International Comparative Analysis on Health Prevention Policy: Identifying policy gaps for the UK

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Table of Contents

List of Boxes

List of Figures

List of Tables

Executive Summary

This report examines how prevention is conceptualised, measured, and delivered in the United Kingdom (UK) relative to other high-income countries, integrating evidence on mortality, morbidity, risk factors, and policy implementation. Taken together, these perspectives reveal substantial unrealised potential for prevention in the UK. Although the UK has a well-developed health system and strong public health infrastructure, it performs poorly on key indicators of preventable health outcomes. Avoidable, preventable, and treatable mortality rates are among the highest across comparator countries, with improvements over the past 15 years lagging behind those seen in countries such as South Korea and Switzerland. These gaps are driven by a relatively small number of conditions—cardiovascular disease, cancer, and injuries, including alcohol- and drug-related deaths—which account for a large share of the UK's excess burden.

At the same time, patterns of morbidity highlight a broader and growing challenge. Mental health conditions now represent the leading cause of non-fatal disease burden, and have increased substantially over time, alongside the rising prevalence of chronic conditions, such as diabetes and kidney disease. Many of these conditions are not well captured by mortality-based measures, but they place significant and sustained demands on individuals and the health system. Underlying these outcomes, key risk factors—including high body mass index (BMI), metabolic risk, alcohol and drug use, and exposure to violence—have remained persistent or worsened, suggesting that prevention efforts have not sufficiently shifted the underlying drivers of disease.

Importantly, these findings do not point to a lack of prevention activity, but rather to a misalignment between prevention efforts and population health needs. The UK performs well in several areas, including tobacco control and vaccination, indicating strong policy capability. However, this strength is not consistently reflected in areas where the burden is highest. Gaps are evident in the early detection and management of cardiovascular risk, delays along cancer diagnostic and treatment pathways, and limited integration of mental health and social services. Patient experience measures further suggest weaknesses in communication and engagement that may undermine adherence to treatment and long-term management of chronic conditions. Together, these patterns indicate that prevention in the UK is delivered unevenly across the care pathway, particularly with weaknesses in translating risk identification into sustained intervention.

Addressing these challenges will require more targeted and systematic action in a small number of priority areas. Strengthening the detection and management of cardiovascular risk—particularly hypertension and diabetes—should be central, alongside efforts to reduce delays in cancer diagnosis and treatment. Greater investment in early intervention and integration for mental health, as well as renewed focus on behavioural and metabolic risks, such as diet and alcohol use, will also be critical. In most cases, the priority is not the introduction of new policies, rather more consistent implementation and integration of existing ones, especially within primary care and across public health and social policy.

Finally, this analysis highlights the need to strengthen how international comparisons are used to inform prevention policy. While aggregate comparisons identify where outcomes differ, they provide limited insight into the mechanisms that produce those differences. Moving forward, more detailed, pathway-based comparisons that track care from risk exposure through diagnosis, treatment, and long-term management will be essential. Expanding international collaborations that support this type of analysis can help identify where prevention efforts succeed or break down in practice, providing a stronger empirical basis for policy action.

Improving prevention in the UK will depend on better aligning prevention efforts with the main drivers of health burden and delivering them more consistently across the system. At a time of rising demand and fiscal pressure, this represents one of the most important opportunities to improve population health and reduce avoidable disease burden.

Introduction

Prevention is widely recognised as a cornerstone of effective and sustainable health systems. By reducing disease risk, improving population health, and mitigating future demand for care, preventive policies are central to addressing the pressures posed by ageing populations, rising multimorbidity, and persistent health inequalities. In recent years, prevention has gained renewed prominence in policy discourse across high-income countries, including the United Kingdom (UK), with growing calls to "shift upstream" and invest more in public health and risk reduction.

Yet despite this renewed focus, there remains limited clarity on how prevention is delivered, prioritised, and resourced across countries, and importantly, whether current efforts are aligned with population health needs. One reason is that prevention is inherently difficult to observe and measure; preventive activities span multiple sectors and are often embedded within routine care or broader policy environments, which generate benefits over long time horizons. As a result, existing international comparisons tend to focus either on narrow measures of prevention spending or on downstream health outcomes, without systematically linking the two or situating them within the broader policy context that shapes risk exposure and disease burden.

This fragmentation limits the ability of policymakers to assess whether prevention efforts are sufficient, appropriately targeted, or generating meaningful health gains. Spending measures provide a harmonised but incomplete summary of prevention activity across countries, often excluding upstream determinants of health and broader policy interventions. At the same time, outcome-based indicators, such as life expectancy, highlight substantial cross-country variation but offer limited insight into how prevention contributes to these patterns. Without a good understanding of the prevention activities undertaken and the outcomes they generate, it remains difficult to identify where unrealised opportunities for prevention exist or how prevention strategies might be improved.

This report addresses this gap by bringing together three complementary perspectives on prevention. First, it considers how prevention is conceptualised and measured, to identify areas where prevention is measured and gaps that should be better explored in future work. Second, it examines how the UK compares on population health outcomes that are susceptible to prevention, specifically avoidable and preventable mortality and years lived with disability (YLDs). Finally, we examine how the UK compares to other high-income countries on the uptake and implementation of specific prevention policies to identify areas for improvement.

Rather than ranking countries or attributing outcomes to specific policies, the objective is to provide a policy-relevant framework for interpreting prevention efforts and identifying areas where prevention resources and policy approaches may be misaligned with health needs. By linking conceptual frameworks that inform policy and data on spending, outcomes, and policy environments, the analysis highlights where prevention is likely underdeveloped, where it may be more effectively targeted, and where international experience can inform future policy direction.

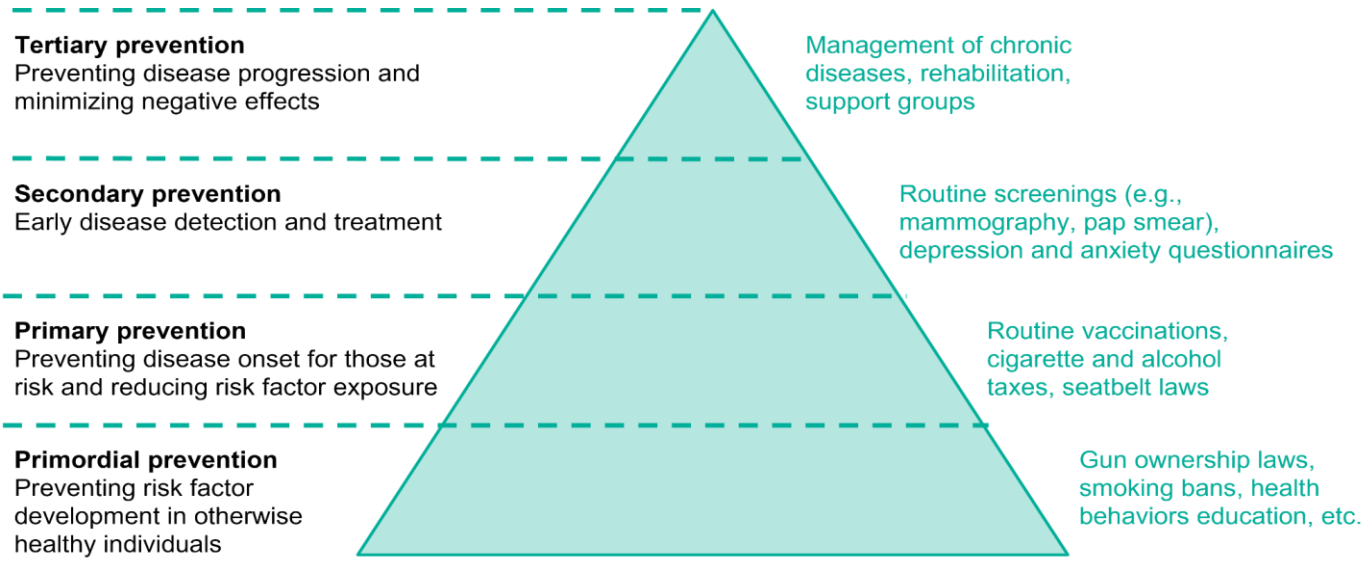
For the UK, these insights are particularly timely. Despite renewed policy attention to prevention, the UK continues to experience relatively high levels of preventable mortality, and a growing burden of risk factors and non-fatal disease. Understanding how these patterns relate to prevention policy choices—both within and beyond the health system—is essential for ensuring that prevention investments translate into meaningful improvements in population health. More broadly, this work contributes to a more integrated approach to assessing prevention within health system performance, supporting more informed decision-making and international policy learning.

Section 1. Conceptualising Prevention across Frameworks

Prevention is widely invoked as a policy priority, yet it remains poorly defined in practice. The term is used to describe a broad and heterogeneous set of activities, ranging from interventions outside the healthcare system, including public health policies, regulation, and efforts to shape social and environmental determinants of health, to services delivered within clinical care, including screening, early detection, and the management of existing conditions to prevent complications.[1] This breadth makes prevention conceptually appealing but analytically challenging. Without a shared understanding of what constitutes prevention, it becomes difficult to structure policy debates, compare efforts across countries, or develop harmonised metrics to assess how prevention is financed, delivered, and translated into improved health outcomes. This challenge is compounded by the fact that prevention encompasses fundamentally different types of interventions, ranging from individual-level programmes to population-wide policies, delivered across a range of settings within and external to the healthcare system, which are evaluated using different standards of evidence and operate over different time horizons. As a result, even the concept of what constitutes "evidence" in prevention is not uniform across contexts.[2]

Several frameworks have attempted to bring structure to the complexity of prevention, each using different lenses to define its scope and boundaries. Some approaches emphasise stages of disease and intervention, others focus on system functions or resource allocation, and still others centre on population outcomes. One widely used way to conceptualise prevention is as a continuum of activities operating across the life course and across sectors (**Figure 1**).[3–5] In its broadest form, this continuum begins with *primordial prevention*, which seeks to reduce exposure to risk factors by shaping the social, environmental, and economic conditions that influence health across the life course. This perspective emphasises that prevention operates not only through discrete interventions, but through the cumulative shaping of risk environments over time, reflecting broader social and ecological determinants of health. The continuum then encompasses: *primary prevention*, aimed at preventing the onset of disease; *secondary prevention*, focused on early detection; and *tertiary prevention*, which seeks to reduce complications and progression among those with established conditions. This framing highlights that prevention is not confined to a single part of the health system; instead, it spans a wide range of interventions, actors, and policy domains.

Figure 1. Levels of Prevention
Source: Papanicolas et al. (2025),[4] Reimer (2023)[5]



While this conceptualisation provides clarity about the scope of prevention, it is not consistently reflected in how prevention is understood, measured, or assessed within health systems. For example, health system

performance assessment (HSPA) frameworks, such as the renewed global framework developed by the World Health Organization (WHO), situate prevention within a broader systems perspective. In this view, prevention is not treated as a discrete category of activity, but as an outcome of how health systems are organised and how they interact with wider societal and environmental determinants of health.[6] Health outcomes are shaped through the interaction of core system functions—governance, financing, resource generation, and service delivery—as well as through multisectoral action and broader policy environments. This perspective underscores that effective prevention depends not only on specific interventions but also on institutional arrangements, incentives, and the capacity of systems to address upstream determinants of health. At the same time, while HSPA frameworks provide a richer conceptualisation of prevention within the system, they do not offer a clear or operational way to measure prevention effort or to link specific prevention activities and investments to outcomes. Nevertheless, the insight they offer illustrates how prevention can work together with other aspects of the health system to attain health system goals.

In contrast, prevention is often operationalised in comparative analyses through measures of health spending, particularly via the System of Health Accounts (SHA).[7] The SHA provides a harmonised framework for tracking health expenditure across countries and defines prevention according to the *primary purpose* of activities within the healthcare boundary. Under this approach, prevention spending is classified into categories including: information, education, and counselling programmes; immunisation; early disease detection; healthy condition monitoring; epidemiological surveillance and disease control; and preparedness for public health emergencies. These categories are based on a functional definition in which activities are included if their primary purpose is to avoid disease or detect it early, and if they fall within the healthcare boundary—that is, they require health-related expertise—activities are classified toward final consumption of health services, which includes transactions for healthcare goods or services.

This framework enables internationally comparable estimates of prevention spending and has shown that only a small share of total health expenditure is allocated to prevention activities across Organisation for Economic Co-operation and Development (OECD) countries. At the same time, the scope of activities captured within this framework reflects its underlying definitions. Tertiary prevention is classified under curative and rehabilitative care, and activities that influence broader social, environmental, and economic determinants of health fall outside the healthcare boundary for classification. As a result, spending-based measures provide a particular lens on prevention—one that captures identifiable healthcare activities but does not encompass the full range of policies and conditions that shape population health. This distinction helps explain differences between conceptual frameworks of prevention and the activities that are reflected in comparative expenditure data.

A complementary perspective on prevention is provided by outcome-based measures, particularly preventable mortality.[8,9] Preventable mortality captures deaths that could be avoided through effective public health and prevention policies, including those targeting behavioural risk factors, environmental exposures, and injuries. In comparative frameworks, these measures are typically constructed by identifying causes of death that are considered largely preventable through public health interventions, often using standardised cause-of-death lists and age thresholds. As such, they provide an empirical lens through which to observe differences in population health outcomes across countries.

