoking in Wales

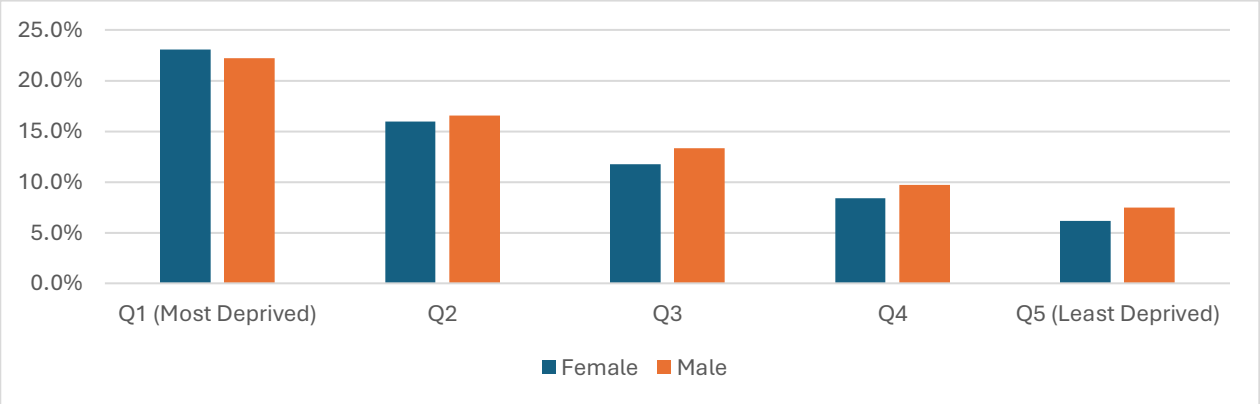
- Sex: Smoking prevalence is similar by sex, with slightly higher rates in males (13.8%) than females (13.0%).
- Deprivation: A strong social gradient exists, with prevalence highest in the most deprived areas (22.6%) and lowest in the least deprived (6.8%).
- Geography: Smoking rates vary widely by local authority, ranging from 19.3% in the Vale of Glamorgan to 7.8% in Conwy, highlighting substantial geographic inequalities.

In 2022/23, smoking prevalence in Wales showed clear patterns by sex, deprivation, and geography. Overall, rates were higher among males than females and followed a strong social gradient, with the most deprived communities exhibiting substantially higher smoking rates. Geographic variation was also evident, with urban and post-industrial areas, particularly in South Wales, showing the highest prevalence compared with smaller or rural authorities.

## Deprivation quintile and sex

Males have a slightly higher overall smoking prevalence (13.8%) compared with females (13.0%). However, among the most deprived groups, smoking prevalence was marginally higher among females than males. A strong gradient is evident, with smoking highest in the most deprived areas (22.6%) and lowest in the least deprived (6.8%).

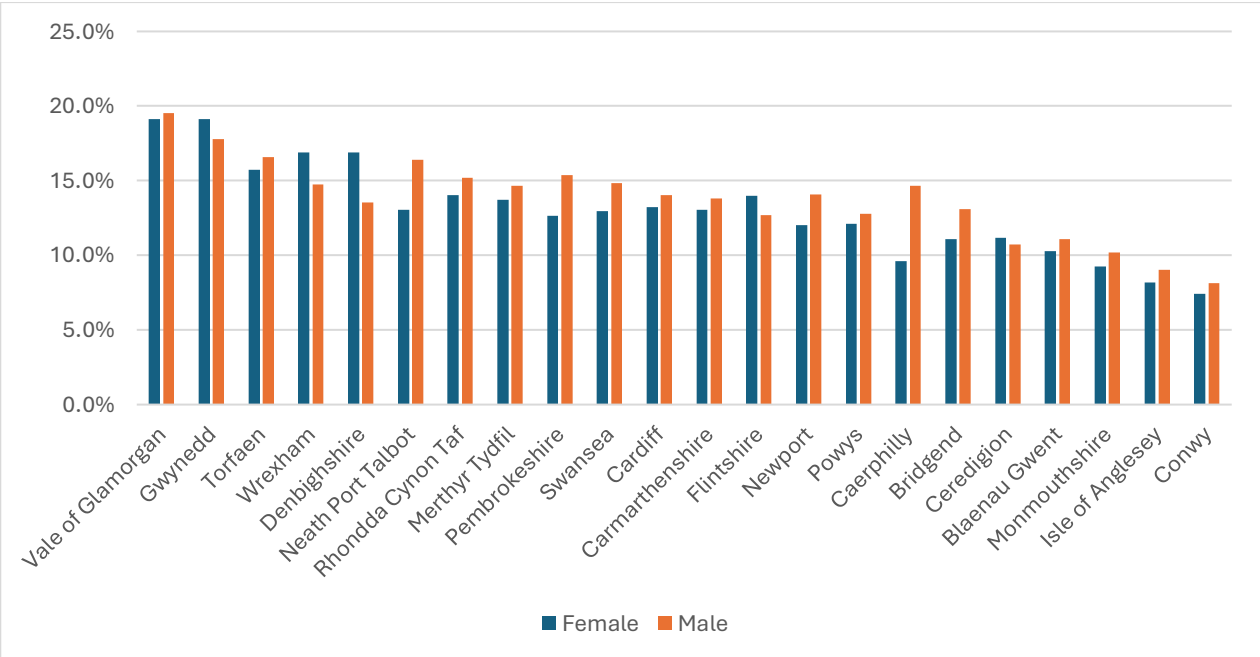
Figure 1 Prevalence of smoking in Wales by deprivation quintile and sex




## Local authority and sex

Smoking prevalence ranges widely across Wales, from 19.3% in the Vale of Glamorgan to 7.8% in Conwy. In most local authorities, smoking prevalence was higher among males than females, although females had slightly higher prevalence in a small number of authorities, including Gwynedd, Wrexham, Denbighshire, Flintshire and Ceredigion.

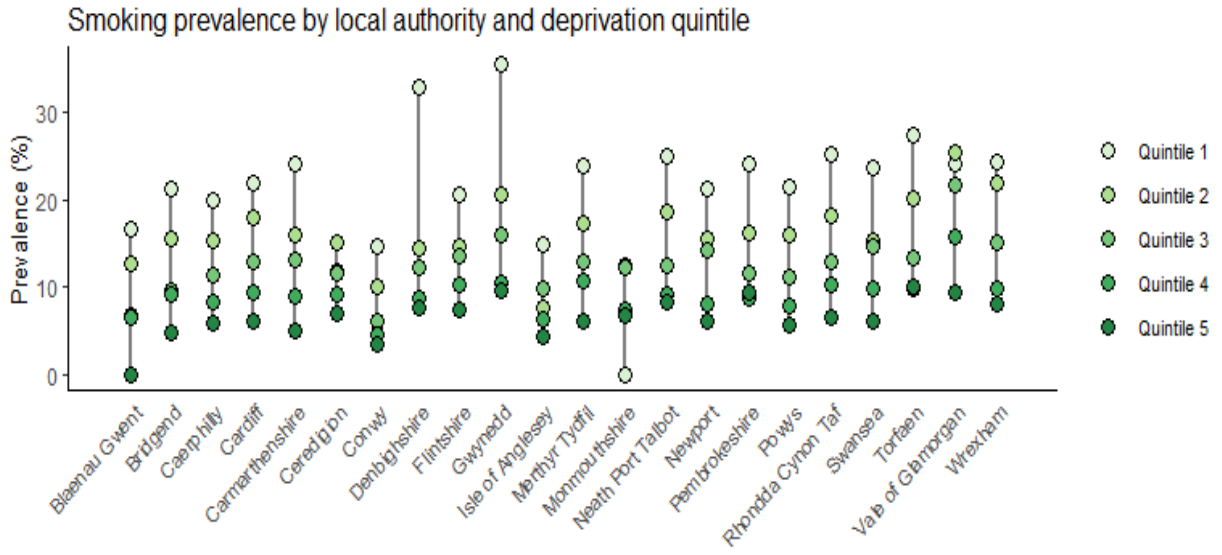
Figure 2 Prevalence of smoking in Wales by local authority and sex



## Local authority and deprivation quintile

Furthermore, the data shows a strong deprivation-smoking gradient across Welsh authorities, but area-wide averages can obscure stark internal inequalities. In Blaenau Gwent, smoking prevalence was highest in the most deprived WIMD quintile (16.7%), while no residents were classified in the national WIMD quintile for the least deprived quintile (Q5) [only Q1 to Q4 exist], meaning the overall average (8.5%) may mask substantial inequality at the local authority level. Conversely, Vale of Glamorgan has one of the highest smoking rates in the least deprived group nationally (9.4%), leading to a higher, more representative average (19.3%). This highlights how overall figures can dilute or misrepresent the true burden of smoking in deprived communities.

Figure 3 Smoking prevalence in Wales by local authority and deprivation quintile




These findings highlight marked geographic and socioeconomic inequalities in smoking, with local authority and deprivation status having a far greater influence than sex. While males tend to smoke slightly more than females, the pronounced deprivation gradient (15.8 percentage point higher) suggests that tackling inequalities - particularly in the most deprived communities - would yield the greatest impact in reducing smoking prevalence in Wales.

## Smoking-related annual hospital admissions costs in Wales

- Sex: Smoking-related hospital admissions cost £210.2 million annually, with higher costs for males (£123.1m; 58%) than females (£87.1m; 42%) across all areas.
- Deprivation: A clear socioeconomic gradient is observed, with costs highest in the most deprived areas (£55.5m) and lowest in the least deprived (£36.2m).
- Geography: Costs vary widely by local authority, peaking in Rhondda Cynon Taf (£29.0m), Caerphilly (£25.2m), and Cardiff (£24.4m), and lowest in Ceredigion (£2.18m) and the Isle of Anglesey (2.96m).

In 2022/23, smoking-related hospital admission costs in Wales were substantial at £210.2 million, with males bearing a higher share of costs (58%) than females (42%). A strong deprivation gradient was evident, with the highest costs in the most deprived areas (£55.5m) and the lowest in the least deprived (£36.2m). Marked geographic variation was observed, with costs highest in Rhondda Cynon Taf, Caerphilly and Cardiff, and lowest in Ceredigion and the Isle of Anglesey.

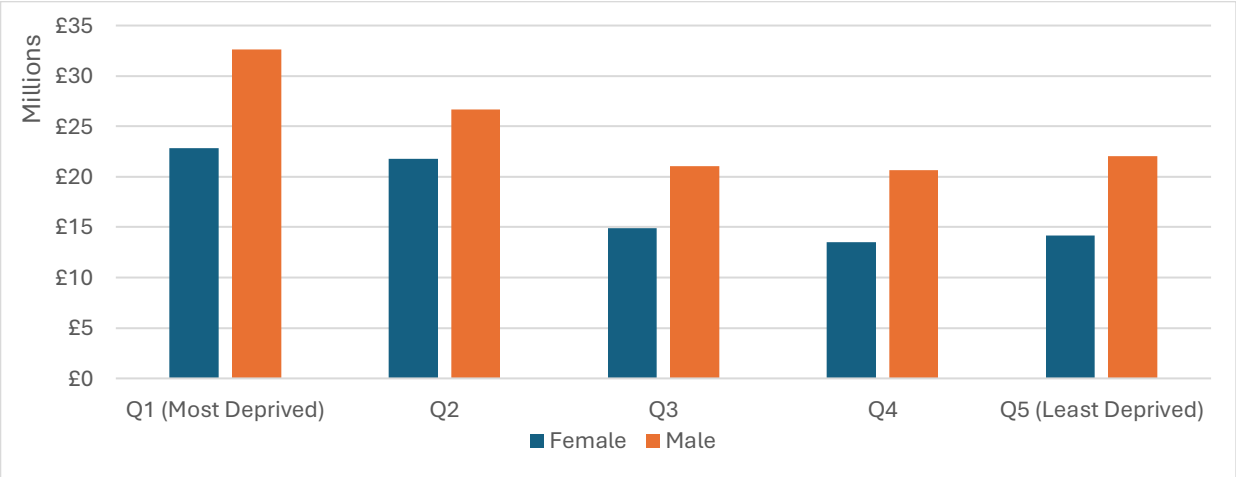
### Sex

Analysis by sex reveals that total annual costs are higher for males (£123.1m, 58%) compared with females (£87.1m, 42%) of the total £210.2 million. This male predominance is consistent across all local authorities and deprivation quintiles, indicating a persistent sex-related disparity in cost distribution.

### Deprivation quintile and sex

When examining annual costs by deprivation quintile, a clear socioeconomic gradient emerges. The most deprived areas account for the largest share (£55.5m), while the least deprived quintiles contribute a substantially lower amount (£36.2m), highlighting that higher costs are disproportionately concentrated in more deprived populations.

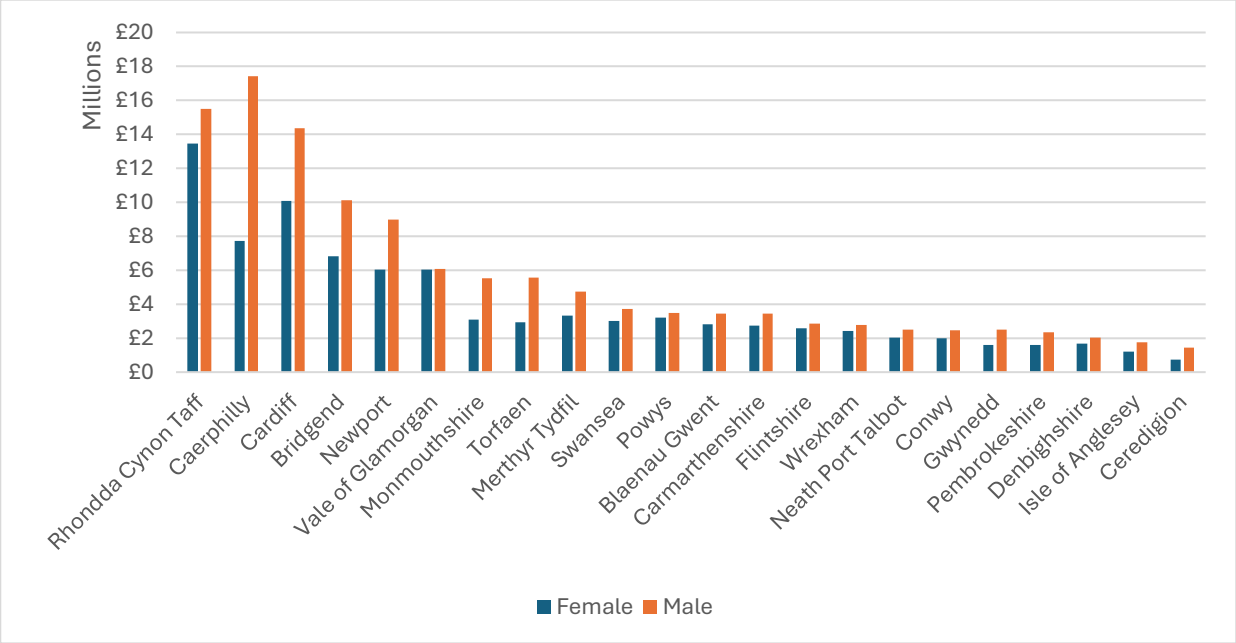
Figure 4 Smoking-related annual hospital admissions cost in Wales by deprivation quintile and sex



## Local authority and sex

Costs also vary considerably by local authority. The highest annual total costs are observed in Rhondda Cynon Taf (£28.95m), Caerphilly (£25.17m), and Cardiff (£24.44m), whereas smaller authorities such as Ceredigion (£2.18m) and Isle of Anglesey (£2.96m) report the lowest costs. Across nearly all authorities, male costs consistently exceed female costs, mirroring the overall sex pattern.