At the same time, interpreting these measures requires careful consideration of what they represent. Preventable mortality reflects the cumulative impact of prevention across the continuum—including primordial prevention through the shaping of risk environments, as well as primary and secondary prevention and aspects of healthcare access and delivery. However, it captures these effects only at the point of death. It does not reflect earlier stages in the disease process, including patterns of morbidity, risk factor exposure, or non-fatal health outcomes, which are central to understanding how prevention operates in practice. For example, barriers to accessing timely and appropriate care—such as financial constraints, time limitations, or other structural factors—can influence whether conditions are detected or managed effectively, thereby affecting mortality

outcomes. In this sense, outcomes classified as “preventable” reflect a combination of prevention policy, health system performance, and broader societal conditions, but do not distinguish between them. As a result, outcome-based measures provide an important but partial perspective; they highlight differences in population health, but do not on their own capture the full scope of prevention, particularly its impact on morbidity and risk, nor do they reveal how prevention is conceptualised, financed, or implemented within health systems.

Taken together, these perspectives highlight the richness of approaches available for understanding prevention in comparative analysis. Conceptual frameworks emphasise the breadth of prevention across the life course and across sectors; health system frameworks highlight the role of system organisation and multisectoral action; spending frameworks provide a structured and comparable view of prevention activities; and outcome measures capture the cumulative effects of prevention efforts on population health. Each of these perspectives offers a distinct and valuable lens, reflecting different aspects of how prevention is conceptualised, delivered, and experienced within health systems.

At the same time, these approaches are not always aligned in their scope or focus. As a result, each provides a partial view of prevention, and no single framework fully captures its breadth—from upstream determinants and risk exposure to morbidity and mortality outcomes. Bringing these perspectives together offers an opportunity to develop a more comprehensive understanding of prevention and how it operates in practice. To do so, this report adopts an integrated framework that combines these complementary perspectives. By linking conceptual definitions of prevention with system-level organisation, spending patterns, and outcome measures, this approach provides a more complete and policy-relevant understanding of how prevention is delivered and where opportunities for improvement may lie. This integrated perspective supports a more nuanced interpretation of prevention across countries and can help inform more effective policy and resource allocation decisions.

Section 2. Comparisons of Avoidable Mortality

Avoidable mortality offers a commonly used approach for comparing prevention across health systems and regions.[10] By identifying deaths that could be avoided through effective public health and healthcare interventions, it provides a summary measure of how prevention and treatment translate into population health outcomes. In doing so, it reflects the cumulative effects of prevention across the continuum—from the shaping of risk environments to the detection and management of disease—captured at the point where these processes result in survival or death. As such, it brings together the influence of prevention policies, health system performance, and broader social and environmental conditions into a single observable outcome. Examined across countries, it provides a consistent basis for identifying differences in how these combined factors translate into population health, highlighting areas where outcomes diverge and where further investigation may be warranted.

Interpreted in this way, avoidable mortality does not isolate specific components of prevention, rather it reflects how these elements operate together. Avoidable mortality, therefore, does not distinguish between the relative contributions of policy, system organisation, and behaviour, nor does it capture earlier stages in the prevention pathway, including patterns of morbidity and risk factor exposure. These features are not limitations of the measure but reflect its role as an outcome-based indicator. In a comparative context, this means that differences in avoidable mortality signal where prevention and related system factors may be more or less effective, without directly identifying the mechanisms that produce those differences. As a result, avoidable mortality is best understood as a starting point for identifying areas of potential improvement and for guiding more detailed analysis of prevention policies and system performance.

Avoidable mortality describes deaths that may have been avoided with timely and effective healthcare interventions (treatable mortality) and deaths that may have been avoided with effective prevention practices (preventable mortality).[11] Prevention practices such as primary prevention interventions from core public health functions, those embedded in healthcare services, and the broader public health policy environment influencing risk exposure all influence preventable mortality, and high and worsening preventable mortality may serve as a signal of insufficient prevention in the primordial, primary, and secondary prevention spheres. Likewise, high and worsening treatable mortality may indicate issues within the healthcare delivery system related to ineffective primary and secondary prevention embedded in healthcare services. Examining avoidable mortality is a helpful insight into possible unrealised potential for prevention, providing a starting point from which policymakers can find areas for improvement.

The OECD/Eurostat 2022 avoidable mortality list,[11] developed by the OECD and Eurostat in collaboration with an expert group of researchers, provides a classification of treatable and preventable causes of death (codes from the International Classification of Diseases 10th edition, ICD-10) considered avoidable for the population aged <75 years, and the UK Office for National Statistics (ONS) has also operationalised this list for its avoidable mortality estimates. According to this classification, treatable mortality spans conditions for which case fatality rates can be reduced through early detection and appropriate treatment, including sepsis, breast cancer, and other highly treatable cancers (e.g. colorectal, thyroid etc.), and appendicitis and other acute conditions (e.g. upper respiratory infections, acute pancreatitis). Preventable mortality includes deaths from vaccine-preventable infectious diseases, primarily exposure-driven cancers, accidental injuries, suicide, homicide, and alcohol- and drug-related deaths. There are also avoidable causes of death that are more difficult to attribute to either treatable or preventable mortality alone, and these causes are considered "50/50" treatable and preventable. For instance, diabetes mellitus is considered "50/50"; type 1 diabetes mellitus is considered treatable because appropriate healthcare interventions can help reduce mortality, and type 2 diabetes mellitus is largely preventable with behavioural changes, though appropriate treatments are also important for reducing mortality. Similarly, most cases of cardiovascular disease (CVD) are considered both preventable, through risk factor reduction and reduced incidence, and treatable, through early detection and effective treatment.

Existing analyses have documented substantial differences in avoidable mortality across countries,[12–14] provoking questions regarding how health system factors, especially approaches to prevention policy, may explain these differences in population health. For the UK, identifying the key causes of avoidable deaths will highlight priority areas of health burden for potential prevention policy interventions, and examining avoidable mortality relative to comparator countries will also help to illuminate areas in which the UK diverges from other countries, revealing opportunities for policy comparison and potential cross-country learning. Avoidable mortality may indicate areas of unrealised potential for prevention in the UK and begin guiding the policy discussion and allocation of funds. For instance, in England, avoidable mortality has been an important measure guiding public health spending allocations across its Integrated Care Boards (ICBs) (**Box 1**). Rooting policy and financing decisions in empirical evidence from population health outcomes and health system performance is essential to ensuring that limited funds for health, and public health in particular, are allocated in a meaningful way to equitably address disparities in health burden.

Therefore, to obtain these insights, we analysed current levels (2022/2023) and patterns of all-cause and cause-specific avoidable mortality over the last 15 years (2009 to 2022/2023) across the UK relative to 14 comparator countries—Australia, Canada, France, Germany, Hong Kong SAR, Ireland, Israel, Japan, the Netherlands, New Zealand, Singapore, South Korea, Switzerland, and the United States of America (US). For 2009 to the most recent year in each country, we obtained internationally comparable, cause-specific mortality data from the WHO Mortality Database,[15] which provides an annual compilation of mortality data by country, age group, sex, and cause of death reported by countries from their own Civil Registration and Vital Statistics (CRVS) systems. Using internationally harmonised, cause-specific mortality data, we examined both the current level of avoidable, preventable, and treatable mortality and trends over time, highlighting areas where the UK has seen improvements, stagnation, or worsening relative to its peers (see **Appendix, Aim 2 Methods**). Our analysis provides a clear, descriptive account of where prevention-relevant health burdens are concentrated and how they have changed, creating a consistent empirical baseline for linking mortality patterns to prevention spending and policy frameworks with the UK and across comparator countries.

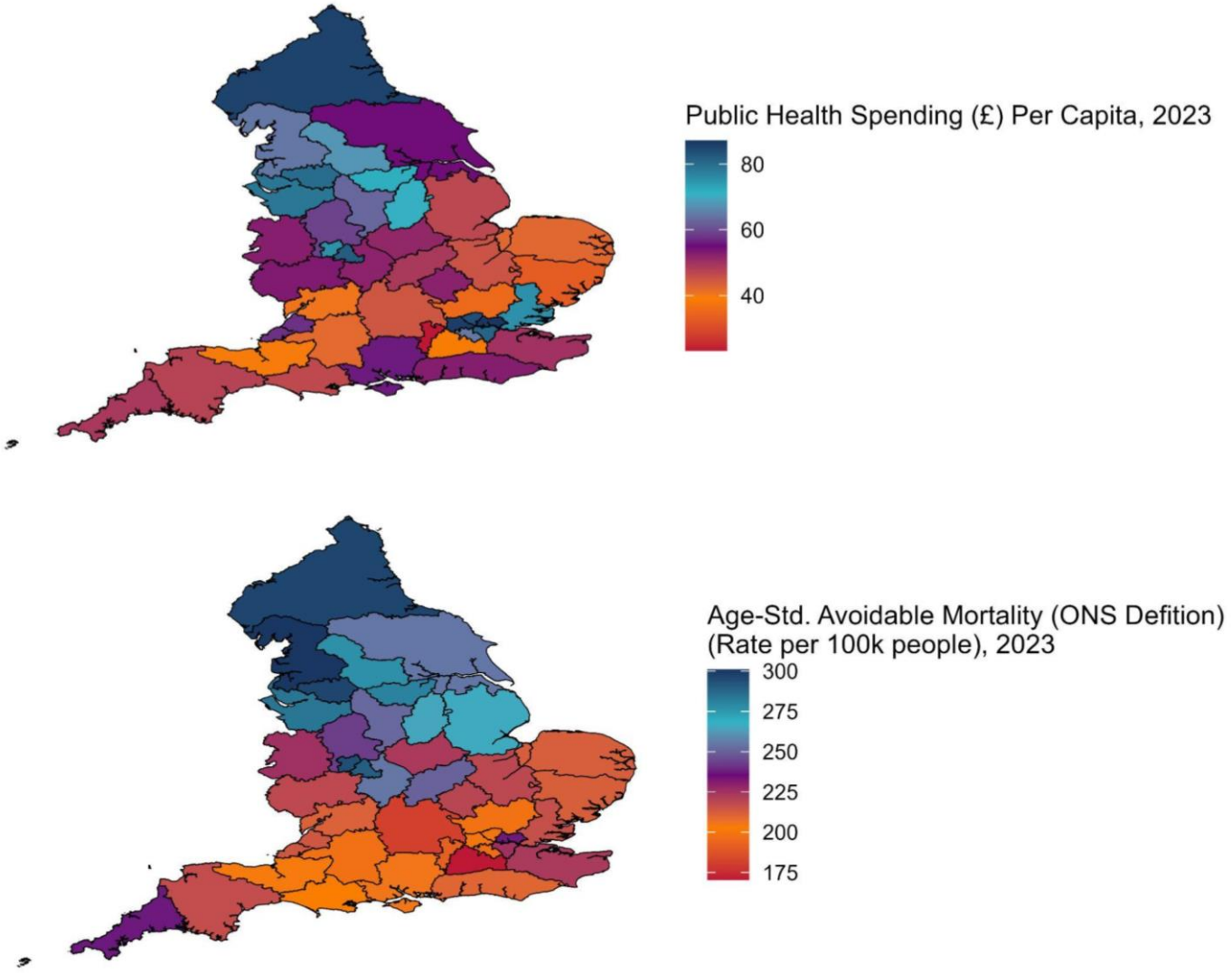
Box 1. Public Health Spending & Avoidable Mortality: Insights from England's Integrated Care Boards

Within the UK's National Health Service (NHS), the total public health budget is determined by the Department of Health and Social Care (DHSC), where a dedicated public health grant is carved out of the wider health budget. This grant is allocated to Local Authorities (LAs), rather than NHS bodies, and is hypothecated to ensure it is utilised for functions including smoking cessation, drug and alcohol services, and health improvement and prevention programmes. Justification for funding allocation to LAs as opposed to the NHS is grounded in evidence indicating that LAs are three to four times as cost-effective in improving health outcomes.[16] In our analysis, we have aligned LA public health spending to England's 42 ICBs. In 2025/26, a total of £3.88 billion was distributed. The median allocation per ICB was £73.69 million [interquartile range (IQR) 45.42–111.69], with a median allocation per capita of £59 [IQR 51–78].

Whilst the overall budget is determined within Government, the relative distribution of the public health grant is subject to recommendations by the Advisory Committee for Resource Allocation (ACRA). The formula for distribution follows principles of equal opportunity of access for equal need, and accounts for factors including population demographics, health need, mortality rates, socioeconomic deprivation and service demand. Critics of the approach cite an over-reliance on retrospective utilisation data, which may exacerbate existing inequities.[17] Outside of the public health grant, this is being addressed through the inclusion of a health inequality index, which adjusts funding allocations for core NHS services on the basis of avoidable mortality rates.[18] Therefore, ICBs with higher avoidable mortality tend to have higher public health spending (see maps below).

Given that the formula for distributing the public health grant omits explicit adjustments for inequality, there is scope for re-evaluation, as has been completed for funding for core NHS services. Additionally, the overall public health grant has seen a 26% reduction in real terms growth between 2015 and 2025. Whilst this may limit the potential impact of funding, it emphasises the importance of distributing available funding to the most vulnerable or at-need populations.

Having adequate public health funding is essential, and the DHSC should continue to ensure that public health funding grows at a higher rate than the overall health budget to increase the proportion spent on public health.

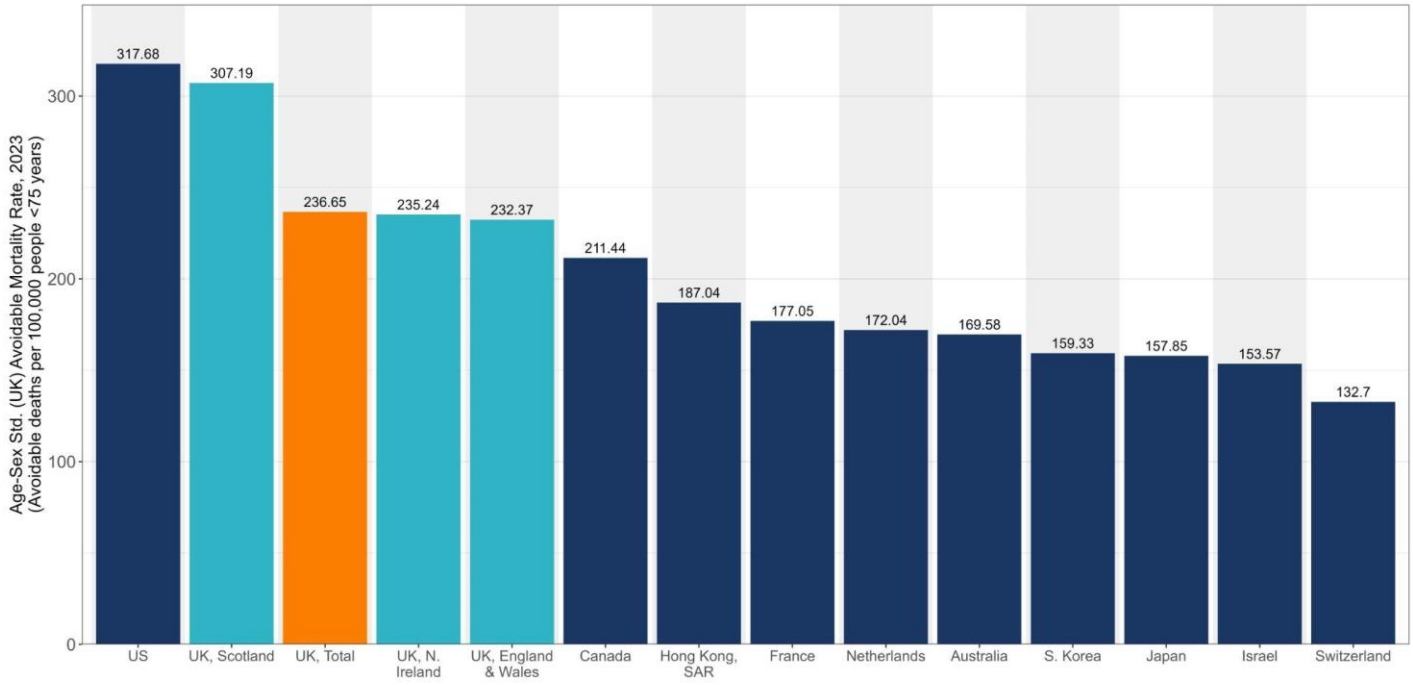


All-cause avoidable, preventable, & treatable mortality: current levels and trends

In 2023, the UK had the second highest avoidable mortality rate relative to comparators (**Figure 2**); Scotland (307 avoidable deaths per 100k people <75 years) ranked just below the USA (318), followed by the UK overall (237), Northern Ireland (235), then England & Wales (232), ranking just above Canada (211). Switzerland (133

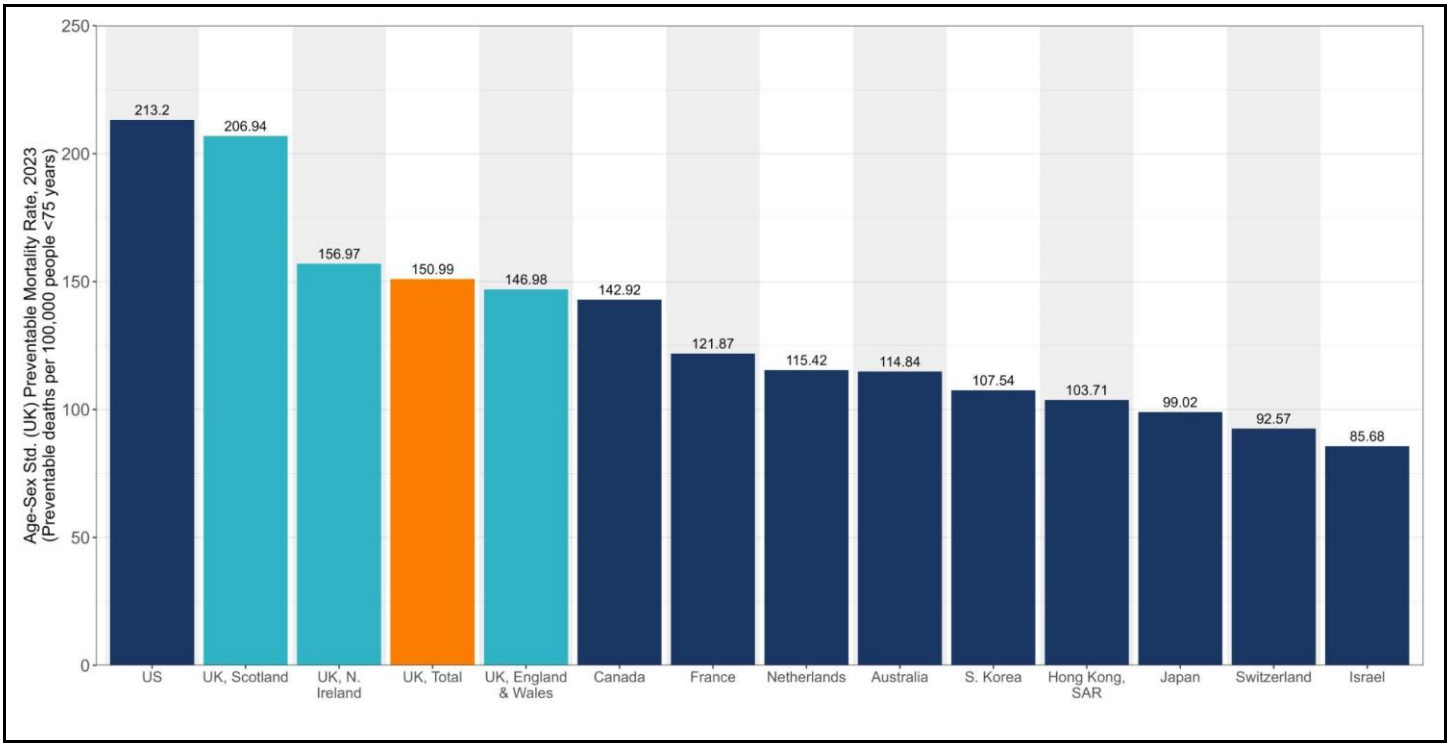
avoidable deaths per 100k), Israel (154), and Japan (158) had the lowest avoidable mortality rates in 2023 of the comparator countries, with Switzerland notably having less than half the avoidable mortality rate of Scotland. We also examined avoidable mortality in 2022 to include additional countries (Ireland and Singapore) for which 2022 was the latest year (**Figure A1**), and the ranking was essentially the same: the highest avoidable mortality rates were in the USA (355 avoidable deaths per 100k) followed by Scotland (308), Northern Ireland (243), the UK overall (238), England & Wales (233), and Canada (228); and Switzerland (145), Japan (160), and Israel (169) had the lowest avoidable mortality rates.

Figure 2. All-Cause Avoidable Mortality, UK & Comparators, 2023
Source: Authors' analysis of WHO Mortality Database data.



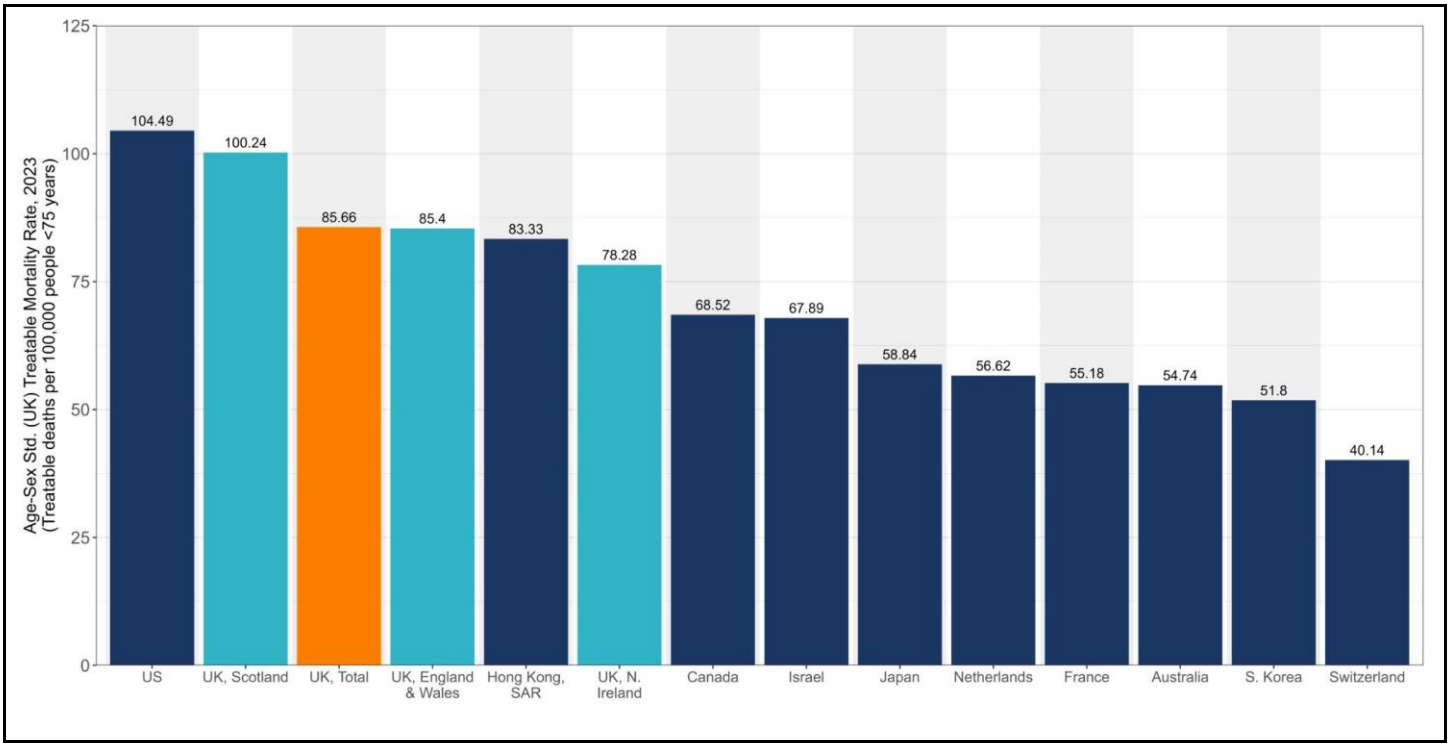
Across countries, most avoidable mortality is attributable to its preventable mortality component. In 2023, the UK ranked just below the USA (213 preventable deaths per 100k people <75 years) for highest preventable mortality, with Scotland (207) having the highest preventable mortality of the UK countries, followed by Northern Ireland (157), the UK overall (151), and England & Wales (147) with the lowest preventable mortality within the UK (**Figure 3**). Like avoidable mortality, Canada (143 preventable deaths per 100k) also ranked slightly lower than England & Wales in 2023 for preventable mortality, and Israel (86), Switzerland (93), and Japan (99) were again among countries with the lowest mortality rates for preventable mortality. Similarly, in 2022 (**Figure A2**), the USA, UK countries, and Canada had the highest preventable mortality rates; however, in 2022, Canada's rate (158 preventable deaths per 100k) slightly surpassed those of the UK overall (154) and England & Wales (149). Additionally, the country with the lowest preventable mortality rate in 2022 was Singapore (92 preventable deaths per 100k), then again Israel (98), Switzerland (100), and Japan (101) were also among the comparator countries with the lowest preventable mortality rates.

Figure 3. All-Cause Preventable Mortality, UK & Comparators, 2023
Source: Authors' analysis of WHO Mortality Database data.