Figure 5 Smoking-related annual hospital admissions cost in Wales by local authority and sex




To maximise impact and promote equity, interventions should prioritise males and populations in more deprived areas, while targeting high-cost local authorities such as Rhondda Cynon Taf, Caerphilly, and Cardiff, ensuring resources are focused where the economic burden is greatest.

## Smoking-related annual outpatient attendance costs in Wales

- Sex differences: Annual outpatient costs are slightly higher for females (£40.7m) than males (£37.6m), suggesting modestly greater service use or longer survival among women.
- Deprivation gradient: The most deprived quintile incurs over twice the costs (£22.6m) of the least deprived (£9.2m), reflecting higher smoking-related health needs in disadvantaged populations.
- Geographic variation: Highest costs occur in larger, more deprived local authorities (Cardiff £7.9m, Rhondda Cynon Taf £7.0m, Swansea £6.1m), while smaller rural areas have lower absolute costs, highlighting the need for targeted interventions in high-burden areas.

In 2022, smoking-related outpatient attendance costs in Wales totalled £78.3 million, slightly higher for females (£40.7m) than males (£37.6m). Costs exhibited a clear deprivation gradient, with the most deprived areas accounting for more than double the costs of the least deprived. Geographic variation was also observed, with the highest costs in Cardiff, Rhondda Cynon Taf, and Swansea, and the lowest in smaller rural authorities.

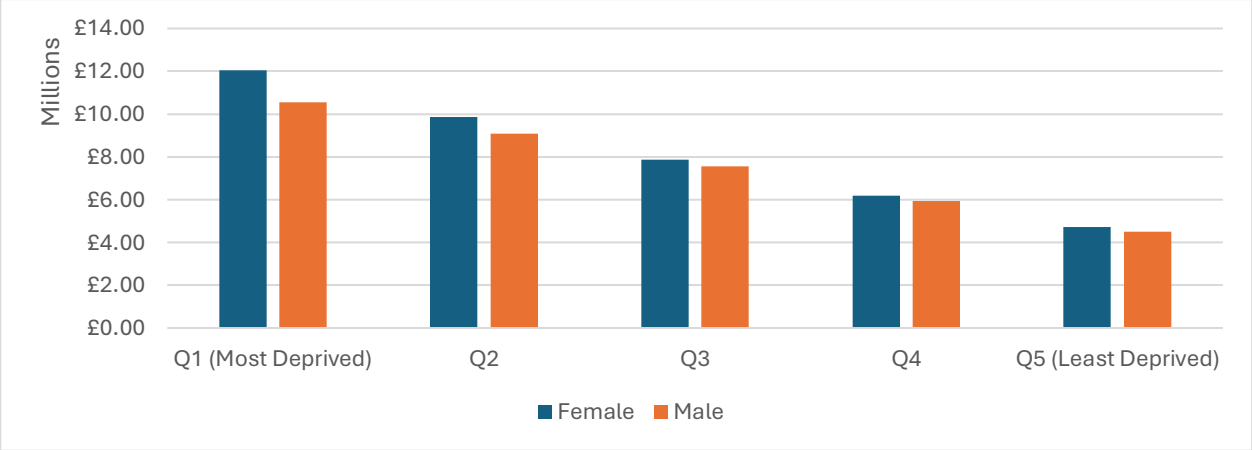
## Sex

Total annual costs are slightly higher for females (£40.7m) than males (£37.6m), suggesting greater outpatient service use or longer survival among females, though differences are modest.

## Deprivation quintile and sex

A clear gradient is evident: the most deprived quintile accounts for £22.6 million, more than double the least deprived (£9.2m). This reflects the social gradient in health, with higher need and costs in more deprived areas.

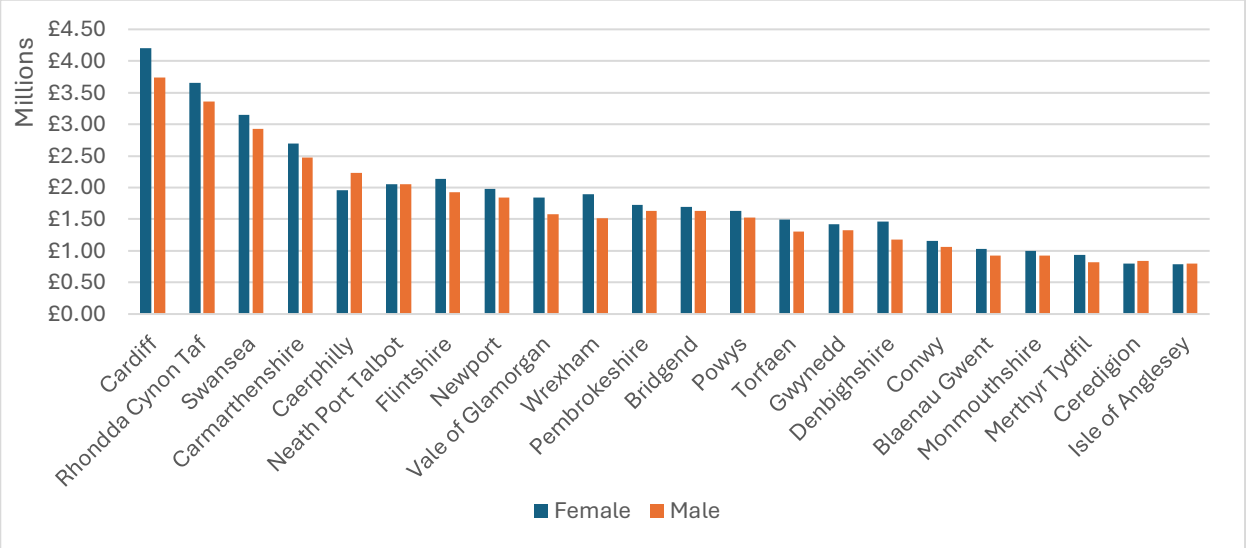
Figure 6 Smoking-related annual outpatient cost in Wales by deprivation quintile and sex



## Local authority and sex

Cardiff (£7.9m), Rhondda Cynon Taf (£7.0m), and Swansea (£6.1m) show the highest costs, linked to larger populations and deprivation. Smaller rural areas like Isle of Anglesey (£1.6m) and Ceredigion (£1.6m) contribute the least, though deprived local authorities within South Wales valleys also carry high relative cost burdens.

Figure 7 Smoking-related annual outpatient cost in Wales by local authority and sex




The findings highlight that costs follow both deprivation and geography. Interventions should focus on deprived communities, where the economic and health benefits are greatest, while ensuring proportionate support across high-burden local authorities through a progressive universalism approach.

## Smoking-related annual GP services cost in Wales

- Sex differences: Annual smoking-attributable GP costs are slightly higher for males (£36.2m) than females (£35.3m), indicating modest sex differences in primary care use.
- Deprivation gradient: Costs are over three times higher in the most deprived quintile (£22.6m) compared with the least deprived (£7.2m), with deprived females slightly exceeding males, highlighting the need for targeted interventions in disadvantaged populations.
- Geographic variation: Highest costs occur in Cardiff (£8.3m) and Rhondda Cynon Taf (£7.0m), while smaller areas like Ceredigion and Isle of Anglesey incur much lower costs, showing that deprivation and population size drive local GP service costs.

In 2022, smoking-related GP service costs in Wales totalled £71.5 million, with males (£36.2m) slightly higher than females (£35.3m). Costs followed a clear deprivation gradient, with the most deprived areas incurring over three times the costs of the least deprived. Geographic variation was evident, with the highest costs in Cardiff and Rhondda Cynon Taf, and the lowest in smaller rural authorities.

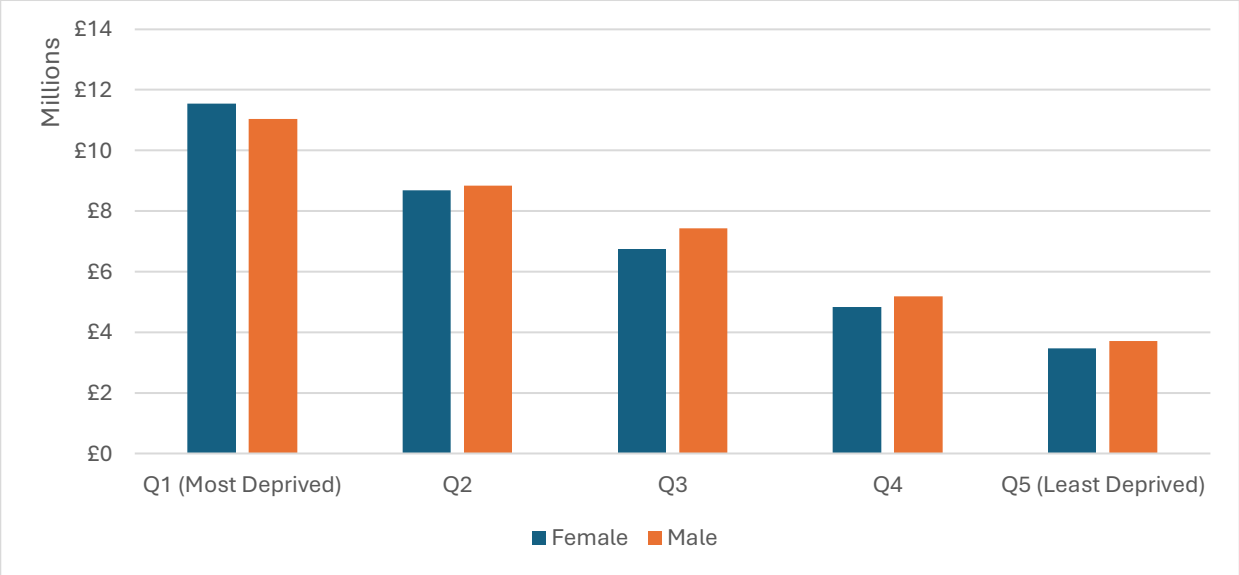
## Sex

Total annual smoking-attributable GP costs are marginally higher for males (£36.2m) than females (£35.3m), indicating modest sex differences in primary care burden from smoking.

## Deprivation quintile and sex

Costs show a clear social gradient, decreasing from £22.6 million in the most deprived quintile to £7.2 million in the least deprived. This pattern reflects higher smoking prevalence and healthcare utilisation among more deprived populations. Interestingly, females in the most deprived quintile have slightly higher costs than males, suggesting targeted interventions may be particularly beneficial for deprived women.

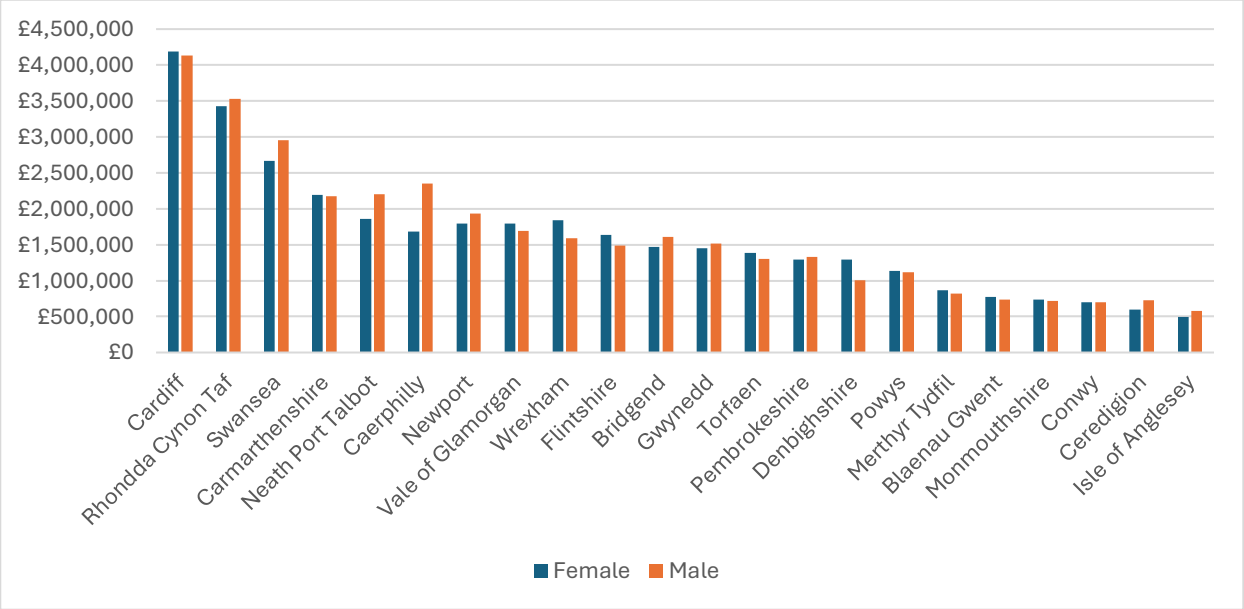
Figure 8 Smoking-related annual GP services cost in Wales by deprivation quintile and sex



## Local Authority and sex

Costs vary substantially across Wales, with the highest in Cardiff (£8.3m) and Rhondda Cynon Taf (£7.0m), likely due to population size and local smoking patterns. Smaller areas such as Ceredigion and Isle of Anglesey incur much lower costs. Sex differences at the local level are generally small but vary by area.

Figure 9 Smoking-related annual GP services cost in Wales by local authority and sex




Smoking-related GP costs are strongly influenced by deprivation and geographic location, while sex differences are relatively minor. Public health efforts should prioritise people living in deprived and high-cost areas, ensuring interventions reach both males and females effectively.

## Smoking-related annual prescriptions cost in Wales

- Sex differences: Smoking-related prescription costs are slightly higher in males (£47.9m) than females (£46.1m), indicating a similar burden across sexes.
- Deprivation gradient: The most deprived quintile incurs £23.5 million, over £9 million more than the least deprived (£14.1m), reflecting higher smoking prevalence and associated illness in disadvantaged communities.
- Geographic variation: Costs are highest in Cardiff (£10.1m), Rhondda Cynon Taf (£7.9m), and Swansea (£7.4m), while smaller areas like Merthyr Tydfil (£2.0m) and Anglesey (£1.9m) have lower totals, highlighting the concentration of burden in populous and deprived areas.

In 2022, smoking-related prescription costs in Wales totalled £94 million, with males (£47.9m) slightly exceeding females (£46.1m). Costs showed a clear deprivation gradient, with the most deprived areas incurring over £9 million more than the least deprived. Geographic variation was notable, with the highest costs in Cardiff, Rhondda Cynon Taf, and Swansea, and lower totals in smaller rural authorities.

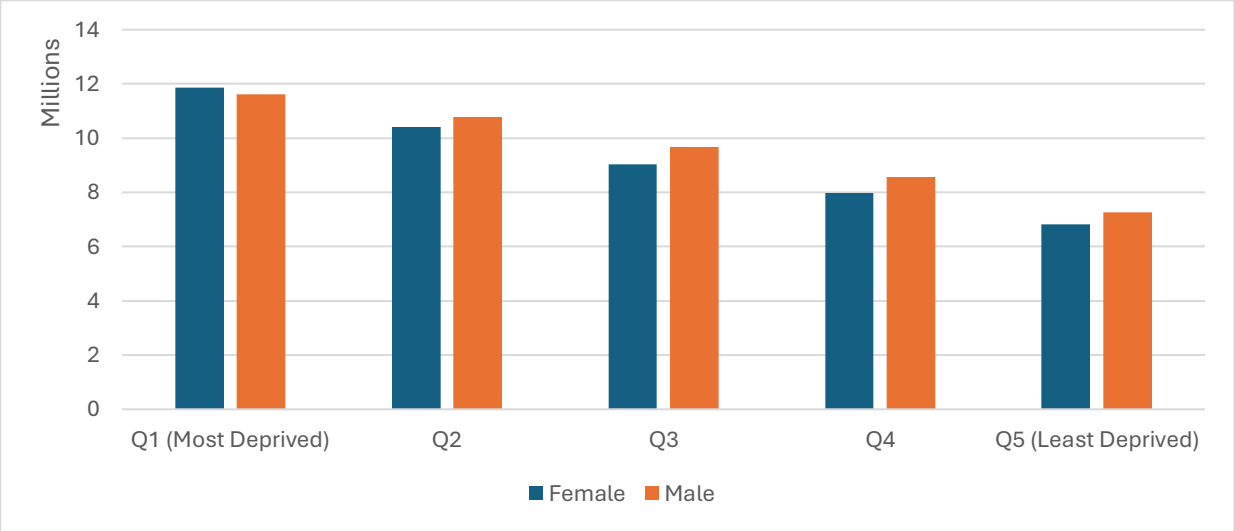
## Sex

Smoking-related prescription costs are slightly higher in males (£47.9m) compared to females (£46.1m), showing both groups carry a similar burden.

## Deprivation quintile and sex

A clear social gradient exists - the most deprived quintile costs £23.5 million compared to £14.1 million in the least deprived, a gap of over £9 million. This reflects higher smoking prevalence and illness in deprived communities.

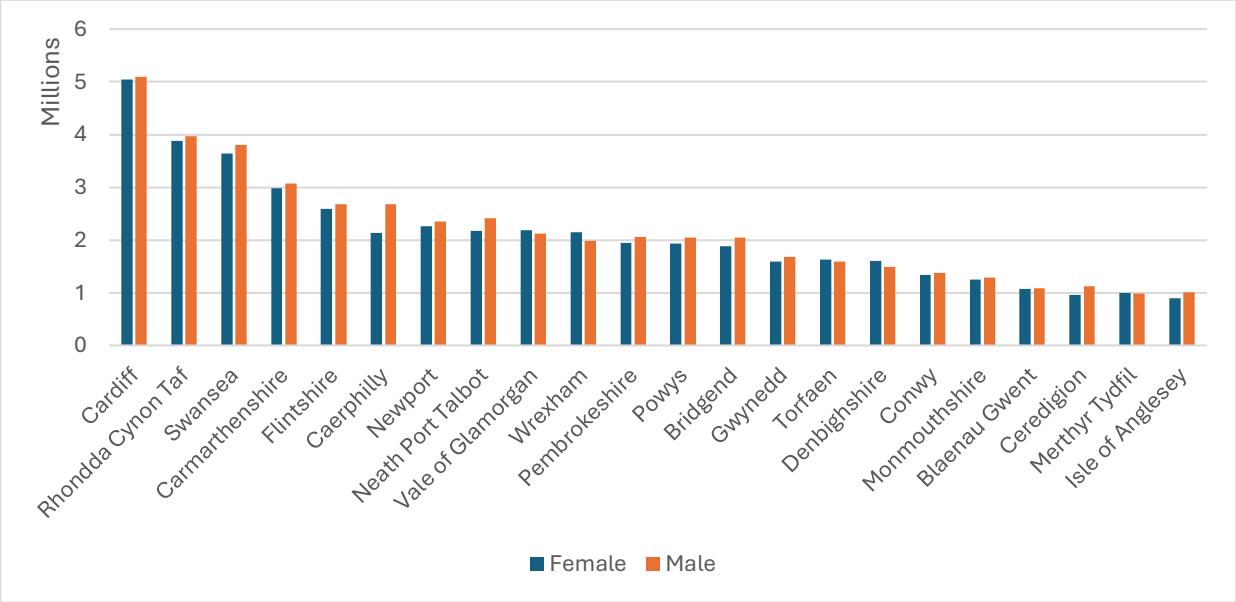
Figure 10 Smoking-related annual prescription cost in Wales by deprivation quintile and sex



## Local authority and sex

Annual costs are highest in Cardiff (£10.1m), Rhondda Cynon Taf (£7.9m), and Swansea (£7.4m), together making up over a quarter of the national total. Smaller areas such as Merthyr Tydfil (£2.0m) and Anglesey (£1.9m) have much lower totals, though the burden relative to population remains high in some Valleys authorities.

Figure 11 Smoking-related annual prescription cost in Wales by local authority and sex




Smoking-related prescriptions cost NHS Wales about £94 million annually. While sex differences are minimal, deprivation and geography drive inequalities, with deprived and Valleys communities facing disproportionate costs. Tackling smoking through universal tobacco control and targeted cessation support in high-burden areas would generate major savings and reduce health inequalities.

## Smoking-related annual social care costs in Wales

- Sex differences: Smoking-related social care costs are nearly identical for males (£98.3m) and females (£97.9m), showing minimal sex variation.
- Deprivation gradient: The most deprived quintile incurs £77.8 million, seven times more than the least deprived (£11.1m), highlighting stark social inequalities in smoking-related care needs.
- Geographic variation: Highest costs are concentrated in South Wales post-industrial authorities (Rhondda Cynon Taf £23.5m, Cardiff £14.6m, Swansea £14.2m), while smaller rural areas have much lower totals, emphasizing the need for targeted interventions in high-burden communities.

In 2022, smoking-related social care costs in Wales totalled £196.2 million, comprising £81.2 million for residential care and £115.0 million for domiciliary care. Costs were nearly identical for males and females but showed a strong deprivation gradient, with the most deprived areas incurring seven times the costs of the least deprived. Geographic variation was evident, with the highest costs in Rhondda Cynon Taf, Cardiff, Swansea, and Neath Port Talbot, and the lowest in smaller rural authorities.

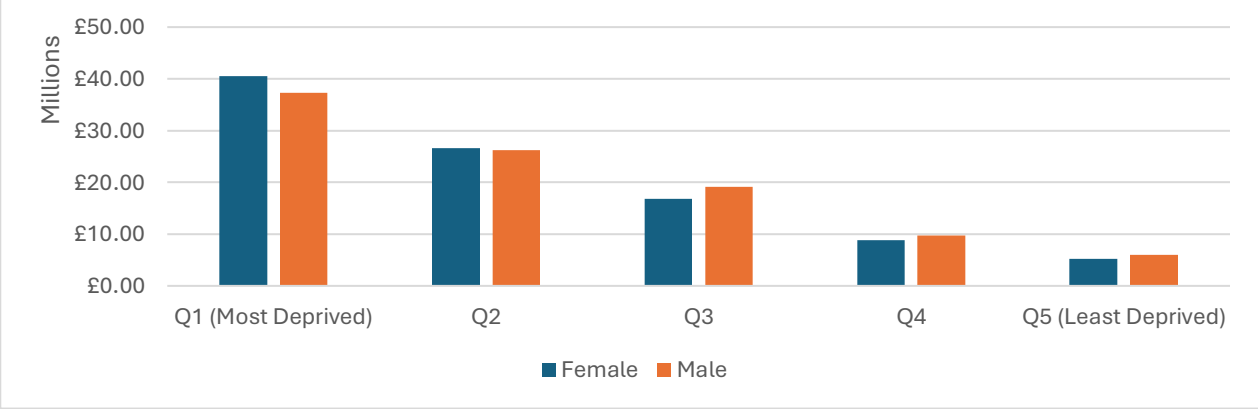
### Sex

When disaggregated by sex, costs are almost identical, with £97.9 million for females and £98.3 million for males.

### Deprivation quintile and sex

By deprivation, there is a strong gradient: the most deprived quintile incurs £77.8 million in costs, compared with £11.1 million for the least deprived quintile, representing a seven-fold difference.

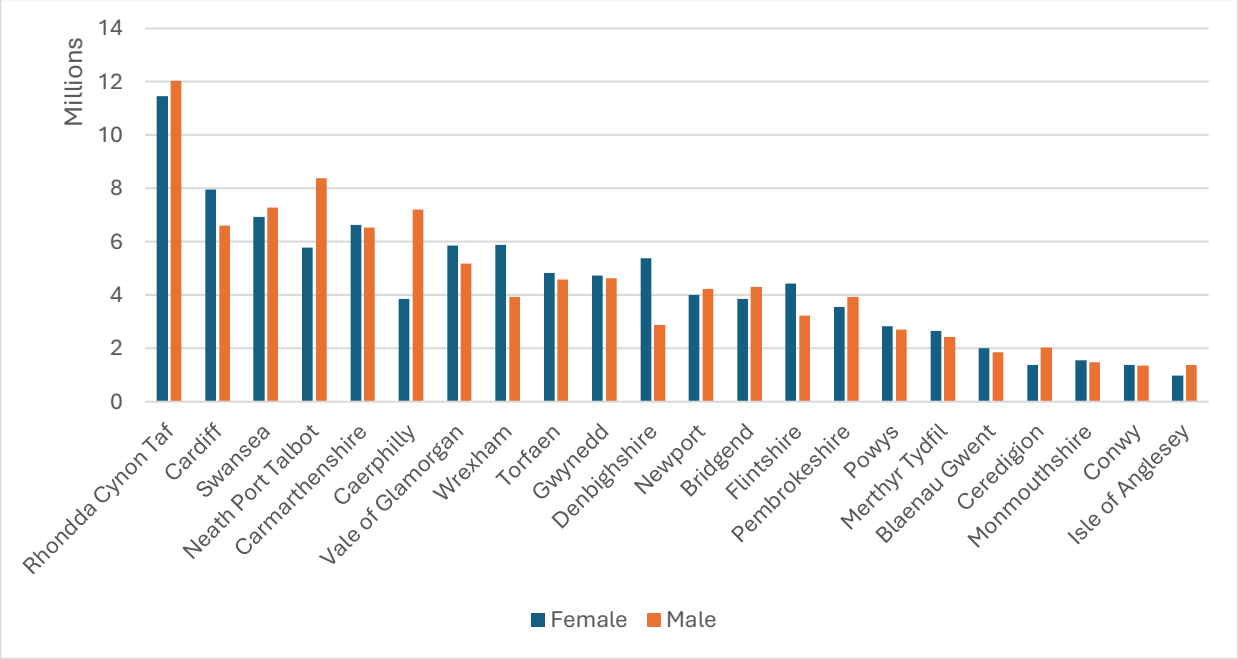
Figure 12 Smoking-related annual social care cost in Wales by deprivation quintile and sex



## Local authority and sex

By local authority, the highest costs are observed in Rhondda Cynon Taf (£23.5 m), Cardiff (£14.6 m), Swansea (£14.2 m), and Neath Port Talbot (£14.2 m), whereas smaller rural authorities such as Isle of Anglesey (£2.4 m) and Conwy (£2.7 m) have the lowest totals.

Figure 13 Smoking-related annual social care cost in Wales by local authority and sex




Social care costs linked to smoking totalled £196 million annually, with minimal sex differences but striking inequalities by deprivation and geography. The burden falls most heavily on deprived communities and post-industrial (Valleys) authorities in South Wales. Policy should prioritise reducing smoking prevalence in high-burden deprived areas through targeted support, alongside population-wide tobacco control, to ease demand on care services, reduce inequalities, and achieve major long-term cost savings for social care and the NHS.

## Smoking-related annual lost productivity costs in Wales

- Sex differences: Lost productivity costs are nearly equal between males (£339.3m) and females (£330.7m), showing minimal sex disparity.
- Deprivation gradient: The most deprived quintile bears £211.8 million - over three times the least deprived (£67.3m) - highlighting the disproportionate economic burden of smoking on disadvantaged communities.
- Geographic variation: Highest costs occur in Cardiff (£78.0m), Rhondda Cynon Taf (£65.2m), and Swansea (£52.7m), while smaller rural areas like Anglesey (£10.1M) and Ceredigion (£12.4m) incur much lower costs, indicating that population size and local deprivation drive productivity losses.

In 2022/23, smoking-related lost productivity costs in Wales were estimated by summing

the impacts of smoking breaks, absenteeism, presenteeism, and premature deaths among working-age adults, totalling £670 million. Costs were nearly evenly split between males and females, but a strong social gradient was evident, with the most deprived areas incurring over three times the costs of the least deprived. Geographic variation reflected population size and deprivation, with the highest costs in Cardiff, Rhondda Cynon Taf, and Swansea.

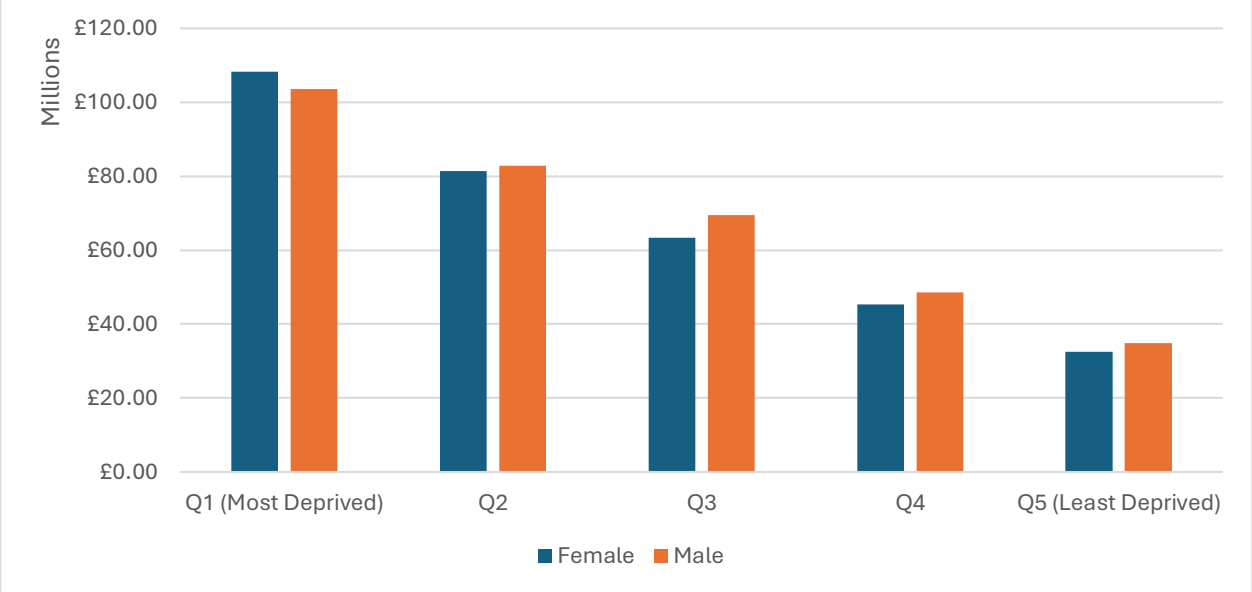
## Sex

The analysis shows that costs are almost equally distributed between males and females, with males accounting for £339.3 million (50.6%) and females £330.7 million (49.4%) of the total £670 million. While the difference is relatively small, it may reflect underlying differences in health risk, disease prevalence, or service use between the sexes.