Treatable mortality rates across countries followed a similar ranking to that for preventable mortality in 2023 (**Figure 4**): the USA (105 treatable deaths per 100k people <75), Scotland (100), the UK overall (86), England & Wales (84), Hong Kong SAR (83), Northern Ireland (78), and Canada (69). Notably, Northern Ireland had the lowest treatable mortality rate in the UK in 2023, rather than England & Wales, which had the lowest preventable mortality rate. Hong Kong SAR, which had a relatively low preventable mortality rate among comparators in 2023, had a greater treatable mortality rate than Northern Ireland and Canada. Countries with the lowest treatable mortality rates in 2023 were Switzerland (40 treatable deaths per 100k), South Korea (52), and Australia (55), with Switzerland being among countries with the lowest mortality rates for both preventable and treatable mortality in 2023. In 2022, countries with the highest treatable mortality rates followed the same ranking (**Figure A3**), except Singapore (95 treatable deaths per 100k), which notably joined countries with the highest treatable mortality rates, ranking slightly below Scotland (97). Switzerland (44 treatable deaths per 100k) and South Korea (53) still had the lowest treatable mortality rates relative to comparators in 2022.

Figure 4. All-Cause Treatable Mortality, UK & Comparators, 2023
Source: Authors' analysis of WHO Mortality Database data.



Relative to comparator countries, the USA, UK, and Canada had the worst avoidable, preventable, and treatable mortality rates in recent years. Within the UK, Scotland had the highest avoidable, preventable, and treatable mortality rates, England & Wales exhibited the lowest avoidable and preventable mortality rates, and Northern Ireland experienced the lowest treatable mortality rate in recent years. Across avoidable, preventable, and treatable mortality, Switzerland was consistently among the three lowest mortality rates, accompanied by Israel, Japan, and Singapore among the lowest preventable mortality rates relative to comparators and by South Korea, Australia, France, and the Netherlands among the lowest treatable mortality rates in recent years.

Over the last 15 years, from 2009 to 2023, avoidable mortality levels decreased or stagnated in the UK and in most comparator countries (**Figure 5**). These trends were briefly interrupted in 2020 when COVID-19—considered a preventable cause of death—caused avoidable mortality to increase, though generally levels decreased back down to pre-COVID-19 levels for most countries. Comparing 2009 and 2023, England & Wales had the same avoidable mortality rate in both years, the UK overall and Scotland experienced slight decreases in avoidable mortality rates between years (3 and 7 avoidable deaths per 100k people <75 years, respectively), and Northern Ireland's avoidable mortality rate decreased nearly 11% (about 28 avoidable deaths per 100k) (**Figure 6**). South Korea exhibited the largest decrease in avoidable mortality from 2009 to 2023, dropping by nearly 38% (97 avoidable deaths per 100k). Switzerland and Israel also made modest improvements in avoidable mortality, decreasing by 24% (42 avoidable deaths per 100k) and 18% (about 35 avoidable deaths per 100k). In contrast to all other countries, the USA experienced an overall increase of 5% (17 avoidable deaths per 100k) in avoidable mortality levels from 2009 to 2023. From 2009 to 2022 (**Figure A4**), Ireland also exhibited a modest decrease in avoidable mortality by 23% (about 56 deaths per 100k).

Figure 5. Trends in All-Cause Avoidable Mortality, UK & Comparators, 2009 to 2023

Source: Authors' analysis of WHO Mortality Database data.

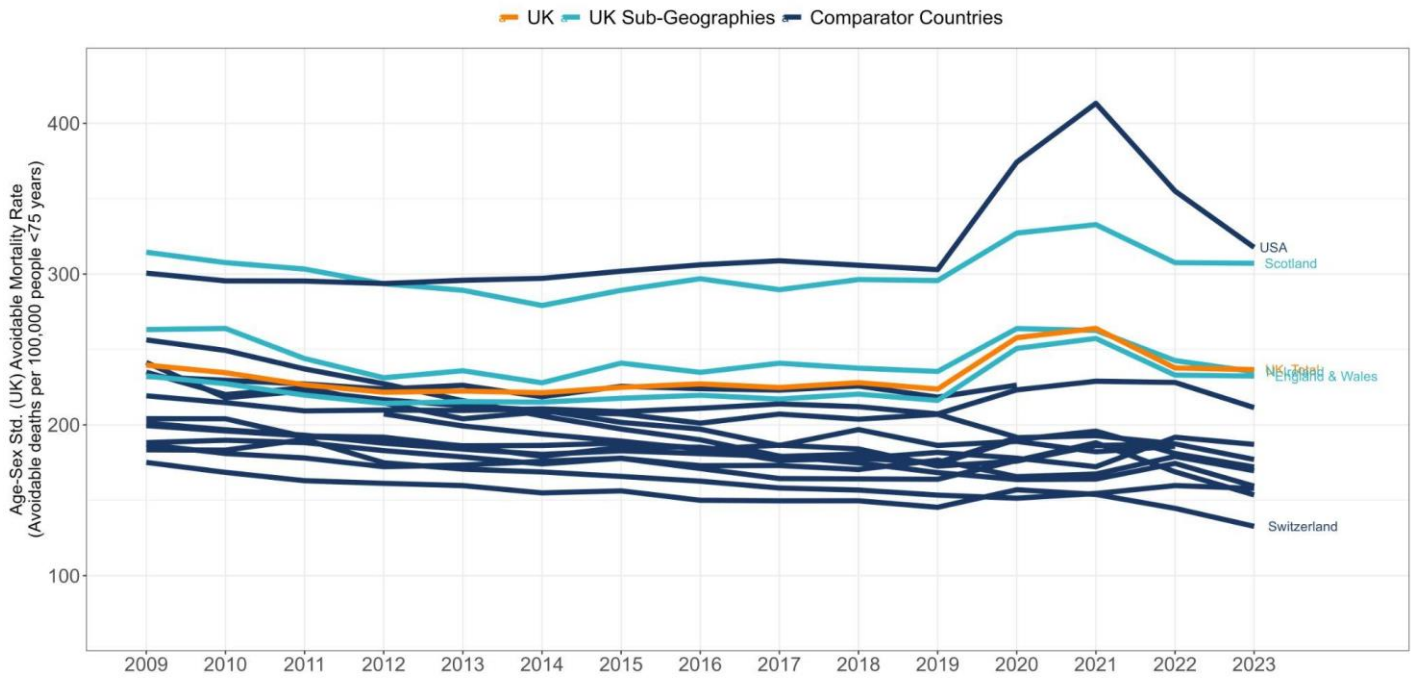
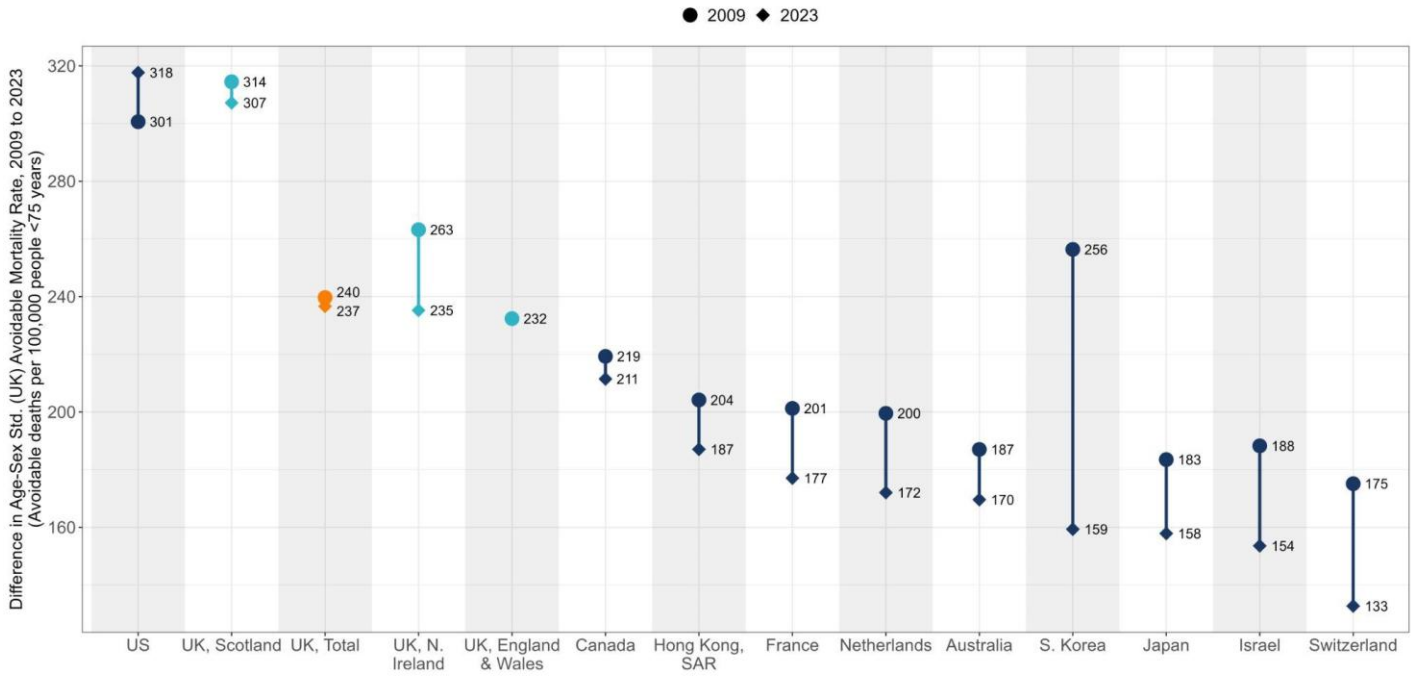


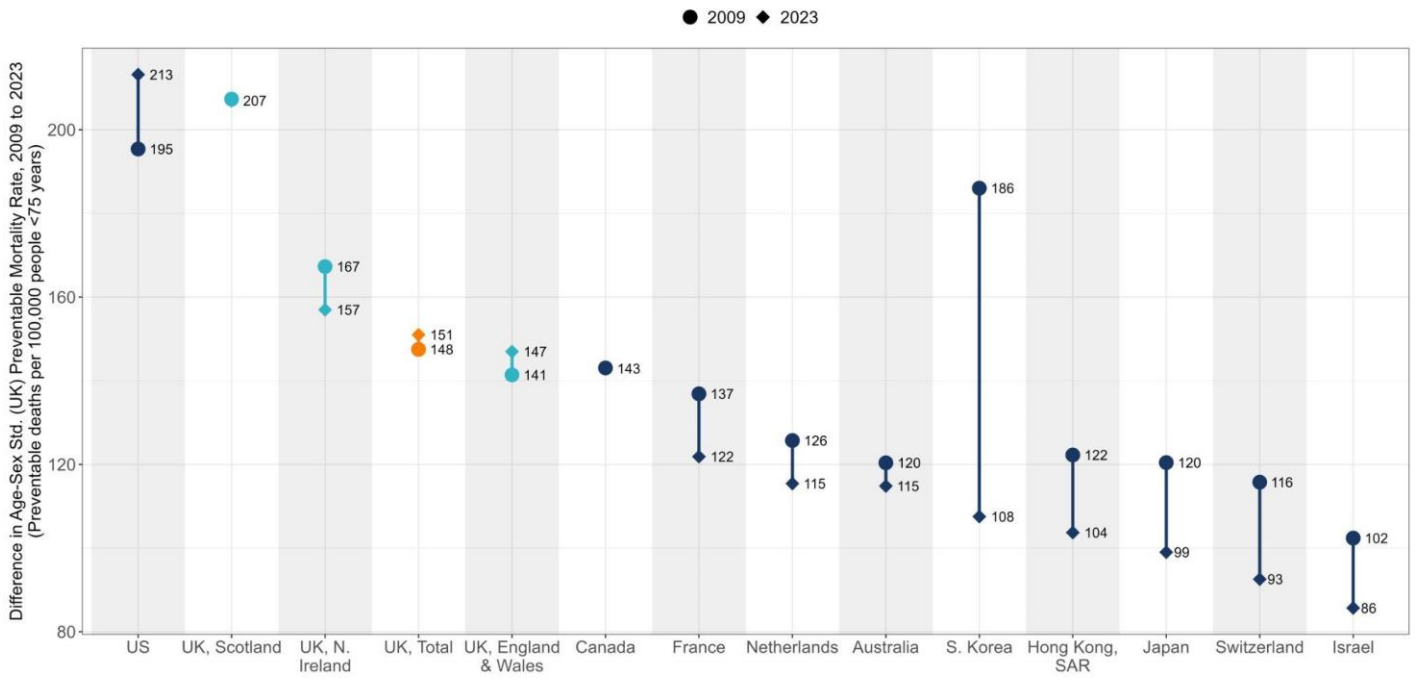
Figure 6. Difference in Levels of All-Cause Avoidable Mortality, UK & Comparators, 2009 to 2023
Source: Authors' analysis of WHO Mortality Database data.