## Deprivation quintile and sex

When broken down by deprivation quintile, a strong socioeconomic gradient becomes evident. The most deprived quintile accounts for £211.8 million, which is more than three times the cost observed in the least deprived quintile at £67.3 million. The costs steadily decrease across the deprivation levels. This clear pattern highlights the disproportionate burden of health costs in more deprived communities, reinforcing the well-established link between socioeconomic deprivation and poorer health outcomes.

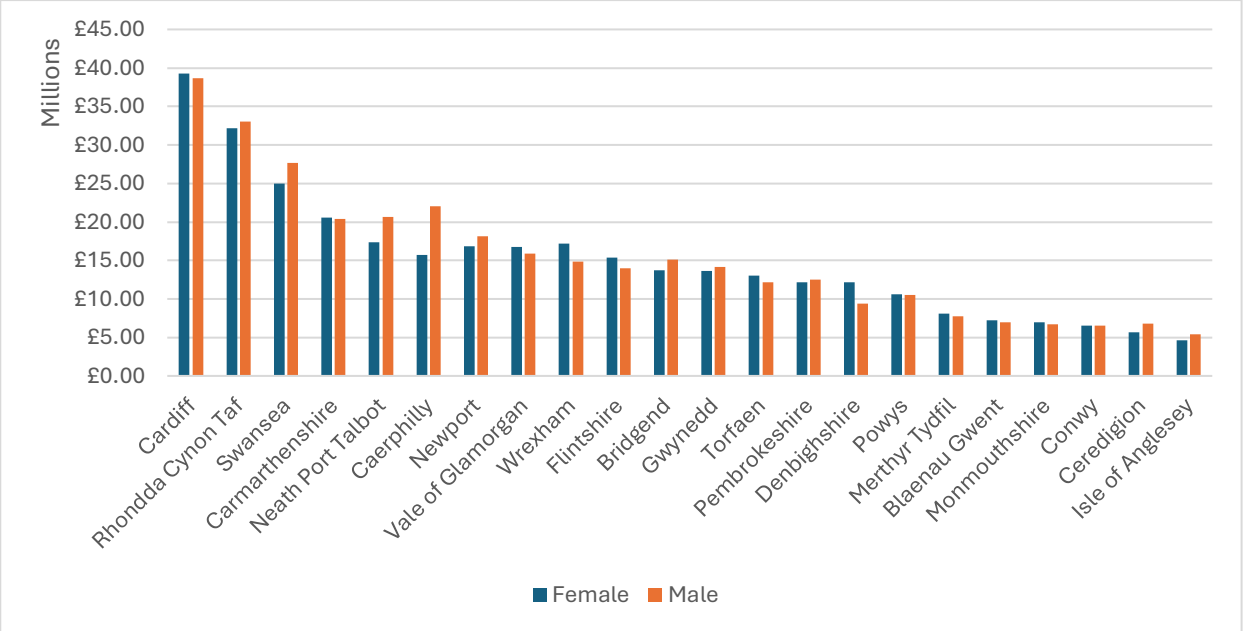
Figure 14 Smoking-related annual lost productivity cost in Wales by deprivation quintile and sex



## Local authority and sex

At the local authority level, there is considerable variation. Cardiff (£78.0m), Rhondda Cynon Taf (£65.2m), and Swansea (£52.7m) show the highest costs, reflecting their larger populations and higher levels of deprivation. In contrast, smaller and more rural areas such as the Isle of Anglesey (£10.1m), Ceredigion (£12.4m), and Conwy (£13.1m) record much lower total costs. These differences highlight how geography and population structure intersect with deprivation to shape the overall burden.

Figure 15 Smoking-related annual lost productivity cost in Wales by local authority and sex




Overall, the findings demonstrate that while costs are evenly split between males and females, social gradient is evident. People living in more deprived areas incur a much greater financial burden, and local authorities with higher deprivation and larger populations bear the highest costs. Addressing these inequalities will require targeted policies and interventions that focus on deprived communities, where the potential health and financial gains are greatest.

## Smoking-related annual environmental cost in Wales

- Sex differences: Environmental costs are nearly equal for males (£122.1m) and females (£119.0m), indicating minimal sex disparity.
- Deprivation gradient: The most deprived areas incur £76.2 million - over three times the £24.2 million in the least deprived - highlighting the disproportionate environmental burden on disadvantaged communities.
- Geographic variation: Highest costs occur in Cardiff (£28.1m), Rhondda Cynon Taf (£23.5m), and Swansea (£19.0m), while smaller rural areas like Anglesey (£3.6m) and Ceredigion (£4.5m) have lower totals, showing that population size and deprivation drive environmental impacts.

In 2022, smoking-attributable environmental costs in Wales totalled £241.2 million. Costs were almost evenly split between males and females, but a clear social gradient was evident, with the most deprived areas bearing over three times the costs of the least deprived. Geographic variation was also notable, with the highest costs in Cardiff, Rhondda Cynon Taf, and Swansea, and lower costs in smaller rural authorities.

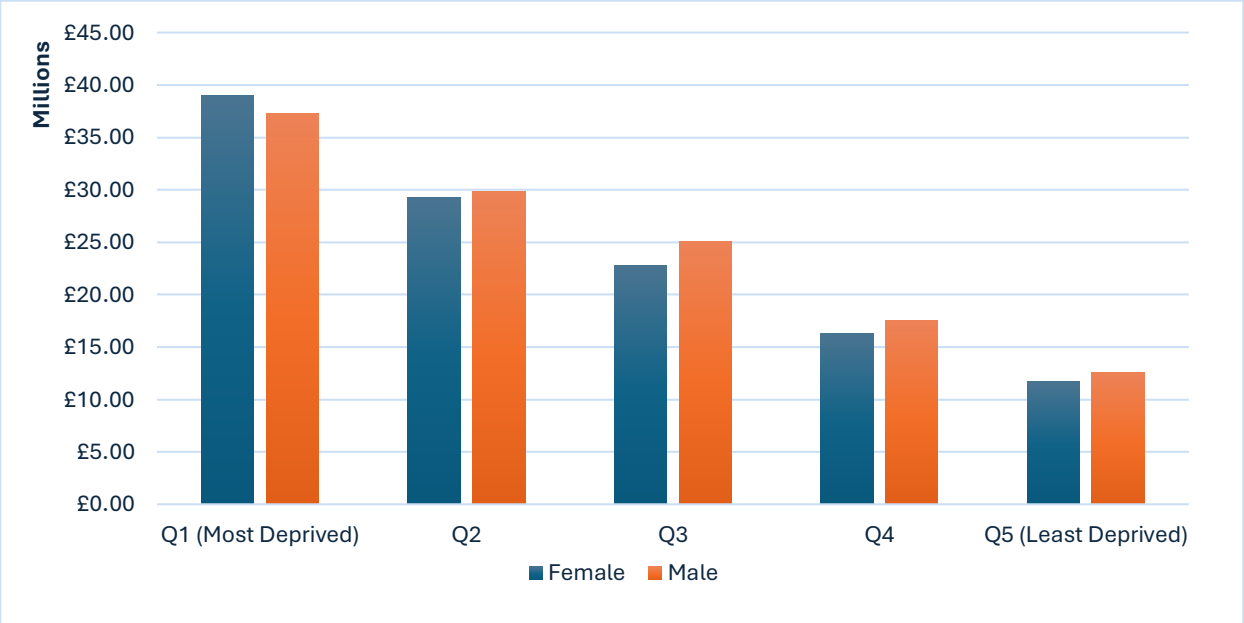
## Sex

In 2022, smoking-attributable environmental costs in Wales totalled £241.2 million, distributed almost equally between males (£122.1m, 50.6%) and females (£119.0m, 49.4%).

## Deprivation quintile and sex

There is a clear deprivation gradient: the most deprived neighbourhoods account for £76.2 million (31.6%) - more than three times the £24.2 million (10.0%) in the least deprived neighbourhoods. This demonstrates that the financial burden of smoking falls disproportionately on the most disadvantaged communities.

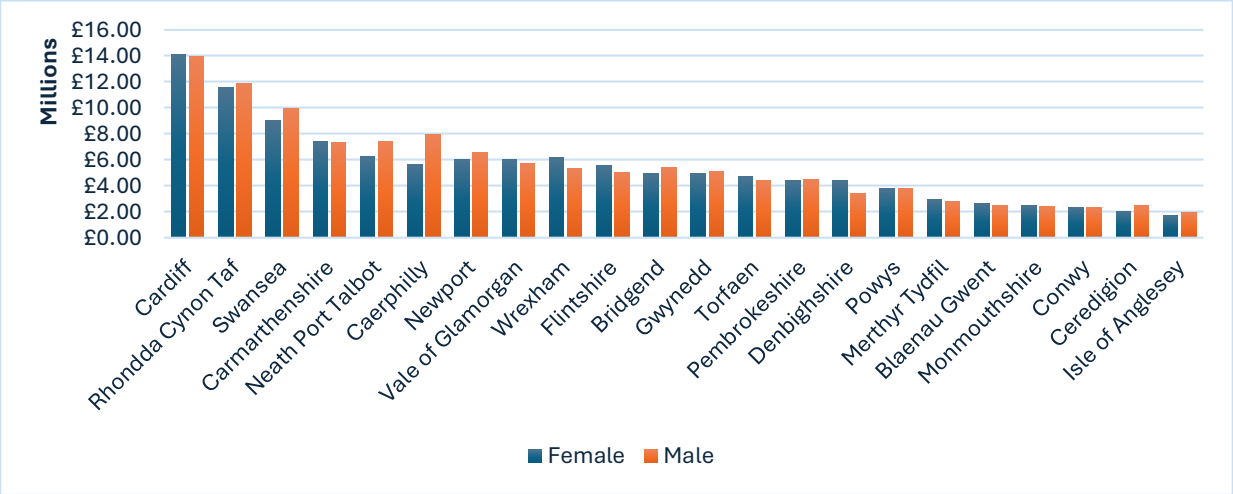
Figure 16 Smoking-related annual environmental cost in Wales by deprivation quintile and sex



## Local authority and sex

Local authority costs vary with population and deprivation. The highest costs are in Cardiff (£28.1m), Rhondda Cynon Taf (£23.5m), and Swansea (£19.0m), while the lowest are in Isle of Anglesey (£3.6m), Ceredigion (£4.5m), and Conwy (£4.7m). Some areas show higher costs for females, reflecting a narrowing gender gap, whereas others remain male-dominated.

Figure 17 Smoking-related annual environmental cost in Wales by local authority and sex




Overall, deprivation is the main driver of costs. Targeting tobacco control in the most deprived communities offers the greatest potential to reduce both costs and health inequalities, with interventions remaining gender inclusive.

## Smoking-related QALY loss and associated costs in Wales

- Smoking-related mortality and morbidity in 2022/23 was associated with a life-time QALY loss of 143,264, with costs ranging from £2.86 bn (£20,000/QALY) to £10.03 bn (£70,000/QALY).
- Sex differences: Males consistently incurred higher costs (59.48%) than females, reflecting greater smoking prevalence and associated harms.
- Deprivation gradient: Costs are strongly concentrated in the most deprived quintiles, over three times higher than the least deprived, indicating substantial socioeconomic inequalities.
- Geographic variation: Highest costs occurred in Cardiff, Rhondda Cynon Taf, and Vale of Glamorgan, while smaller rural areas such as Isle of Anglesey and Conwy had much lower costs.
- Cost thresholds: Total costs rise with higher QALY valuations, illustrating the sensitivity of economic estimates to the value assigned per QALY lost.

Smoking in Wales was associated with substantial health losses and economic costs. Smoking-related mortality and morbidity resulted in 143,264 QALYs lost over the life-course. The economic impact of such losses ranged from £2.86 billion to £10.03 billion,

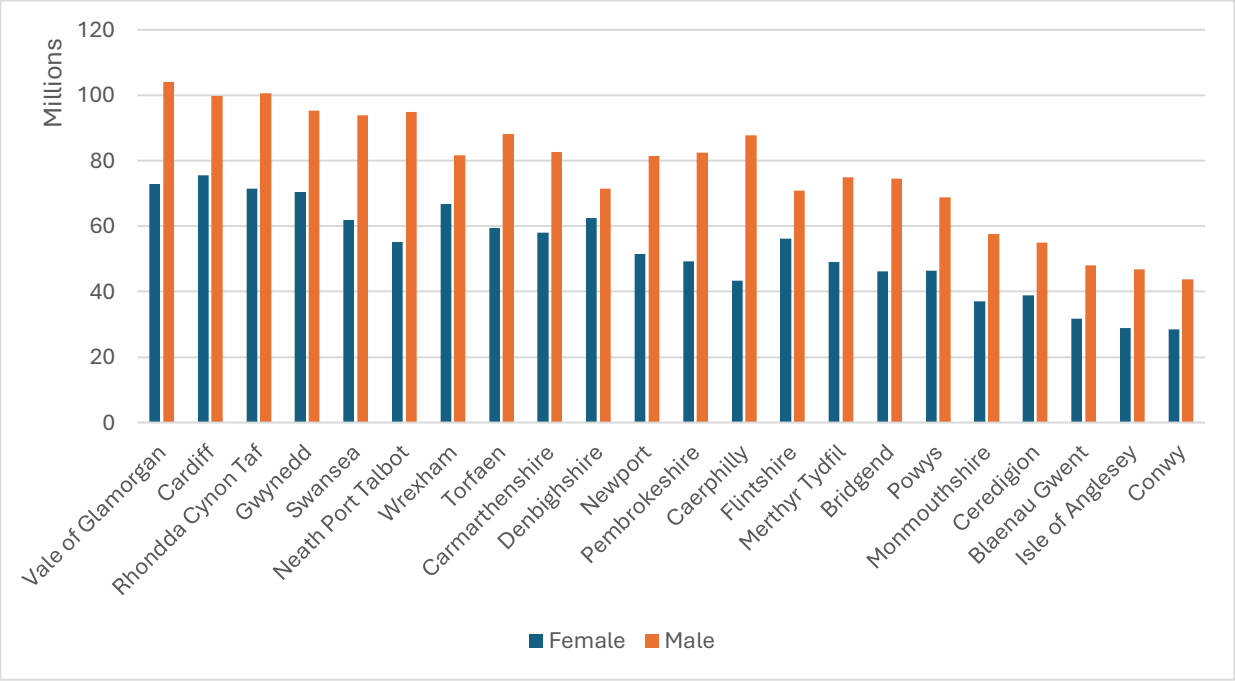
depending on the QALY valuation, with clear disparities by sex, deprivation, and geography. Findings are grouped into different QALY thresholds (£20,000; £30,000 and £70,000 per QALY).

## £20,000 QALY threshold

### Local authority and sex

The figure shows the estimated total costs stratified by sex across local authorities in Wales. Overall, the combined total cost is £2.86 billion, with males contributing 59.48% of the total costs. Vale of Glamorgan has the highest total cost (£176.8m), followed by Cardiff (£175.3m) and Rhondda Cynon Taf (£171.9m), while Conwy has the lowest (£72.3m). The distribution reflects both population size and sex-specific cost differences across local authorities.

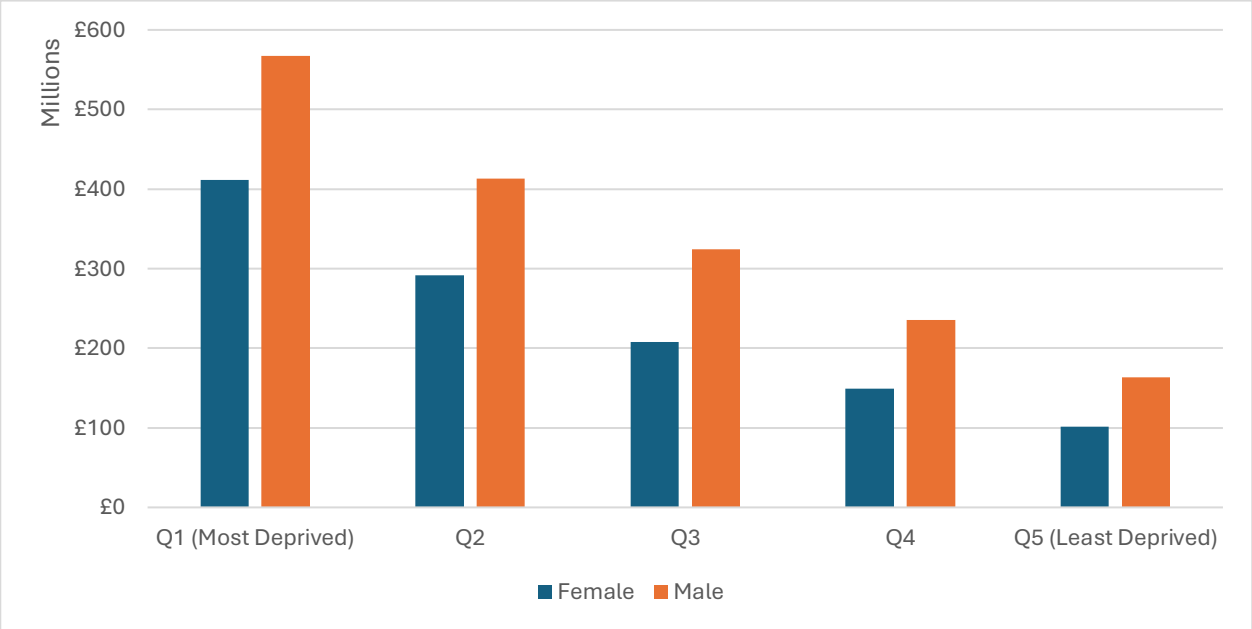
Figure 18 Smoking-related costs in terms of QALYs by local authority and sex in Wales (£20,000/QALY)



## Deprivation quintile and sex

The figure presents total costs by deprivation quintile and sex in Wales. Overall, the combined cost is £2.86 billion, with males contributing 59.48% of the total costs. Costs are strongly concentrated in more deprived areas: the most deprived accounts for £979 million (34.16% of the total), while the least deprived accounts for £265 million (9.26%). Across all quintiles, male costs consistently exceed female costs, and there is a clear gradient of decreasing costs from the most to the least deprived, highlighting substantial socioeconomic inequalities.

Figure 19 Smoking-related costs in terms of QALYs by deprivation quintile and sex in Wales (£20,000/QALY)

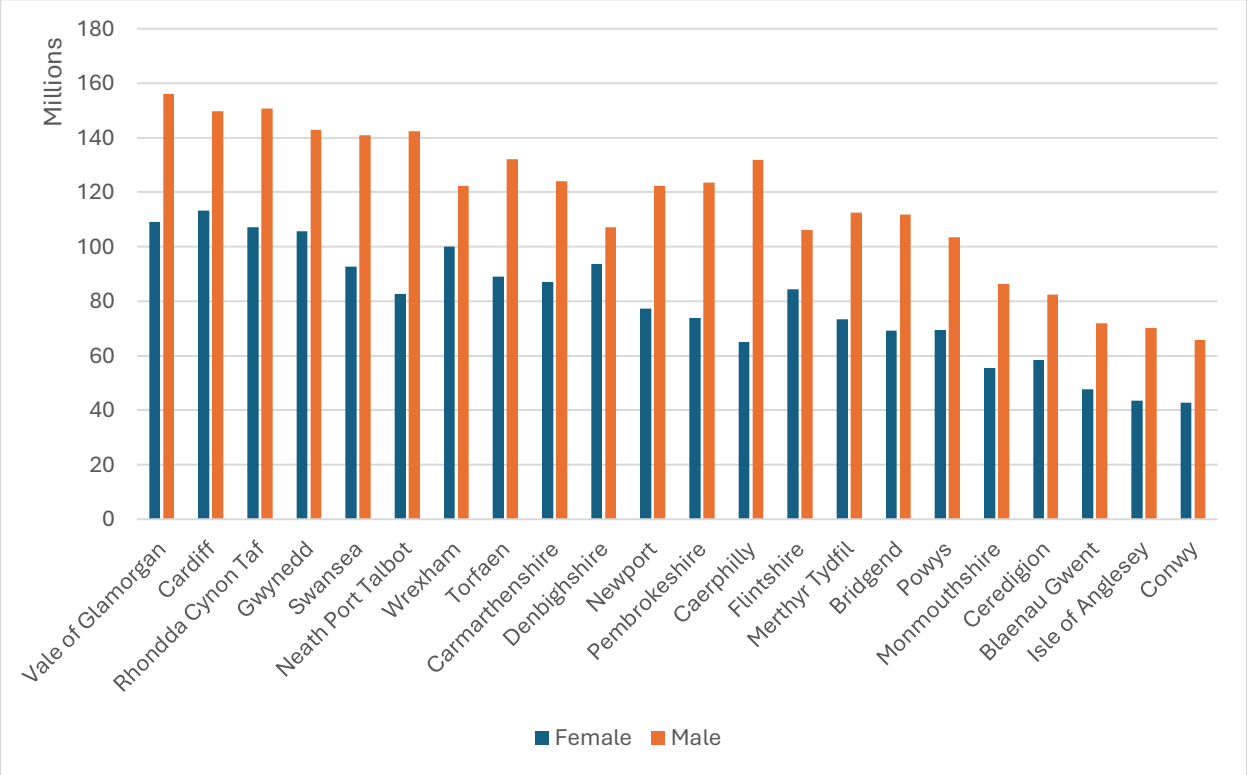


## £30,000 QALY threshold

### Local authority and sex

Smoking-related costs across Welsh local authorities total £4.30 billion, with males accounting for 59.48% of the total costs. Vale of Glamorgan has the highest total cost (£265.2m), followed by Cardiff (£262.9m) and Rhondda Cynon Taf (£257.9m), while Conwy has the lowest (£108.5m).

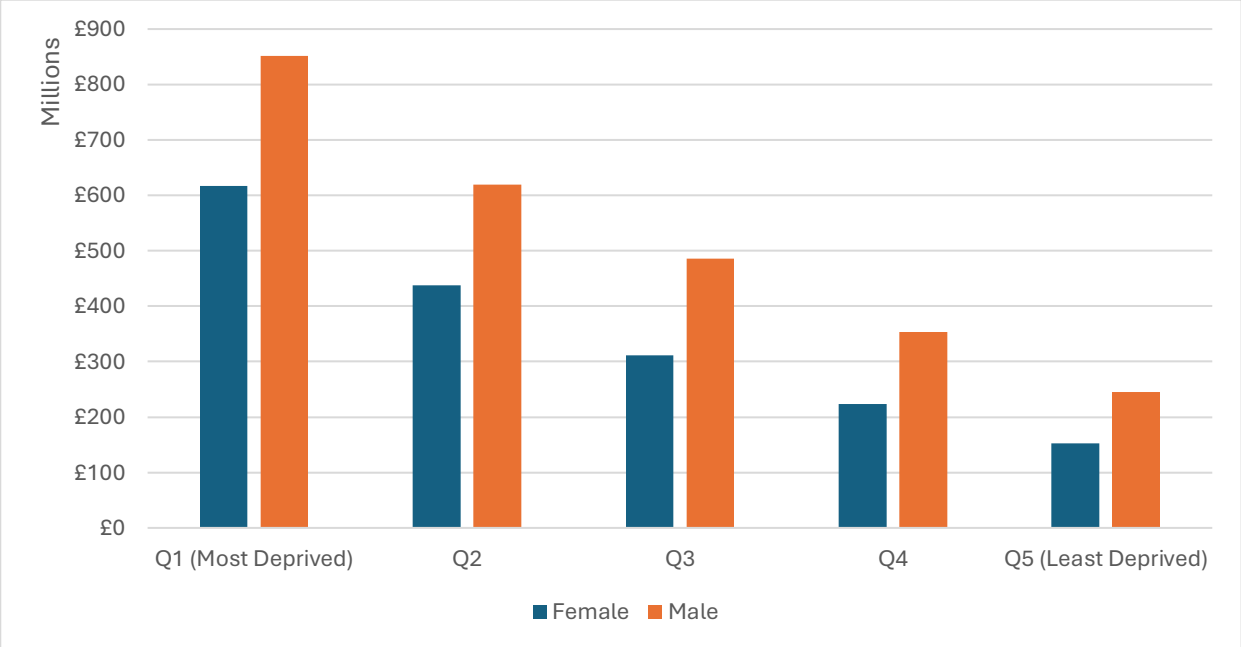
Figure 20 Smoking-related costs in terms of QALYs by local authority and sex in Wales (£30,000/QALY)



## Deprivation quintile and sex

Smoking-related costs show a clear social gradient across deprivation quintiles in Wales, with the most deprived areas incurring the highest total cost (£1.47 bn) and the least deprived the lowest (£0.40 bn). Costs decrease steadily with decreasing deprivation, highlighting a strong link between socioeconomic disadvantage and smoking-related burden. Males consistently account for a larger share of costs across all quintiles, reflecting higher smoking prevalence and associated impacts. Overall, more than half of Wales's total smoking-related QALYs lost costs arise from the two most deprived quintiles, underscoring the substantial inequality in the economic consequences of smoking.

Figure 21 Smoking-related costs in terms of QALYs by deprivation quintile and sex in Wales (£30,000/QALY)

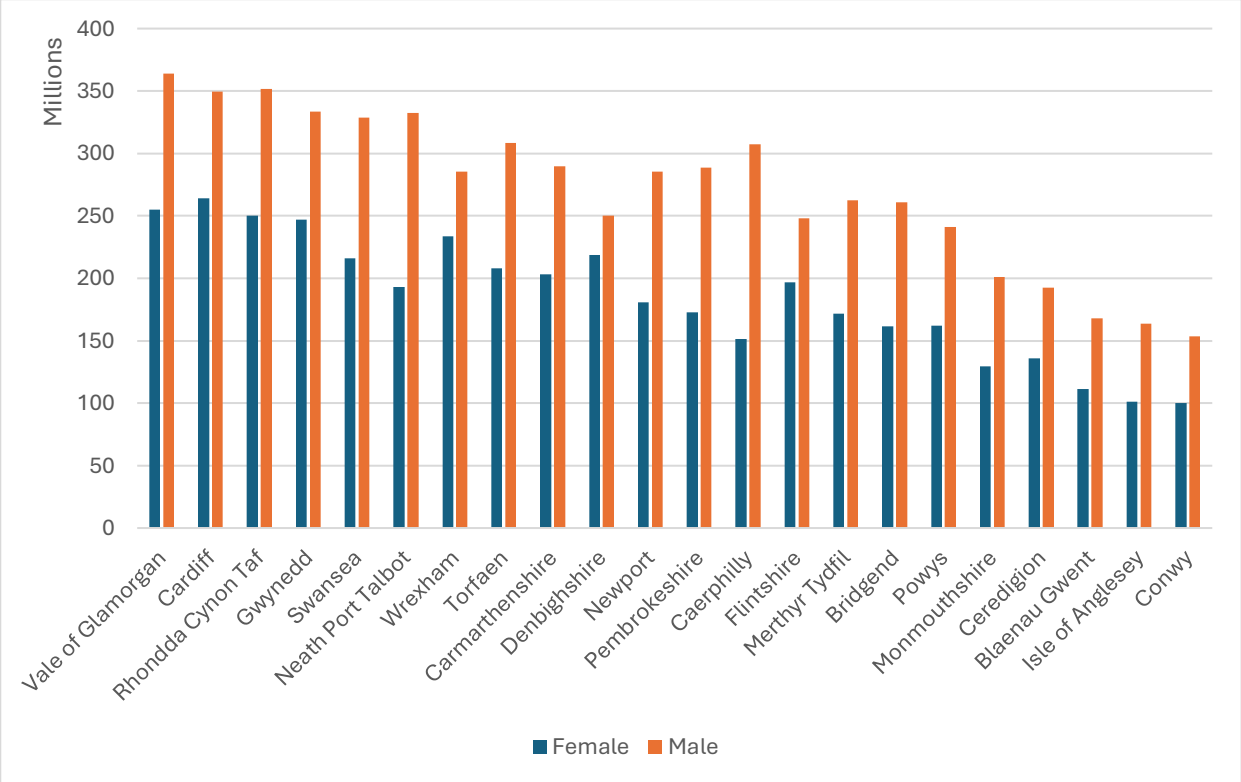


## £70,000 QALY threshold

### Local Authority and sex

The total estimated value of QALYs lost across Welsh local authorities amounts to £10.03 billion, with males contributing 59.48% of the total cost burden. Vale of Glamorgan (£619m) records the highest overall cost, followed by Cardiff (£614m), and Rhondda Cynon Taf (£602m) - reflecting their larger populations and higher smoking-related or economic burdens. In contrast, smaller or more rural authorities such as Isle of Anglesey (£265m) and Conwy (£253m) show the lowest costs. The results reveal clear geographic and gender disparities, with higher costs concentrated in densely populated and more deprived areas, and men consistently contributing a greater share of the total burden.