While most comparator countries saw declines in preventable mortality between 2009 and 2023, some experienced increases over the same period (**Figure 7**). Within the UK, England & Wales (141 to 147 preventable deaths per 100k) and the UK overall (148 to 151) showed modest increases, while the USA

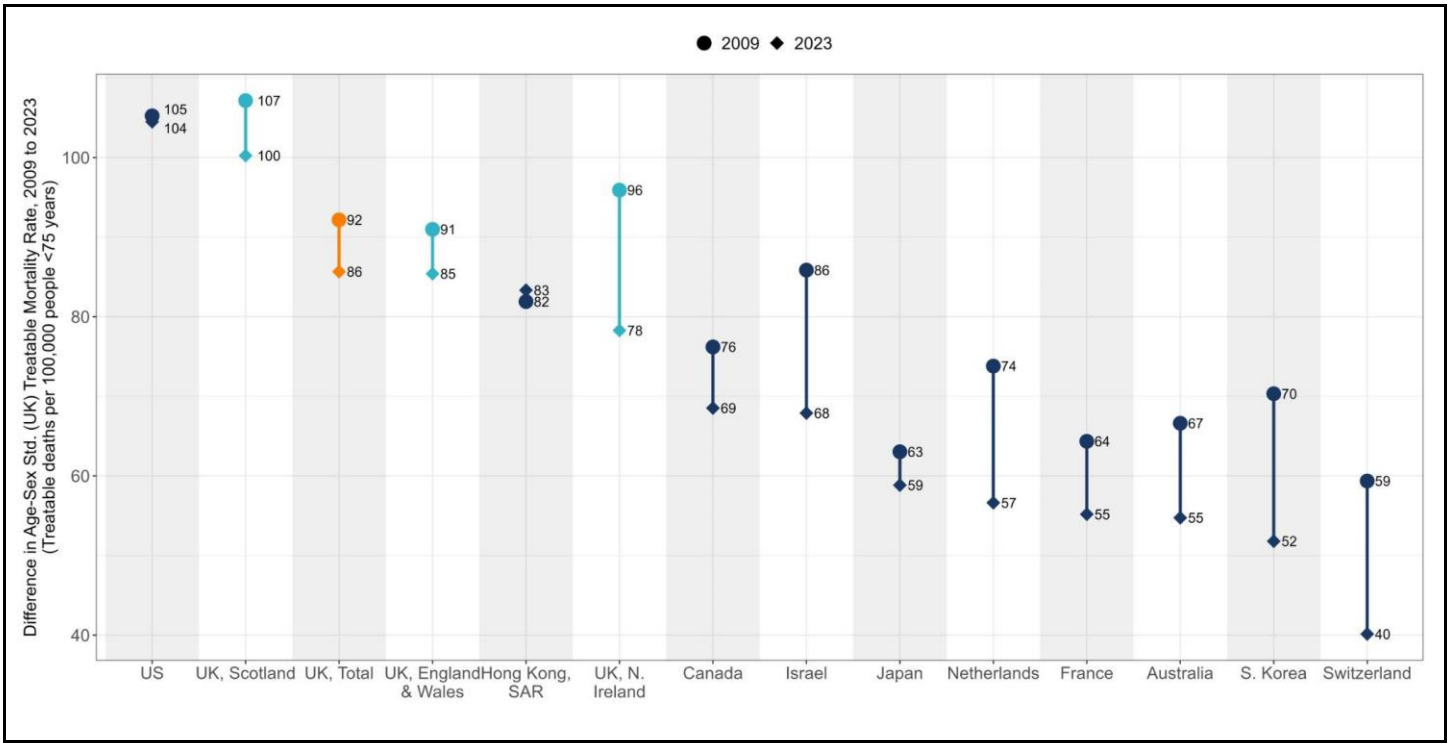
experienced the largest rise. Scotland remained largely unchanged at 207, and Northern Ireland saw a small improvement, declining from 167 to 157. Levels of preventable mortality increased the most in the USA from 2009 to 2023. In contrast, several countries recorded substantial reductions. South Korea experienced the largest decrease, with preventable mortality falling by approximately 42% (from 186 to 108 deaths per 100k). Over a slightly shorter period (2009–2022), Ireland also saw a notable decline of 20% (from 149 to 119) (**Figure A5**).

Figure 7. Differences in Levels of All-Cause Preventable Mortality, UK & Comparators, 2009 to 2023
Source: Authors' analysis of WHO Mortality Database data.



Most comparator countries saw improvements in both preventable and treatable mortality over the past 15 years, with reductions in treatable mortality generally larger (**Figure 8**). Within the UK, England and Wales, the UK overall, and Scotland experienced relatively small declines in treatable mortality, while Northern Ireland saw the largest improvement, with a reduction of about 19% (from 96 to 78 treatable deaths per 100k). In contrast, the USA showed little change over this period, with a slight increase in treatable mortality between 2009 and 2023. Among comparator countries, South Korea—which also experienced the largest decline in preventable mortality—saw one of the largest reductions in treatable mortality (about 26%, from 70 to 52), while Switzerland recorded the greatest overall improvement (32%, from 59 to 40). Over a slightly shorter period (2009–2022), Ireland also demonstrated a substantial decline of 23% (from 92 to 67) (**Figure A6**).

Figure 8. Differences in Levels of All-Cause Treatable Mortality, UK & Comparators, 2009 to 2023
Source: Authors' analysis of WHO Mortality Database data.



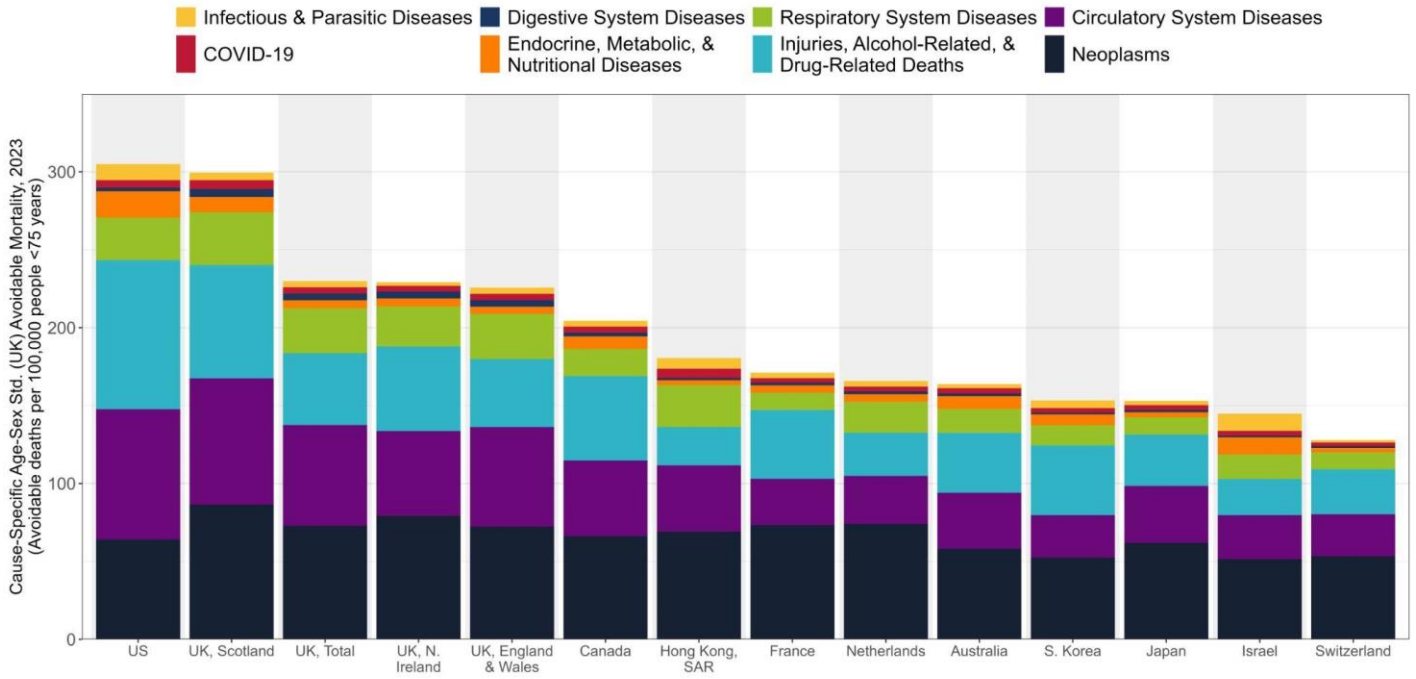
Comparing current levels of avoidable, preventable, and treatable mortality with those from 15 years ago, most comparator countries experienced declines, although these were generally modest across the UK and many peer countries. Within the UK, Northern Ireland saw the largest improvements in both preventable and treatable mortality between 2009 and 2023. Across comparator countries, South Korea experienced the greatest reduction in preventable mortality and one of the largest declines in treatable mortality, while Switzerland saw the largest improvements in treatable mortality. In contrast, the USA experienced slight increases in both preventable and treatable mortality over this period. Taken together, trends in all-cause avoidable mortality reflect the net effect of improvements and worsening across different conditions. To better understand the drivers of these patterns, the next section examines cause-specific mortality, identifying which categories of conditions contribute most to these trends and highlighting dynamics that may be obscured in aggregate measures.

Cause-specific avoidable, preventable, & treatable mortality: current levels and trends

Across the UK and comparator countries in recent years, three main cause-of-death categories contributed to the avoidable mortality burden in 2022 and 2023 (**Figure 9**): (1) cancers; (2) CVD; and (3) injuries, alcohol- and drug-related deaths (considered for the most part "external" causes of death). Injuries include accidental injuries, such as transport accidents, as well as suicide and homicide, and alcohol- and drug-related deaths include both poisonings and conditions induced by those substances (e.g. alcohol-induced pancreatitis etc.). In 2023, Scotland had the highest avoidable cancer mortality rate (87 avoidable cancer deaths per 100k) relative to all comparators. Within the UK, Scotland also had the highest avoidable mortality rates from CVD (81 avoidable deaths per 100k) and injuries, alcohol- and drug-related deaths (73 avoidable deaths per 100k), though the USA had the greatest rates in those categories (84 and 96). In contrast, Switzerland, South Korea, and Israel had much lower avoidable cancer mortality rates (53, 53, and 52 avoidable deaths per 100k, respectively) and CVD avoidable mortality rates (27, 27, and 28), and their CVD avoidable mortality rates were about one-third of Scotland's. Similarly, Israel (23), Hong Kong SAR (25), and the Netherlands (28) had injury and substance-related avoidable mortality rates less than half that of Scotland in 2023. Other causes of avoidable mortality among the top five categories in the UK were respiratory system diseases and endocrine,

metabolic, and nutritional diseases, though rates of these were much lower than the major three categories. COVID-19 appears to contribute quite a small amount to avoidable mortality in 2023, though in earlier years, such as 2022, it contributed more (**Figure A7**).

Figure 9. Cause-Specific Avoidable Mortality, UK & Comparators, 2023
Source: Authors' analysis of WHO Mortality Database data.



Across the UK and comparator countries, preventable mortality in 2023 was primarily from injuries and alcohol- and drug-related deaths, followed by deaths from cancer and deaths from CVD (**Figure 10**). Within preventable mortality from injuries, alcohol-related, and drug-related deaths, alcohol-related deaths, drug-related deaths, and suicide were the main causes of death across comparator countries in 2023 (**Figure 11**). Within the UK, Scotland had the highest rates of all three of these causes (24, 23, and 14 preventable deaths per 100k, respectively), whereas England & Wales had the lowest (17, 8, and 9). Across all comparators, Scotland also had the highest alcohol-related preventable mortality in 2023, the USA had the highest drug-related preventable mortality rate (32), and South Korea exhibited the highest preventable mortality rate from suicide (22). Comparatively, Hong Kong SAR and Israel had very low alcohol-related preventable mortality (around 3 deaths per 100k for both), South Korea and Japan had <1 death per 100k for drug-related preventable mortality, and Israel and England & Wales had the lowest preventable suicide mortality (5 and 9 deaths per 100k, respectively). The USA also exhibited the highest preventable mortality rates from transport accidents (13 preventable deaths per 100k) and homicide (7) in 2023, whereas all other comparators had less than half the USA preventable transport mortality rate (from 1 death per 100k in Hong Kong SAR to 5 deaths per 100k in Australia). Besides the USA, homicide preventable mortality was generally low across all comparators (about 1 death per 100k in Scotland and <1 in all other countries), except for in Israel (4). Cause-specific preventable mortality attributable to COVID-19 appears relatively larger when examining 2009 to 2022 (**Figure A8**), indicating a decrease in COVID-19 deaths from 2022 to 2023.

Figure 10. Cause-Specific Preventable Mortality, UK & Comparators, 2023
Source: Authors' analysis of WHO Mortality Database data.

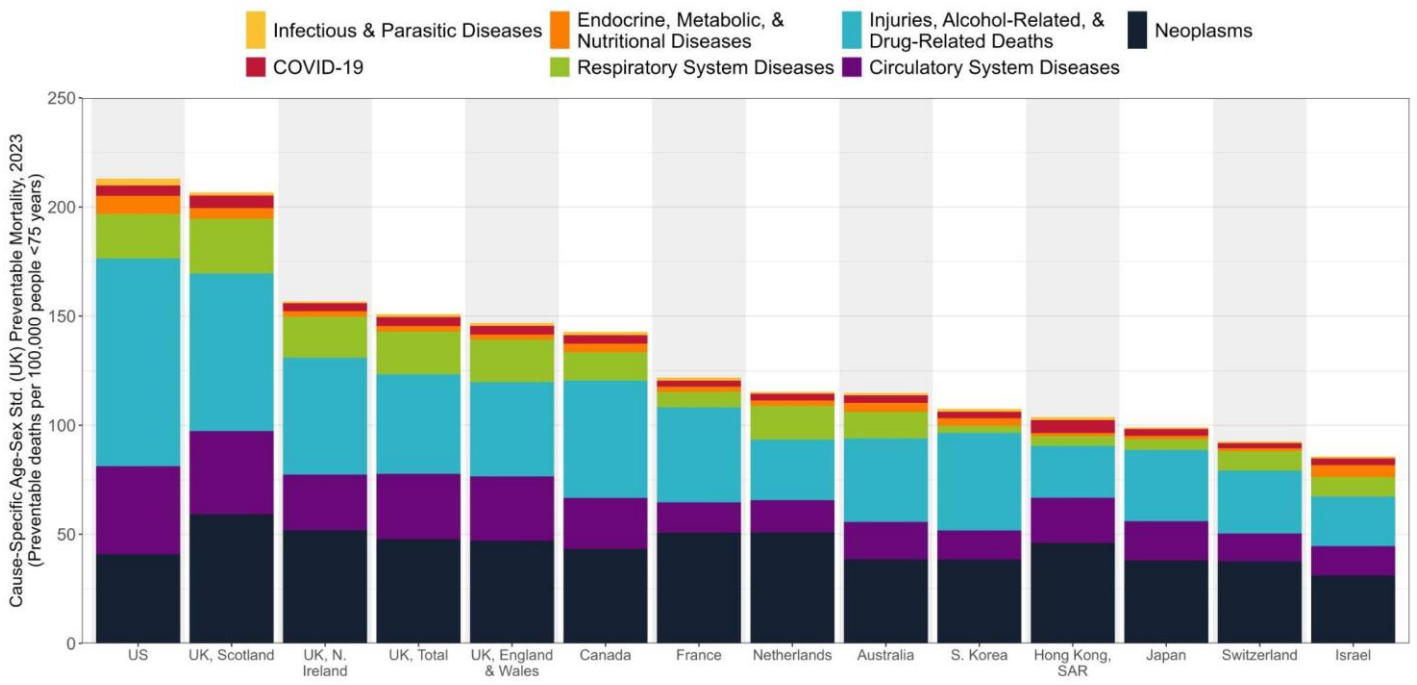
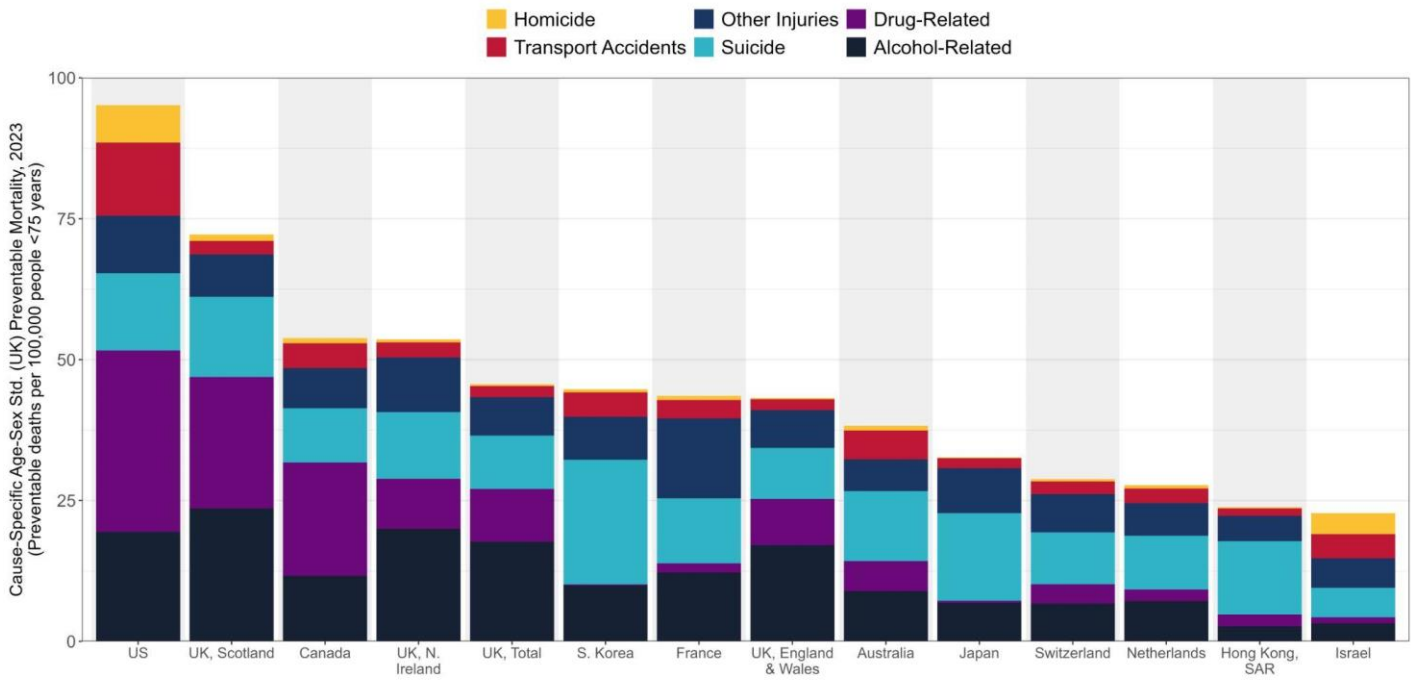


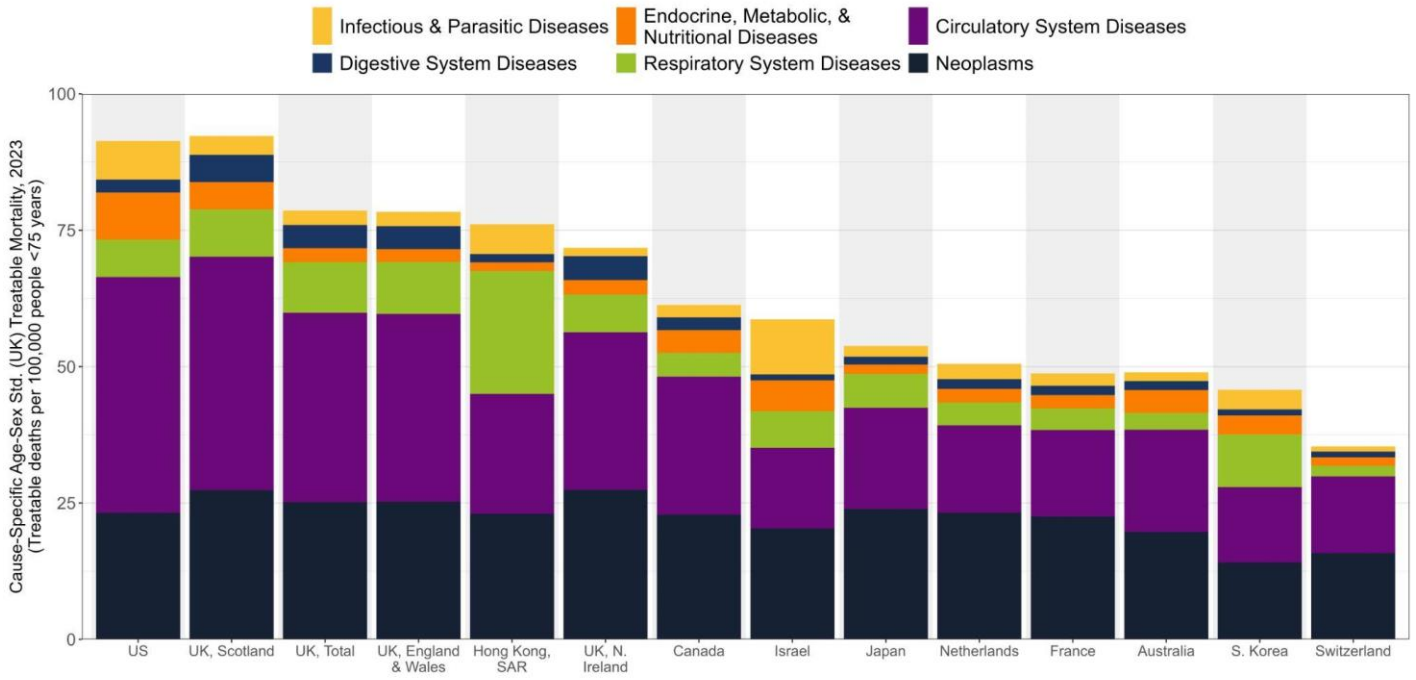
Figure 11. Preventable Mortality from Injuries, Alcohol- & Drug-Related Causes, UK & Comparators, 2023
Source: Authors' analysis of WHO Mortality Database data.



Most treatable mortality across the UK and comparators in 2023 was due to cancer and CVD (**Figure 12**). Amongst comparators, the UK had the highest treatable cancer mortality rates (27 treatable deaths per 100k in

Northern Ireland, 27 in Scotland, 25 in England & Wales, and 25 in the UK overall), and South Korea, (14), Switzerland (16), and Australia (20) had the lowest rates of treatable cancer mortality in 2023. Overall, the USA had the greatest treatable mortality rate from CVD (about 43 treatable deaths per 100k), though Scotland had roughly the same CVD treatable mortality rate, the highest within the UK. The UK overall (35), England & Wales (34), and Northern Ireland (29) closely followed in ranking for CVD treatable mortality in 2023. South Korea (14), Switzerland (14), and Israel (15) had the lowest CVD treatable mortality rates among comparators in 2023. For additional countries (Ireland and Singapore), refer to **Figure A9**.

Figure 12. Cause-Specific Treatable Mortality, UK & Comparators, 2023
Source: Authors' analysis of WHO Mortality Database data.



Overall, most avoidable mortality in recent years across comparator countries was attributable to avoidable cancer, CVD, and injury and substance-related deaths, and countries differed in their burden from each cause category. Within the UK, Scotland had the highest avoidable mortality from all three of these categories, and Scotland also had the greatest avoidable cancer mortality rate relative to all comparators. Breaking down injury and substance-related deaths further, the majority of these deaths were due to alcohol-related, drug-related, and suicide preventable mortality across comparators. Within the UK, Scotland exhibited the highest rates of alcohol-related, drug-related, and suicide preventable mortality, and England & Wales had the lowest rates from these categories within the UK. Scotland also had the worst preventable mortality rate from alcohol-related deaths in 2023, the USA had the worst preventable mortality from CVD, and South Korea had the worst suicide preventable mortality.

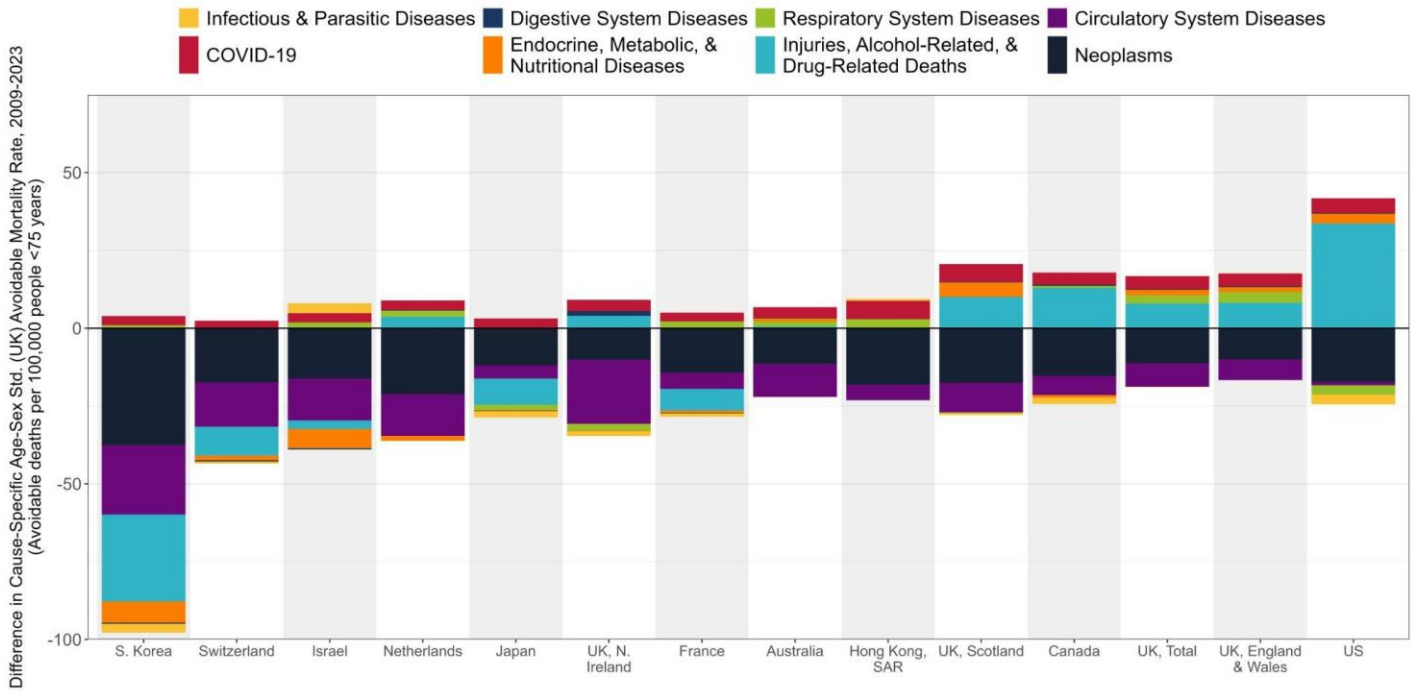
In the 15 years from 2009 to 2023, cancer and CVD avoidable mortality improved the most across the UK and all comparator countries, though the extent of this improvement was greater in some countries than in others. South Korea had the largest drop in avoidable cancer mortality (about 38 avoidable cancer deaths per 100k), whereas England & Wales saw the least improvement (about 10 deaths per 100k) within the UK, as well as across comparators, closely followed by Northern Ireland (also about 10 deaths per 100k). Within the UK, Scotland had the greatest reduction in avoidable cancer mortality (about 18 deaths per 100k) from 2009 to 2023, though this was still less than half the decrease South Korea experienced. The Netherlands also exhibited a

decrease (21 avoidable cancer deaths per 100k) of about twice the reduction in avoidable cancer mortality than England & Wales or Northern Ireland did.