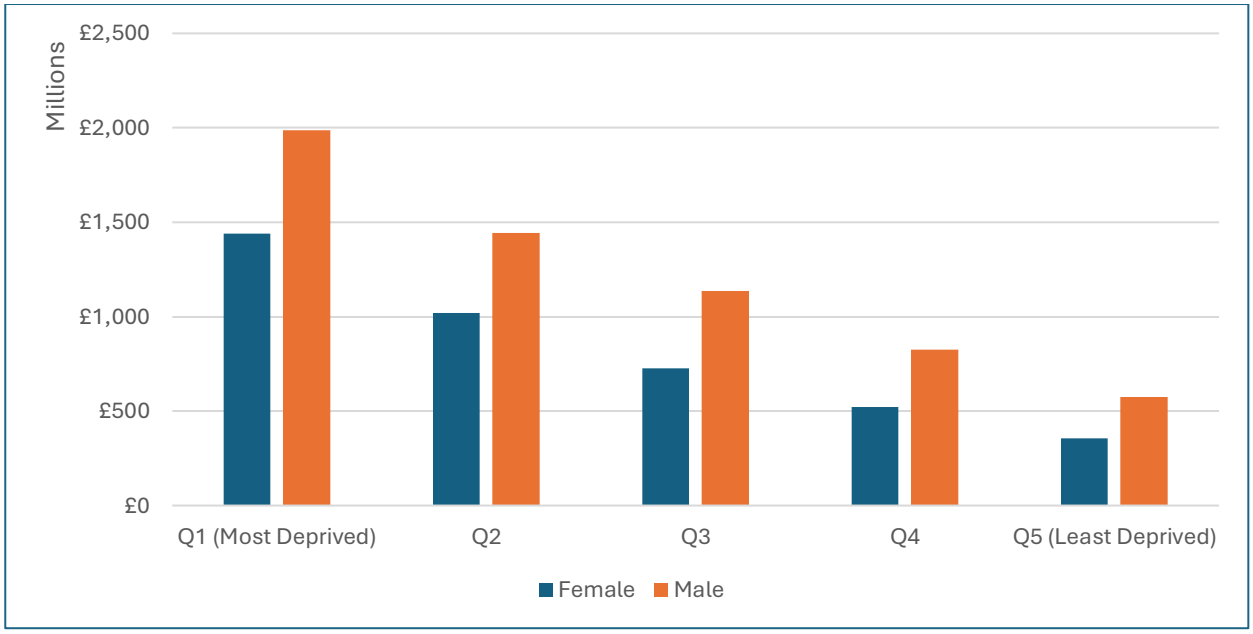
Figure 22 Smoking-related costs in terms of QALYs by local authority and sex in Wales (£70,000/QALY)



## Deprivation quintile and sex

The results show a clear social gradient in total estimated costs, with the most deprived quintile bearing the highest burden at £3.43 billion, more than three times higher that of the least deprived quintile at £0.93 billion. This pattern highlights strong socioeconomic inequalities, where more deprived areas face substantially greater costs. Across all quintiles, males consistently contribute more than females, reflecting higher smoking prevalence and related harms among men. Overall, the findings emphasise that deprivation is a major driver of the total cost burden, with the most deprived populations disproportionately affected both economically and in terms of health impact.

Figure 23 Smoking-related costs in terms of QALYs by deprivation quintile and sex in Wales (£70,000/QALY)




Smoking-related mortality and morbidity in 2022/23 among adults in Wales was associated with an estimated 143,264 QALYs lost over a lifetime, translating to substantial economic costs across varying QALY thresholds. At the £20,000 - £30,000 per QALY thresholds, total costs ranged from £2.86 billion to £4.30 billion, while at the £70,000 threshold, costs reached £10.03 billion. Across all thresholds, males consistently contributed a greater share of costs than females, reflecting higher smoking prevalence and mortality impacts. Vale of Glamorgan, Cardiff, and Rhondda Cynon Taf had the highest total costs, while Isle of Anglesey and Conwy showed the lowest. A pronounced social gradient was evident, with the most deprived areas bearing over three times the QALYs lost costs of the least deprived areas, underscoring deep socioeconomic and geographic inequalities in the burden of smoking across Wales.

# Discussion and Conclusions

This study confirms that tobacco smoking continues to impose a substantial economic and health burden in Wales, consistent with evidence from England and the wider UK. Our updated estimate of £1.56 billion annually in 2022 represents a doubling of the costs previously reported in 2013 (£790 million), reflecting both improved methodological capture of cost domains and persistent prevalence in disadvantaged populations (48). Although smoking prevalence has declined in Wales to 13% of adults, the financial costs have not reduced proportionately, primarily due to the enduring concentration of smoking in deprived communities and the broader recognition of environmental and social care costs.

The current Public Health Wales (PHW) estimate suggests that smoking costs Wales £1.56 billion annually, almost double the £0.79 billion estimated in the earlier ASH Wales study by Grant (2013). This increase reflects updated evidence and broader cost inclusion. Unlike Grant (2013), which primarily focused on healthcare costs (£302 million), the PHW analysis estimates higher healthcare costs (£454 million) and additionally includes social care (£196 million), environmental harms (£241 million), and productivity losses (£670 million). Smoking-related social care costs in Wales also showed a clear deprivation gradient, consistent with evidence from England that smokers require earlier and more intensive care.

Table 2 Comparison of smoking-related costs between England and Wales

| Cost category | PHW estimate | ASH Wales (Grant, 2013) | ASH England estimate | English estimates apportioned for Wales |
|---|---|---|---|---|
| Total costs | £1.56 bn | £0.79 bn | £14 bn (49)<br>£43.7 bn (50) | £0.78 bn<br>£2.45 bn |
| Healthcare costs | £454 m | £302 m | £1.8 bn (50) | £100.73 m |
| Social care costs | £196 m | X | £13.9 bn (50) | £778 m |
| Environmental costs | £241 m | X | X | - |
| Productivity loss costs | £670 m | X | £27.6 bn (50) | £1.54 bn |
| QALY lost costs | £2.86 bn | X | £34.6 bn (50) | £1.94 bn |

Recent ASH estimates (50) place smoking costs at £43.7 billion for England (2025), equivalent to around £2.45 billion for Wales when population-apportioned, exceeding the PHW estimate. This difference may reflect the broader methodological scope of the English estimates rather than necessarily indicating a higher smoking burden. The English estimates include smoking-related unemployment and reduced Gross Value Added (GVA) within productivity losses and unpaid care and unmet care needs within social care costs - components not fully incorporated in our analysis. As a result, productivity (£27.6 billion) and social care (£13.9 billion) dominate the English estimates, whereas in Wales the largest measured costs were productivity losses (£670 million), followed by environmental impacts (£241 million) and hospital admissions (£210 million). QALY loss costs in Wales were slightly higher than the apportioned English estimates because the English study included only smoking-attributable premature mortality, whereas the Welsh estimates incorporated both mortality and morbidity impacts.

In addition to direct and indirect economic impacts, smoking continues to exact a substantial toll in health outcomes and quality of life. Our analysis estimated that smoking-related deaths and hospital admissions in Wales in 2022/23 were associated with 143,264 QALYs lost across the life-course, equivalent to the costs of £2.86 - £10.03 billion depending on the value of a QALY used (£20,000 - £70,000 per QALY). These values illustrate that the health-related costs of smoking in Wales exceed NHS expenditures at higher QALY thresholds, underscoring the profound opportunity cost of preventable disease. The highest QALY losses and associated costs were observed in populous areas such as Vale of Glamorgan, Cardiff and Rhondda Cynon Taf, while rural authorities like Isle of Anglesey and Conwy incurred markedly lower totals. A clear social gradient was evident: the most deprived quintile accounted for over a third of total QALY-related costs, while the least deprived contributed less than one-tenth. This mirrors longstanding evidence linking smoking prevalence, mortality, and quality-of-life loss to socioeconomic disadvantage (8, 51, 52). Males consistently accounted for a greater share of costs, reflecting higher smoking prevalence and disease burden.

Across all contexts, socioeconomic inequality emerges as a central theme. In Wales, smoking prevalence in the most deprived quintile is more than three times that of the least deprived, with cost consequences distributed accordingly. Our analysis showed the most deprived neighbourhoods incurring £490 million in smoking-related costs versus £169 million in the least deprived quintile. This mirrors English findings that smoking prevalence and related health and care costs are disproportionately borne by disadvantaged populations (23, 50). Such inequalities are consistent with the well-established role of smoking as a driver of health disparities in life expectancy, quality of life and overall health outcomes (53).

The marked socioeconomic gradient observed across all smoking-related cost categories highlights the need for targeted action in communities experiencing the greatest burden. Behavioural science offers a powerful opportunity to accelerate smoking reduction in Wales, particularly in the most deprived communities where smoking prevalence and smoking-related costs remain highest. Tailored interventions such as targeted messaging, financial incentives, social norm approaches, and proactive referral to cessation services can increase quit attempts and successful cessation (54, 55). Combined with strong tobacco control policies, these approaches can help reduce health inequalities and support progress towards a smoke-free Wales.

A central finding of this study is that smoking imposes substantial economic costs that extend far beyond the healthcare sector and fall disproportionately on deprived communities. Taken together, the evidence underscores several policy implications. First, the costs of smoking vastly exceed the revenue generated by tobacco taxation, a finding emphasised by the 2025 ASH report which estimated £16.5 billion in public finance costs compared with £6.8 billion in tax revenue in England (50). Second, while health service costs are substantial, the dominant societal costs arise from productivity losses and social care, highlighting the need for comprehensive evaluations that extend beyond the NHS. Third, the concentration of costs in deprived communities reinforces the importance of equity-focused tobacco control strategies. Reducing smoking prevalence in these groups would deliver disproportionate health and economic gains, alleviating pressure on both health and social care systems.

Although this report focuses on tobacco smoking, the rapidly increasing use of e-cigarettes (vapes) also warrants attention. Recent data indicate that 10.0% of adults in Wales used e-cigarettes in 2024–25, an increase from 6.7% in 2019–20, with use highest in more deprived communities (56). Although vaping is generally considered less harmful than smoking and can support smoking cessation, its growing prevalence may create its own health, environmental, and economic burden (57). Further research is needed to quantify the public health and societal costs associated with vaping and to understand its implications for health inequalities in Wales.

This study has several limitations. First, although it uses the best available Welsh data, some estimates rely on assumptions and parameters derived from UK or international studies, which may not fully capture local variation. In addition, smoking prevalence has continued to decline since 2022/23, meaning that some estimates may overstate the current burden of smoking. Second, local authority smoking prevalence estimates from the National Survey for Wales are subject to sampling uncertainty and should not be interpreted as definitive rankings of smoking prevalence between authorities. As these prevalence estimates underpin the cost calculations, this uncertainty may also influence the estimated smoking-related costs and comparisons across local authorities. Third, GP and prescription cost estimates relied on assumptions informed by historical evidence due to limited smoking-specific cost data, which may affect the precision of these estimates. Fourth, productivity costs were estimated using population-level assumptions and did not explicitly account for variations in employment status, such as unemployment, economic inactivity, or participation in education, which may affect the accuracy of these estimates. Fifth, the modelling applied average smoking-attributable fractions and unit costs across population groups, which may mask important heterogeneity by disease, age, and geography. Smoking also interacts with other determinants of health, such as occupation, housing conditions, alcohol consumption, and diet, which may not be fully captured through deprivation measures alone. Sixth, certain indirect costs, including wider societal impacts of second-hand smoke, long-term morbidity among ex-smokers, and intangible wellbeing losses not captured through QALYs, were excluded, meaning the overall economic burden is likely underestimated. Finally, although stratification by local authority, deprivation quintile, and sex strengthens the equity analysis, the cross-sectional nature of the prevalence data limits causal interpretation and may not fully reflect historical smoking patterns or future trends in smoking behaviour and associated costs.

# Recommendations

The findings highlight that smoking imposes a substantial and unequal economic burden on Wales with the heaviest impacts concentrated in deprived communities. These results underscore the urgency of intensifying tobacco control as a public health and economic priority. Policies should combine universal measures - such as sustained taxation, curbing tobacco depictions on television, and smoke-free legislation - with targeted interventions for high-prevalence, high-cost groups, particularly in post-industrial and deprived areas. Expanding equitable access to smoking cessation services, integrating smoking prevention into wider health and social care strategies, and investing in public health campaigns are essential to reduce prevalence and narrow health inequalities.

Given that productivity losses, social care costs, and QALY losses attributable to smoking rival or exceed healthcare expenditures, effective action requires collaboration across health, social care, employment, and environmental sectors. Policymakers should also emphasise the economic burden borne by employers, including lost productivity, increased absenteeism, and the costs of recruiting and training replacement staff following smoking-related illness and premature mortality.

A smoke-free Wales by 2030 would not only deliver major health gains but also alleviate pressures on the NHS and social care, reduce environmental damage, and enhance economic productivity, generating significant long-term savings for government and society.

Building on this work, further economic analyses are planned to assess the costs, benefits, cost-effectiveness, and return on investment of a range of smoking cessation and tobacco control interventions in Wales. This will include distributional cost-effectiveness analyses to evaluate not only overall health gains but also how these interventions may affect health inequalities across different population groups and levels of deprivation. In addition, economic evaluations of tobacco retailer licensing and other regulatory measures could provide robust evidence to inform future tobacco control policies, decision-making, and resource allocation.

Together, this programme of work will strengthen the evidence base for tobacco control in Wales, helping policymakers identify interventions that deliver the greatest health and economic benefits. By supporting more effective and equitable tobacco control policies, this research has the potential to reduce smoking prevalence, improve population health and wellbeing, lessen pressures on public services, and contribute to reducing health inequalities across Wales.

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# Appendices

## The Cost of Smoking in Wales by Health Boards

### Summary

In 2022/23, smoking cost Wales more than £1.56 billion, with the biggest overall costs in Aneurin Bevan, Betsi Cadwaladr, and Cardiff & Vale health boards. People living in Aneurin Bevan and Cwm Taf Morgannwg faced the highest costs per person and per adult. Smokers in Aneurin Bevan also had the highest cost per smoker, while those in Hywel Dda had the lowest. Across Wales, this worked out to about £499 per person, £622 per adult, and £4,661 per smoker, showing that smoking continues to create a heavy financial burden, and this burden is not the same everywhere.

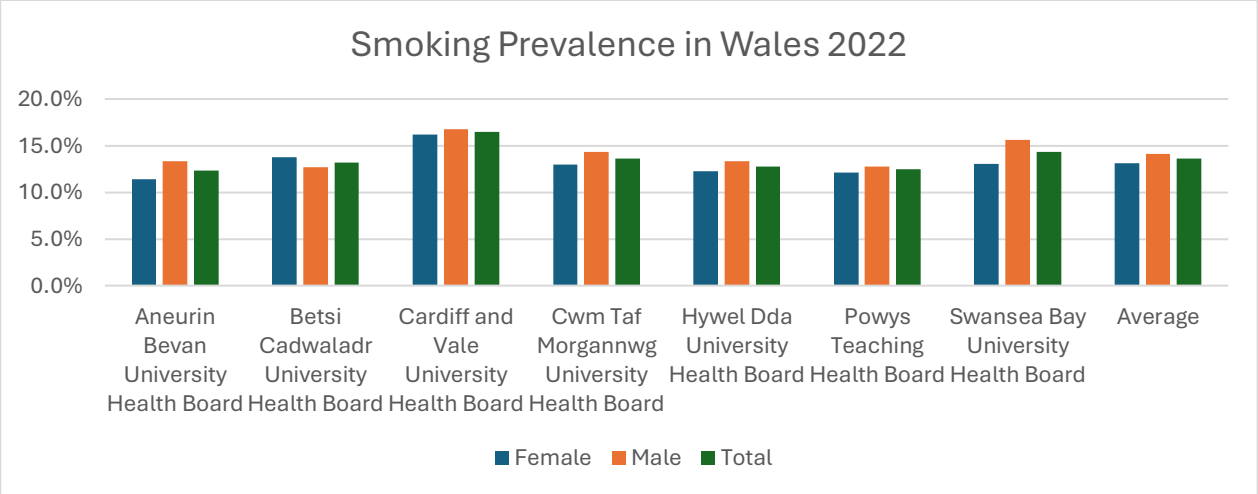
| Health Boards | Total costs | Cost per capita | Cost per Adult | Cost per Smoker |
|---|---|---|---|---|
| Aneurin Bevan University Health Board | £315,630,077.14 | £648.28 | £810.67 | £6,287.11 |
| Betsi Cadwaladr University Health Board | £299,568,739.55 | £435.29 | £540.18 | £4,472.08 |
| Cardiff and Vale University Health Board | £250,283,838.77 | £495.04 | £621.63 | £4,522.95 |
| Cwm Taf Morgannwg University Health Board | £277,678,074.76 | £625.35 | £786.26 | £5,056.09 |
| Hywel Dda University Health Board | £173,113,609.93 | £353.57 | £440.31 | £3,350.43 |
| Powys Teaching Health Board | £50,309,081.16 | £375.75 | £455.95 | £4,769.56 |
| Swansea Bay University Health Board | £194,871,793.00 | £508.22 | £631.04 | £4,297.19 |
| **Grand Total** | **£1,561,455,214.29** | **£498.61** | **£621.60** | **£4,660.91** |

Similarly, smoking-related losses in Wales led to very large costs in terms of reduced quality of life (QALYs) from both premature death and long-term illness. These ranged from £2.86 billion at a £20,000/QALY threshold to £10.03 billion at £70,000/QALY, with higher impacts on males and the greatest losses seen in Betsi Cadwaladr and Aneurin Bevan Health Boards. Overall, the results show that smoking causes a significant health and economic burden across Wales through both early death and chronic illness.