Similarly, South Korea had the greatest improvement in CVD avoidable mortality from 2009 to 2023 (22 deaths per 100k), though Northern Ireland also exhibited a similar level of improvement (about 21 deaths per 100k). Other parts of the UK only reduced CVD avoidable mortality about half as much as Northern Ireland, with Scotland having the next greatest decrease within the UK (about 9), then England & Wales (7). However, out of all comparators, the USA experienced the most minimal reduction in CVD avoidable mortality from 2009 to 2023 (only about 1 death per 100k).

One area in which many countries worsened was avoidable mortality from injuries, and alcohol- and drug-related deaths (**Figure 13**). Avoidable mortality from injuries and substance abuse grew the most in the USA (34 deaths per 100k) relative to comparators, whereas, by contrast, South Korea reduced avoidable mortality due to these causes by almost as much (28 deaths per 100k). Across the UK, all countries worsened, with injury and substance-abuse-related avoidable mortality increasing the most in Scotland (10 deaths per 100k), followed by England & Wales (8 deaths per 100k), then Northern Ireland (4 deaths per 100k). The only area of avoidable mortality that increased across all comparators was COVID-19, which is considered a preventable cause of death; however, this increase was much more pronounced for 2009 to 2022 (**Figure A10**), indicating a decrease in COVID-19 deaths from 2022 to 2023.

Figure 13. Differences in Levels of Cause-Specific Avoidable Mortality, UK & Comparators, 2009 to 2023
Source: Authors' analysis of WHO Mortality Database data.



Injuries and substance-abuse-related avoidable deaths are mostly considered preventable, and essentially all increases and improvements in deaths in this area were attributable to changes in preventable mortality (**Figure 14**). Breaking this down further into its components (**Figure 15**), preventable drug-related deaths increased across the UK, and Scotland experienced the worst increase in preventable mortality from drugs within the UK from 2009 to 2023 (11 preventable deaths per 100k), though Northern Ireland (5) and England & Wales (4) also experienced modest increases. Across all comparators, the USA exhibited the worst increase in drug-related

preventable mortality (21 preventable deaths per 100k), followed by Canada (15), and then Scotland. Drug-related preventable mortality rates remained mostly stable across other comparators. Alcohol-related preventable mortality rates also saw increases across the UK, worsening the most in England & Wales (about 5 preventable deaths per 100k); however, across all comparators, the USA again exhibited the worst increase (7). Preventable deaths from suicide also increased in Scotland (3 preventable deaths per 100k) and England & Wales (about 3), though they improved slightly in Northern Ireland (by 1). Suicide preventable deaths improved the most in terms of levels in South Korea (7 preventable deaths per 100k) and Japan (about 6), though South Korea still had the worst suicide preventable mortality rate in 2023 relative to all comparators (22).

Almost all avoidable CVD is considered both preventable and treatable, so decreases for that cause were seen in both components (**Figure 14** and **Figure 16**) across countries and follow the changes seen in overall avoidable mortality (**Figure 13**) from 2009 to 2023. Improvements in cancer avoidable mortality varied across preventable and treatable components, depending on the country. South Korea saw the greatest improvement in cancer preventable mortality (about 34 deaths per 100k) but exhibited less improvement in treatable cancer mortality (4). Similarly, Hong Kong SAR saw a considerable improvement in preventable cancer mortality (18) but a negligible (<1) decrease in treatable cancer mortality. Japan experienced a decrease in preventable cancer mortality (14) but also a slight increase in treatable cancer mortality (2). Across the UK, all countries decreased the most in preventable cancer mortality and experienced a smaller reduction in treatable cancer mortality; Scotland exhibited the largest reduction in preventable cancer mortality within the UK (about 15 preventable cancer deaths per 100k) and in treatable cancer mortality (about 3 treatable cancer deaths per 10k), though a much smaller improvement in the treatable component. Across the UK, countries saw slight increases in avoidable mortality from endocrine, metabolic, and nutritional diseases. Given that these increases are exhibited in equal measure for both preventable and treatable mortality, these increases are attributable to diabetes mellitus, which is considered 50/50; Scotland had the greatest, albeit small, increase in this area (about 2 deaths per 100k). See **Figures A11–A13** for versions of Figures 14–16 for 2009 to 2022.

Figure 14. Differences in Levels of Cause-Specific Preventable Mortality, UK & Comparators, 2009 to 2023
Source: Authors' analysis of WHO Mortality Database data.

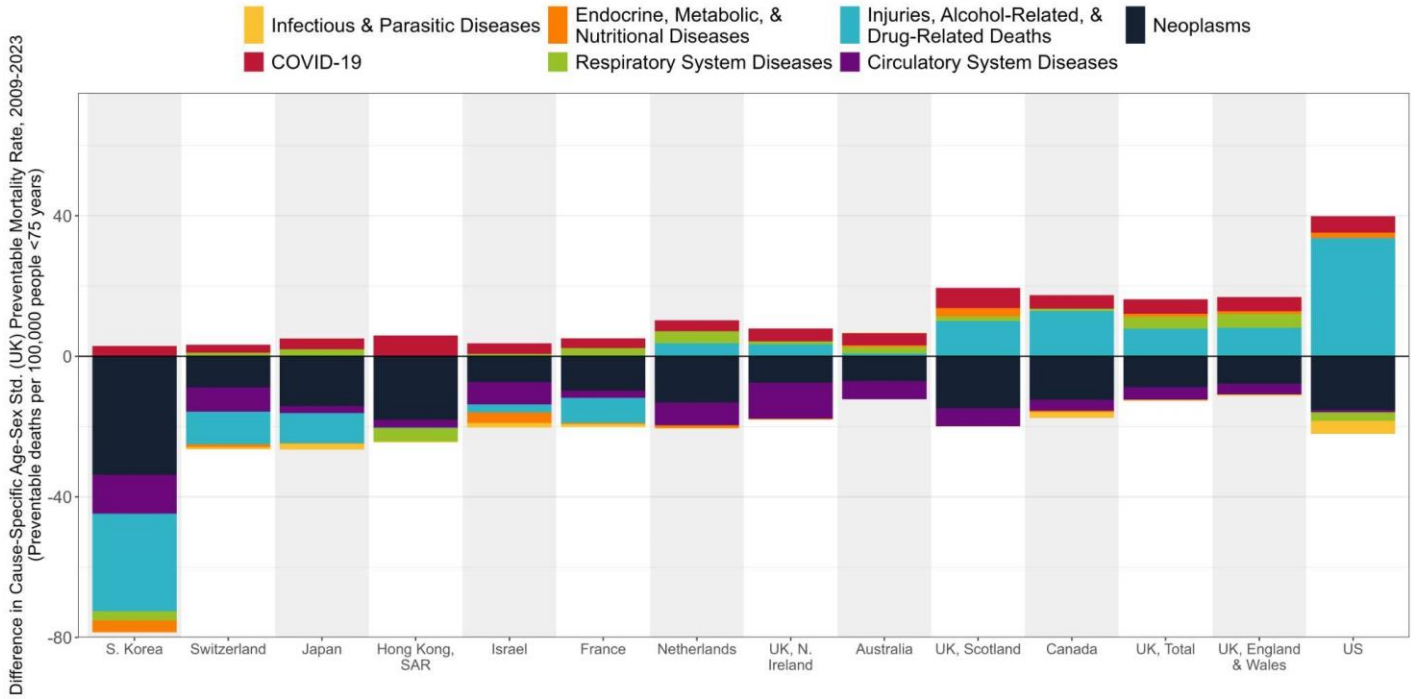


Figure 15. Differences in Levels of Preventable Mortality from Injuries, Alcohol- & Drug-Related Causes, UK & Comparators, 2009 to 2023
Source: Authors' analysis of WHO Mortality Database data.

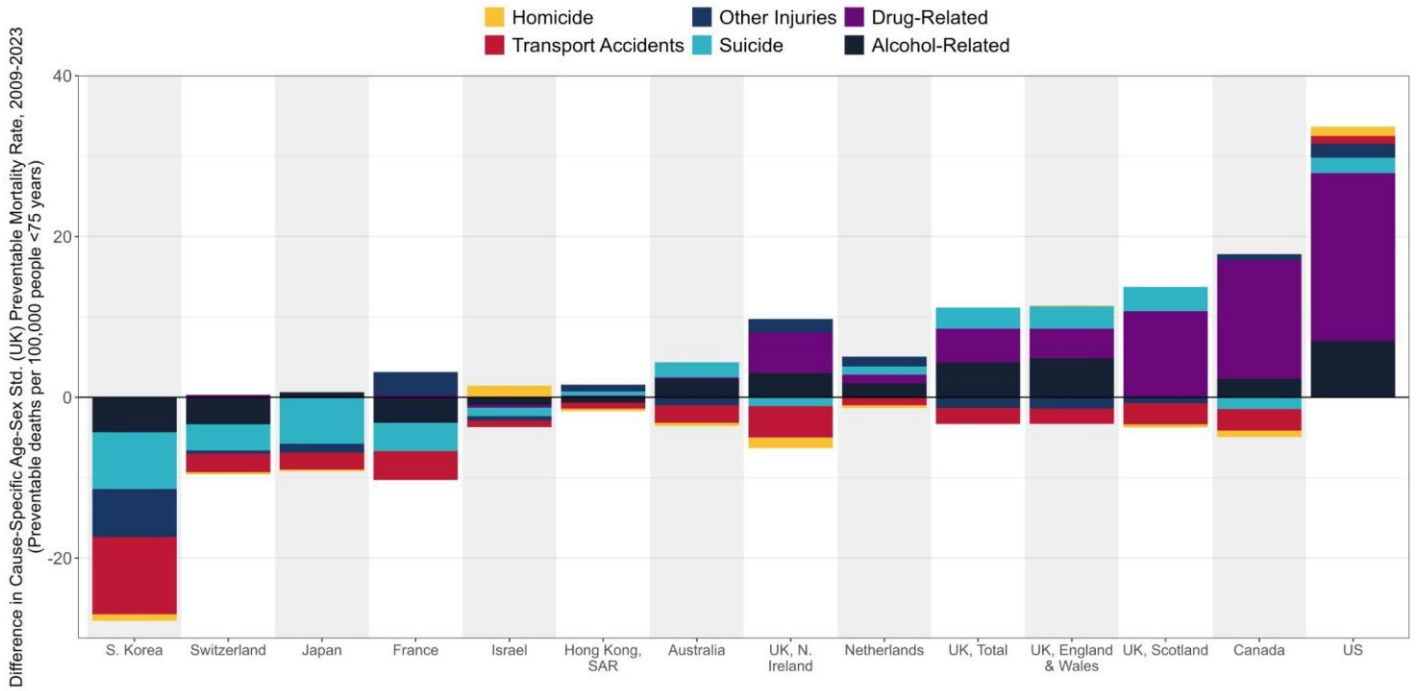
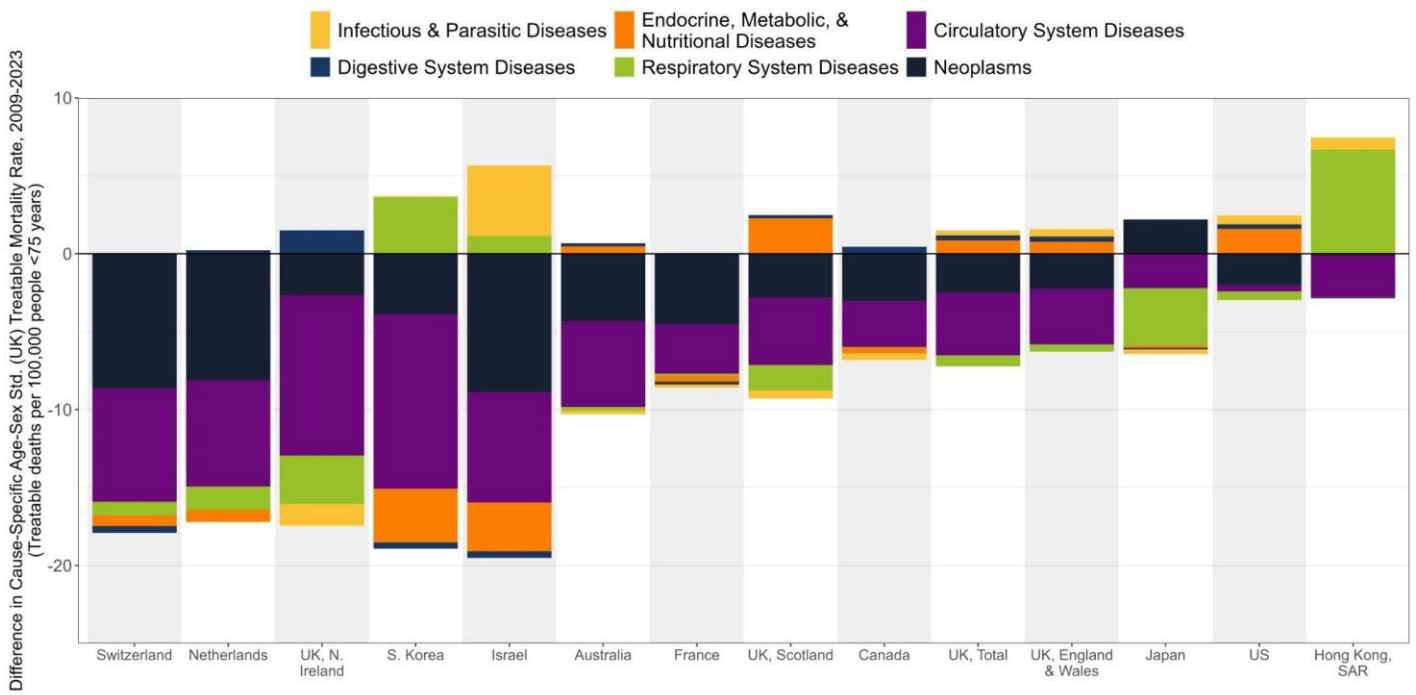