# Findings

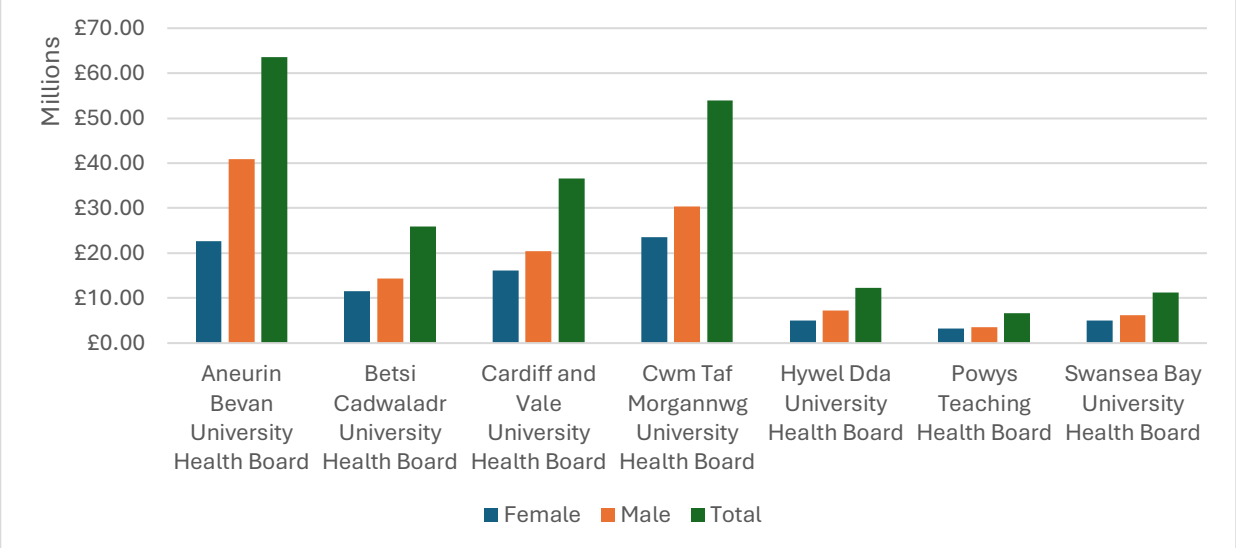
## Smoking Prevalence

In 2022/23, smoking prevalence in Wales averaged 13.6%, with slightly higher rates among males (14.1%) than females (13.1%). The highest overall prevalence was observed in Cardiff and Vale University Health Board (16.5%), while the lowest was in Aneurin Bevan and Powys Teaching Health Boards (12.4%). This variation highlights regional differences in smoking behaviour across Welsh health boards.



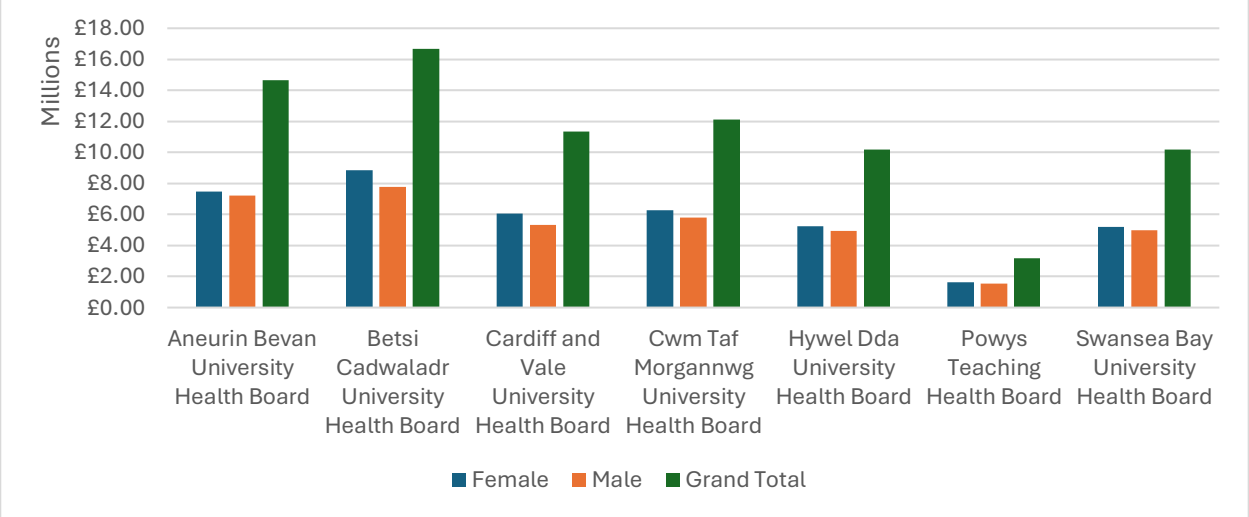

## Hospital Admissions

In 2022, smoking-related hospital admissions in Wales cost an estimated £210.2 million, with male admissions (£123.1 million) accounting for a larger share than female admissions (£87.1 million). The highest total costs were recorded in Aneurin Bevan (£63.6 million) and Cwm Taf Morgannwg (£54.0 million) University Health Boards, while the lowest were in Powys (£6.7 million). These figures highlight substantial regional and gender disparities in the healthcare burden of smoking across Wales.



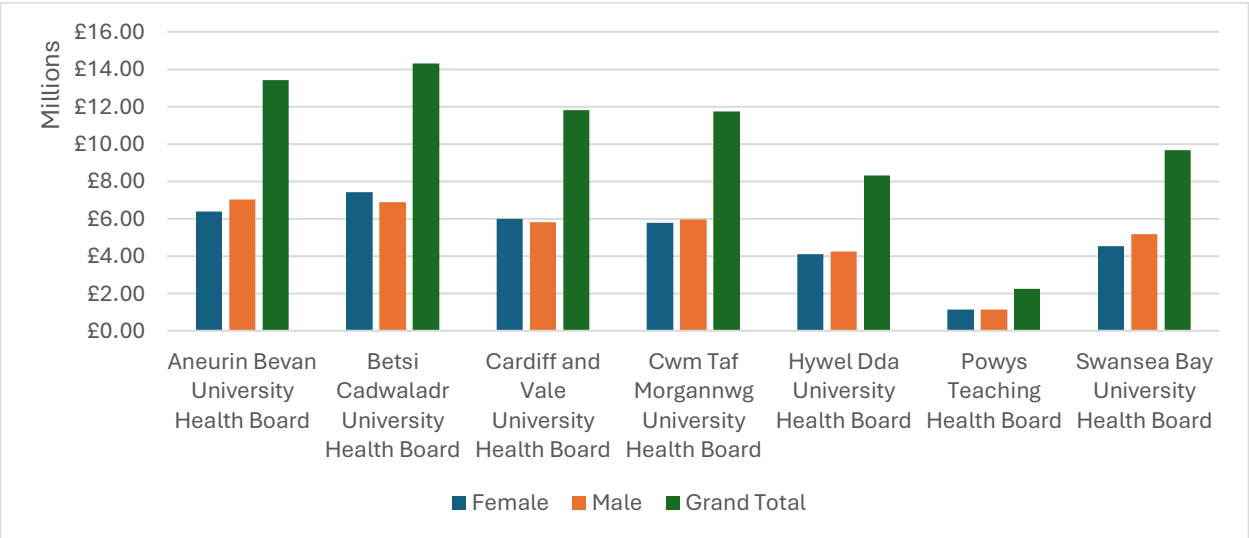
## Outpatient Attendance

In 2022, smoking-related outpatient attendances in Wales cost an estimated £78.3 million, with female patients (£40.7 million) accounting for slightly higher costs than male patients (£37.6 million). The highest overall outpatient costs were recorded in Betsi Cadwaladr (£16.7 million) and Aneurin Bevan (£14.7 million) University Health Boards, while the lowest were in Powys (£3.2 million). These figures illustrate notable regional differences in outpatient service use linked to smoking across Wales.



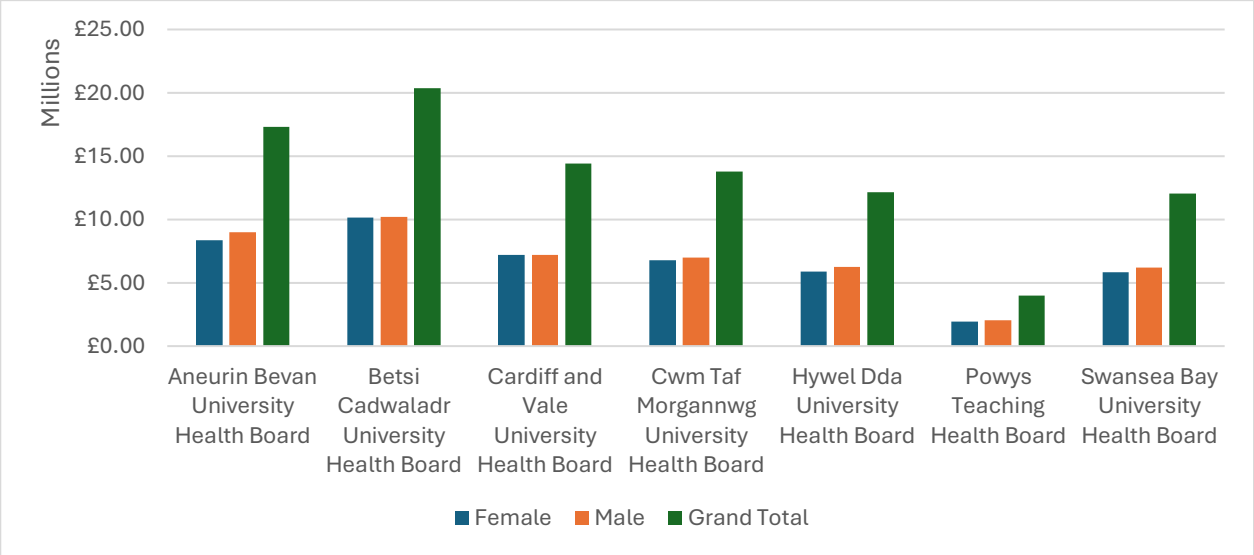

## GP Visits

In 2022, smoking-related GP visits in Wales cost an estimated £71.5 million, with male patients (£36.2 million) incurring slightly higher costs than female patients (£35.3 million). The greatest costs were observed in Betsi Cadwaladr (£14.3 million) and Aneurin Bevan (£13.4 million) University Health Boards, while Powys (£2.3 million) recorded the lowest. These figures highlight the widespread and consistent primary care burden of smoking across all Welsh health boards.



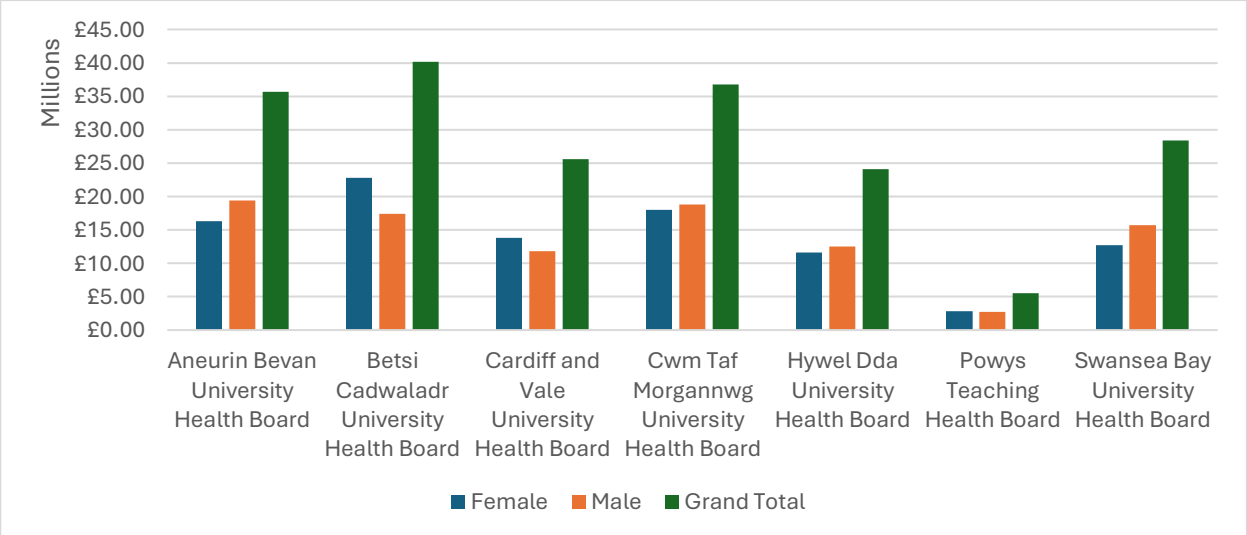
## Prescriptions

In 2022, smoking-related prescription costs in Wales totalled approximately £94.0 million, with male patients (£47.9 million) accounting for slightly higher costs than female patients (£46.1 million). The highest prescription expenditures were seen in Betsi Cadwaladr (£20.4 million) and Aneurin Bevan (£17.3 million) University Health Boards, while the lowest occurred in Powys (£4.0 million). These figures underscore the substantial and widespread pharmaceutical costs associated with smoking across Wales.



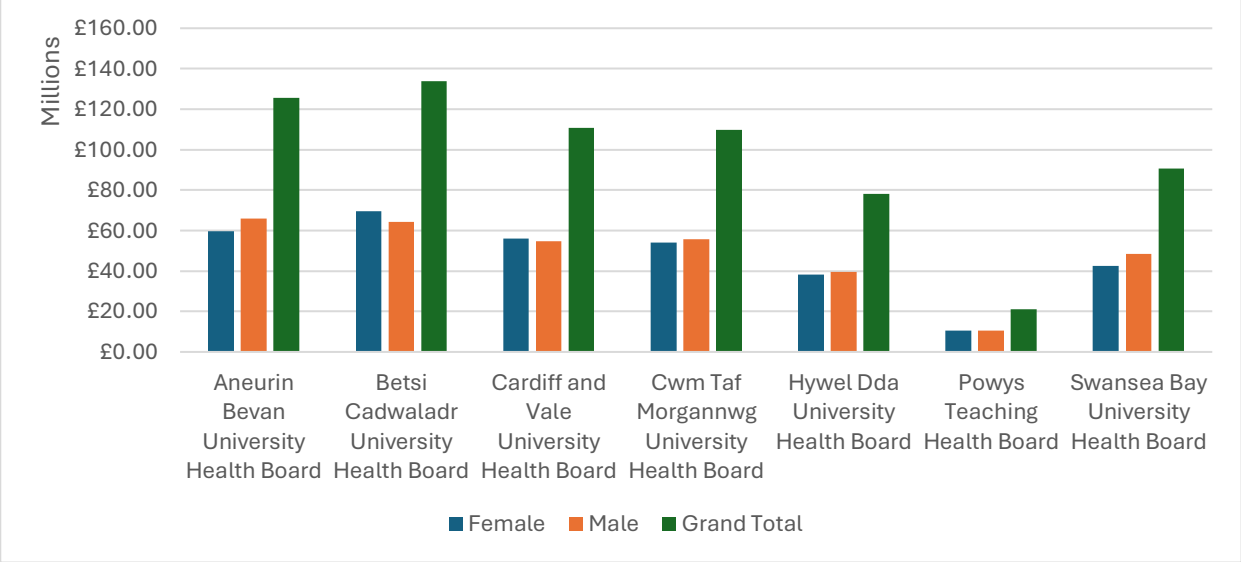

## Social Care

In 2022, smoking-related social care costs in Wales were estimated at £196.2 million, with costs almost evenly split between female (£97.9 million) and male (£98.3 million) recipients. The highest total costs were observed in Betsi Cadwaladr (£40.2 million) and Cwm Taf Morgannwg (£36.8 million) University Health Boards, while Powys (£5.5 million) recorded the lowest. These figures highlight the significant social care burden of smoking across all Welsh health boards.



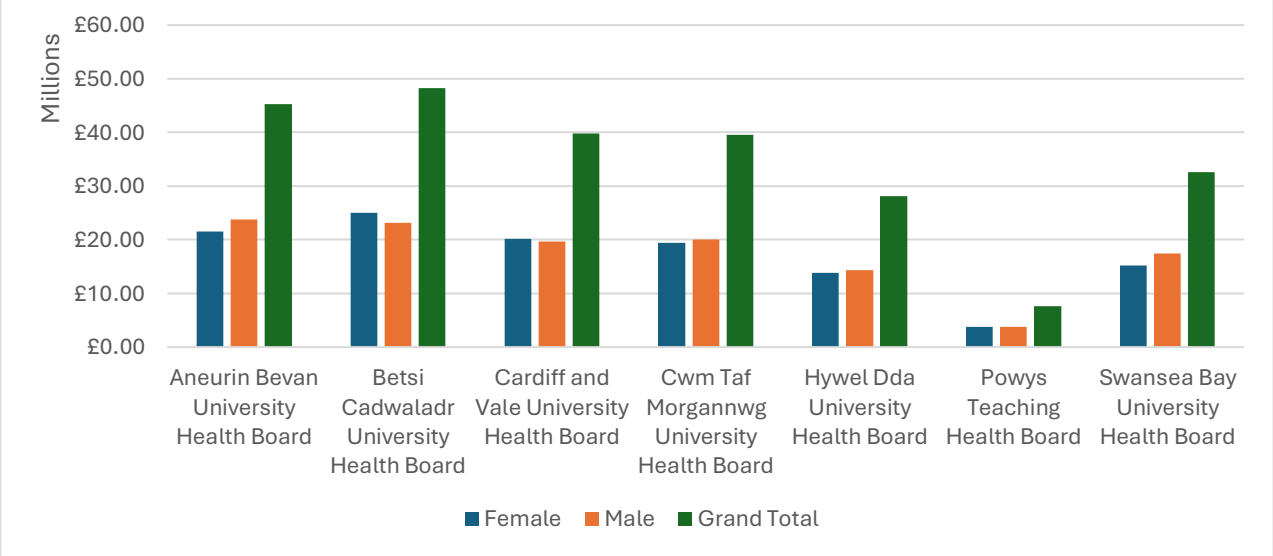
## Lost Productivity

In 2022, smoking-related lost productivity in Wales was estimated to cost £670.0 million, with male losses (£339.3 million) slightly exceeding those for females (£330.7 million). The highest costs for productivity losses occurred in Betsi Cadwaladr (£134.0 million) and Aneurin Bevan (£125.7 million) University Health Boards, while Powys (£21.1 million) experienced the lowest. These figures reflect the substantial economic impact of smoking on the Welsh workforce across all regions.




## Environmental Impact

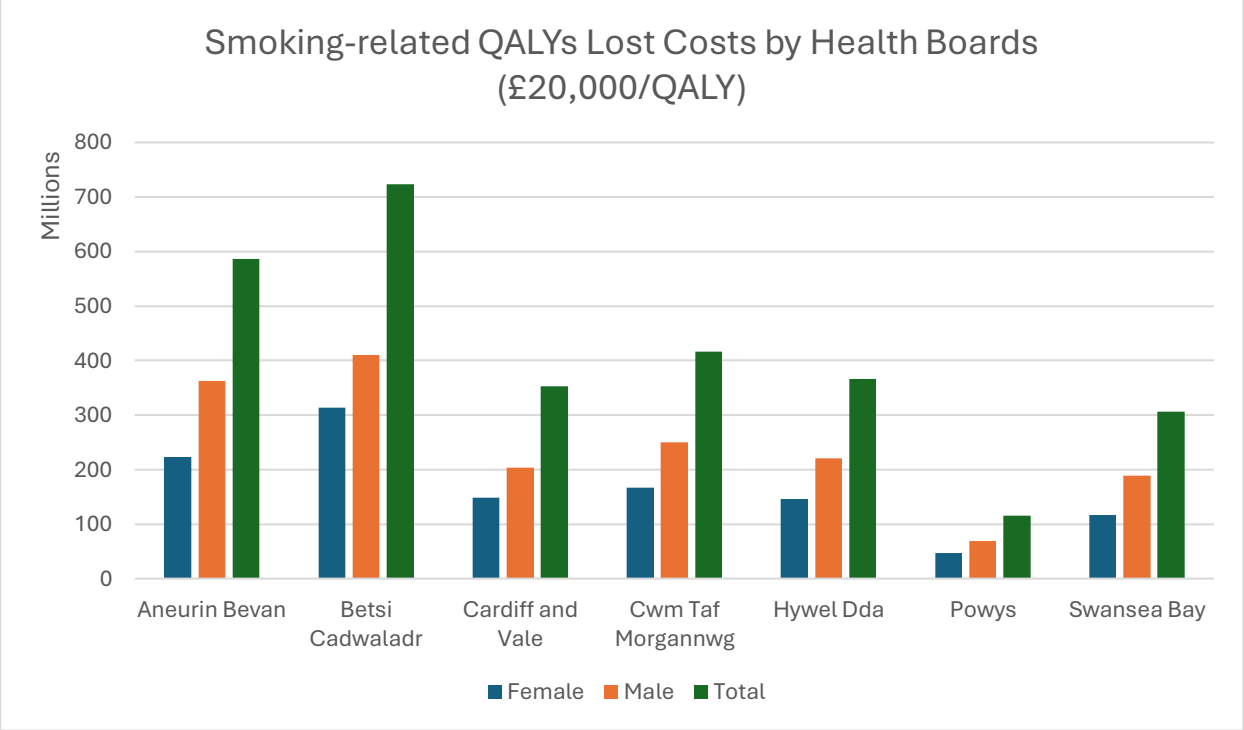
In 2022, smoking-related environmental costs in Wales were estimated at £241.2 million, with male-related impacts (£122.1 million) slightly higher than female-related impacts (£119.0 million). The highest environmental costs were recorded in Betsi Cadwaladr (£48.2 million) and Aneurin Bevan (£45.3 million) University Health Boards, while Powys (£7.6 million) had the lowest. These findings highlight the considerable environmental burden of smoking across all Welsh health boards.



## Smoking-related costs due to QALY loss from mortality and morbidity in Wales

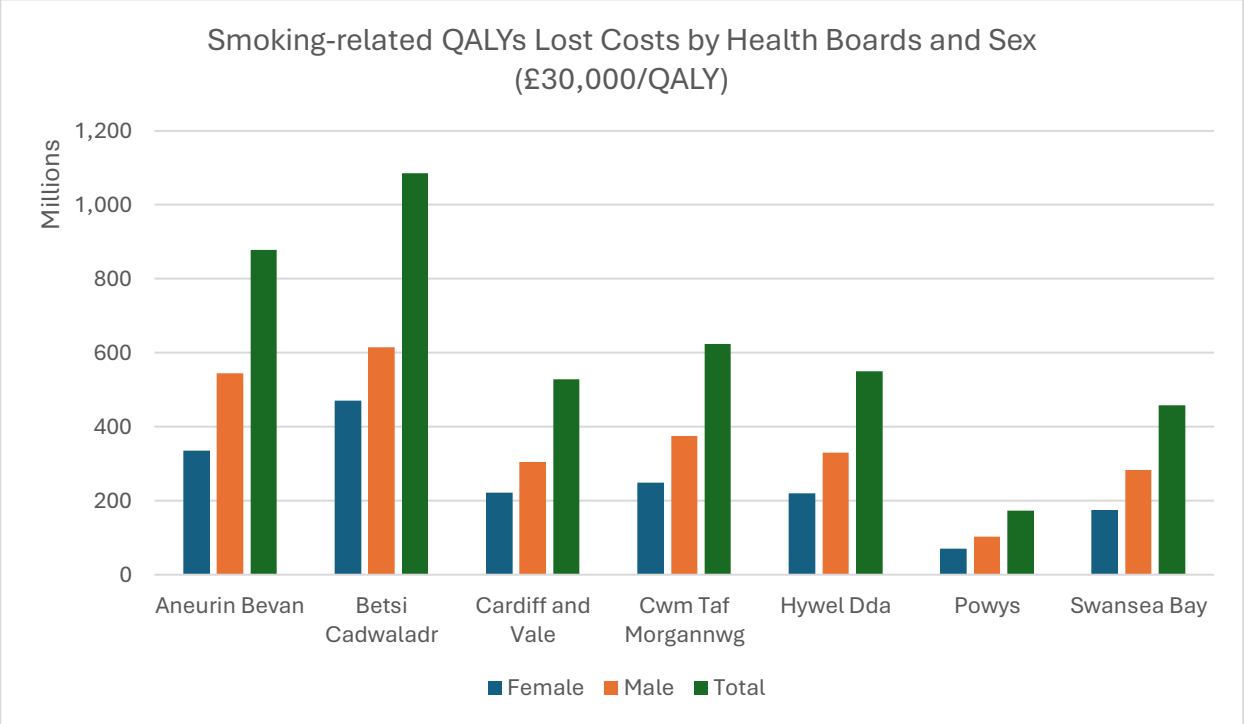
### £20,000 QALY Threshold

The estimated cost of QALY loss due to smoking-related mortality and morbidity among adults in 2022/23 in Wales - valued at a £20,000 per QALY threshold - totalled approximately £2.86 billion across life-course, with males contributing 59.48% of the total cost burden. The greatest impacts were seen in Betsi Cadwaladr (£723 million) and Aneurin Bevan (£585 million) University Health Boards, while Powys (£115 million) recorded the lowest. These figures underline the profound human and economic toll of smoking-related premature mortality across Wales.



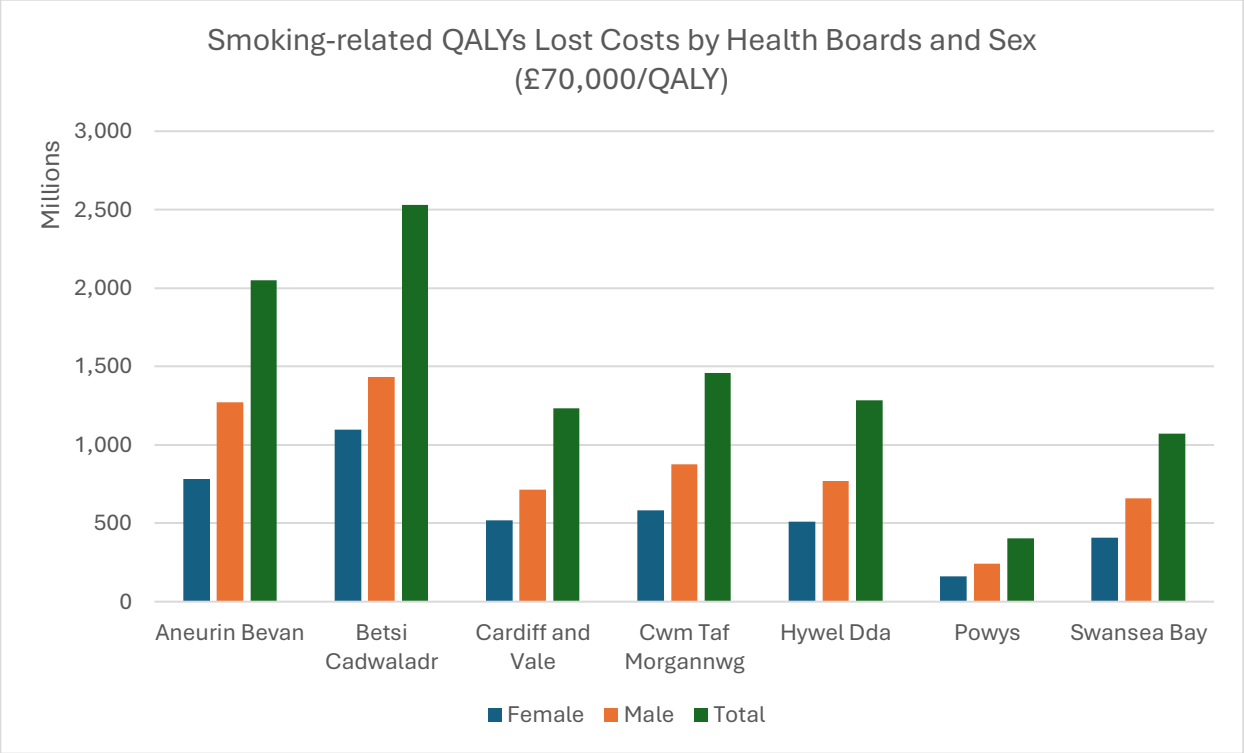
## £30,000 QALY Threshold

The estimated cost of QALY loss from smoking-related mortality and morbidity in 2022/23 in Wales, valued at a £30,000 per QALY threshold, was approximately £4.30 billion across life-course, with males contributing 59.48% of the total cost burden. The highest total costs occurred in Betsi Cadwaladr (£1.08 billion) and Aneurin Bevan (£879 million) University Health Boards, while Powys (£173 million) had the lowest. These results reflect the significant societal and economic burden of smoking-related premature deaths across Wales.



## £70,000 QALY Threshold

The estimated cost of QALY loss from smoking-related mortality and morbidity in 2022/23 in Wales, valued at a £70,000 per QALY threshold, totalled approximately £10.03 billion across life-course, with males contributing higher share (59.48%) of such loss. The greatest impacts were observed in Betsi Cadwaladr (£2.53 billion) and Aneurin Bevan (£2.05 billion) University Health Boards, while Powys (£403 million) recorded the lowest. These estimates highlight the immense societal and economic burden of smoking-related premature mortality across Wales when valued at higher QALY thresholds.



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Canolfan Gydweithredol Sefydliad Iechyd y Byd ar Fuddsoddi ar gyfer Iechyd a Llesiant

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# Gweithio gyda'n gilydd i greu Cymru iachach

# Working together for a healthier Wales



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