Figure 16. Differences in Levels of Cause-Specific Treatable Mortality, UK & Comparators, 2009 to 2023
Source: Authors' analysis of WHO Mortality Database data.



Across the UK and comparator countries, three main cause categories contributed to avoidable mortality: (1) cancers; (2) CVD; and (3) injuries, and alcohol- and drug-related deaths. Scotland was a clear outlier within the

UK: Scotland had the greatest avoidable cancer mortality relative to all comparators, the greatest CVD avoidable mortality within the UK, the highest rates of alcohol-related, drug-related, and suicide preventable mortality within the UK, and the greatest increase in drug-related preventable mortality over the 15-year study period. South Korea also stood out for its improvements and its burdens, exhibiting the greatest improvement in both cancer and CVD avoidable mortality, but the highest suicide preventable mortality across all comparators. These findings signal the unrealised potential for prevention, particularly in Scotland, to reduce the fatality of cancer, CVD, and substance-use disorders, as well as the potential to learn from other countries, perhaps South Korea, due to the reductions they have achieved.

Morbidity: A Complementary Metric to Avoidable Mortality

While avoidable mortality is a salient population health outcome and health system performance metric, it has limitations. Avoidable mortality only measures deaths that could have been treated or prevented, whereas it is also important to measure health system performance on prevention for people living with health conditions and their quality of life. For the most part, avoidable mortality also only captures conditions related to primary prevention within the health system and the later stages of secondary and tertiary prevention; although some preventable deaths may signal implications for risk factor environments and broader policy environments, measuring morbidity and risk factors for morbidity within a country's population is also important to gain insights for primordial and primary prevention and, more generally, the broader policy environments shaped for public health.

Therefore, we complemented our analysis of avoidable mortality by examining the leading causes of morbidity and the leading risk factors for morbidity across the UK relative to comparator countries. Using Global Burden of Disease (GBD) estimates from the Institute for Health Metrics and Evaluation (IHME),[19] we examined the leading causes of and risk factors for morbidity across the UK and how the levels of health burden attributable to those causes and risk factors changed over the 15-year period from 2009 to 2023, as well as relative to comparators. To measure health burden, we have chosen to report YLDs, as this measure captures the non-fatal burden of disease that has the potential to respond to risk-factor reduction and broader policy environments. We also examined age-standardised measures for both sexes to provide a holistic view of the burdens experienced across age and sex. By examining morbidity in this way, we identify areas of unrealised potential for public health communications, health behaviour modification, and risk-factor reduction for prevention in the UK.

Causes of morbidity: current levels and trends (years lived with disability)

In the UK overall in 2023, the 10 leading causes of morbidity (in terms of YLDs) were all non-communicable diseases and some injuries: mental disorders; musculoskeletal disorders; unintentional injuries (e.g. falls); neurological disorders; other non-communicable diseases; chronic respiratory diseases; substance-use disorders; sense-organ diseases (e.g. blindness and vision loss); diabetes and kidney diseases; and CVD (**Table 1**). Mental disorders were the leading cause of morbidity across the UK and on average across comparators. England had the worst burden from mental disorders (3,562 YLDs per 100k), and Northern Ireland (2,962), Wales (2,962), and Scotland (2,581) were also above the average burden experienced by other comparators (2,528).

Table 1. Leading Causes of Morbidity in the UK (YLDs) vs Comparators, 2023
Source: IHME GBD (2023)[19]

Top 10 Causes of Morbidity in the UK,	**Morbidity, 2023 (Age-Std. YLDs per 100k) [Cause rank within country]**

2023	UK	England	Northern Ireland	Scotland	Wales	Average, Comparators[1]
1. Mental disorders	3462	3562 [1]	2962 [1]	2581 [1]	2962 [1]	2528 [1]
2. Musculoskeletal disorders	2135	2138 [2]	2049 [2]	2138 [2]	2139 [2]	2159 [2]
3. Unintentional injuries	962	932 [3]	1204 [3]	1091 [3]	1123 [3]	1258 [3]
4. Neurological disorders	929	916 [4]	966 [4]	1044 [4]	947 [4]	819 [5]
5. Other non-communicable diseases	909	914 [5]	872 [5]	890 [5]	880 [5]	798 [5]
6. Chronic respiratory diseases	584	599 [6]	480 [6]	512 [7]	486 [8]	429 [8]
7. Substance-use disorders	535	499 [7]	409 [8]	878 [6]	697 [6]	413 [10]
8. Sense-organ diseases	495	495 [9]	439 [7]	506 [8]	508 [7]	560 [6]
9. Diabetes and chronic kidney diseases	486	496 [8]	406 [9]	468 [10]	381 [10]	422 [9]
10. Cardiovascular diseases	386	372 [10]	376 [10]	493 [9]	430 [9]	413 [9]

[1] Included in this average are Australia, Canada, China, France, Ireland, Israel, Japan, the Netherlands, Singapore, South Korea, Switzerland, and the USA.

The leading causes of morbidity in the UK were the same, and with the same rankings, in 2023 as they were 15 years prior in 2009 (**Table 2**). The burden of mental disorders in the UK overall has increased by about 50% from 2009 (2290 YLDs per 100k) to 2023 (3462). The other cause of morbidity that modestly increased in the UK over this period was diabetes and chronic kidney diseases, which worsened by about 16% (419 to 486 YLDs per 100k). The burden of mental disorders, diabetes, and chronic kidney diseases also increased on average across comparators from 2009 to 2023 (2009 to 2528 and 402 to 422, respectively). The only leading cause of morbidity to experience a noticeable reduction in the UK overall was chronic respiratory diseases, which saw a decrease of about 13% from 2009 to 2023 (671 to 584 YLDs per 100k). Morbidity caused by CVD also decreased over this period in the UK overall, but only slightly (404 to 386 YLDs per 100k).

Table 2. Leading Causes of Morbidity in the UK (YLDs) vs Comparators, 2009
Source: IHME GBD (2023)[19]

Top 10 Causes of Morbidity in the UK, 2009	Morbidity, 2009 (Age-Std. YLDs per 100k) [Cause rank within country]					
	UK	England	Northern Ireland	Scotland	Wales	Average, Comparators[1]
1. Mental disorders	2290	2306 [1]	2330 [1]	2156 [2]	2224 [1]	2009 [2]
2. Musculoskeletal	2177	2180 [2]	2072 [2]	2178 [1]	2182 [2]	2180 [1]

disorders						
3. Unintentional injuries	941	924 [3]	1105 [3]	1011 [4]	1026 [3]	1440 [3]
4. Neurological disorders	929	914 [4]	975 [4]	1042 [3]	950 [4]	810 [5]
5. Other non-communicable diseases	876	878 [5]	857 [5]	885 [5]	845 [5]	793 [5]
6. Chronic respiratory diseases	671	695 [6]	513 [6]	580 [7]	521 [8]	431 [8]
7. Substance-use disorders	541	509 [8]	404 [9]	831 [6]	662 [6]	356 [10]
8. Sense-organ diseases	515	515 [7]	449 [7]	522 [9]	533 [7]	564 [6]
9. Diabetes and chronic kidney diseases	419	427 [9]	345 [10]	409 [10]	341 [10]	402 [9]
10. Cardiovascular diseases	404	381 [10]	441 [8]	548 [8]	515 [9]	449 [8]

[1] Included in this average are Australia, Canada, China, France, Ireland, Israel, Japan, the Netherlands, Singapore, South Korea, Switzerland, and the USA.

Risk factors for morbidity: current levels and trends (years lived with disability)

Underlying risk factors for morbidity in the population are another key indicator for gaining insights into prevention performance, specifically for primordial prevention to reduce risk factors for otherwise healthy individuals and for primary prevention to reduce risk factor exposures. In the UK, the top 10 risk factors for morbidity (measured in age-standardised YLDs per 100k) were mainly metabolic and behavioural risk factors, with occupational risks also included in the top 10: high BMI; high fasting plasma glucose; sexual violence against children; smoking; high alcohol use; drug use; intimate partner violence; occupational ergonomic factors; low bone mineral density; and bullying (**Table 3**). Within the UK and on average across comparator countries, high BMI was the number one risk factor for morbidity in 2023, and Wales had the highest burden of high BMI (832 YLDs per 100k), closely followed by Scotland (821). Countries across the UK all had a higher burden of high BMI (749) relative to the average for other comparators (577). High fasting plasma glucose was also similarly ranked across the UK and on average for other comparators, though YLDs from high fasting plasma glucose were higher in England (531 YLDs per 100k) than in Scotland (472), Northern Ireland (405), Wales (385), and other comparators on average (424). However, other risk factors and their rankings varied within the UK. For instance, sexual violence against children was the second major risk factor for morbidity in Scotland in 2023, ranking third in England and Northern Ireland and fifth in Wales. Scotland also displayed a much higher risk from drug use than England, Northern Ireland, Wales, and other comparators on average.

Table 3. Leading Risk Factors for Morbidity in the UK (YLDs) vs Comparators, 2023
Source: IHME GBD (2023)[19]

Top 10 Risk Factors in the UK, 2023	**Morbidity, 2023 (Age-Std. YLDs per 100k) [Risk factor rank within country]**					
	UK	**England**	**Northern**	**Scotland**	**Wales**	**Average, Other**

			Ireland			Comparators[1]
1. High BMI	749	737 [1]	734 [1]	821 [1]	832 [1]	577 [1]
2. High fasting plasma glucose	516	531 [2]	405 [2]	472 [4]	385 [4]	424 [3]
3. Sexual violence against children	438	429 [3]	403 [3]	575 [2]	372 [5]	329 [4]
4. Smoking	401	395 [4]	403 [4]	444 [6]	442 [3]	337 [4]
5. High alcohol use	331	317 [5]	271 [5]	433 [6]	443 [2]	257 [7]
6. Drug use	290	265 [6]	239 [6]	551 [3]	348 [6]	240 [10]
7. Intimate partner violence	234	251 [7]	137 [10]	113 [11]	192 [8]	127 [14]
8. Occupational ergonomic factors	176	174 [8]	175 [8]	186 [9]	186 [9]	171 [9]
9. Low bone mineral density	169	163 [10]	226 [7]	197 [8]	201 [7]	224 [7]
10. Bullying	156	165 [9]	71 [14]	110 [13]	118 [13]	96 [15]

[1] Included in this average are Australia, Canada, China, France, Ireland, Israel, Japan, the Netherlands, Singapore, South Korea, Switzerland, and the USA.

The leading risk factors for morbidity remained similar over the 15 years between 2009 (**Table 4**) and 2023 (**Table 3**). In the UK overall, the burden of intimate partner violence as a risk factor for morbidity increased the most from 2009 to 2023, worsening by nearly 60% (148 to 234 YLDs per 100k). Most of this increase was attributable to the increase in intimate partner violence burden in England (60%, from 157 to 251 YLDs per 100k), though Scotland (46%, from 77 to 113), Wales (33%, from 144 to 192), and Northern Ireland (26%, from 109 to 137) also experienced considerable increases. Other comparators saw a 37% increase in morbidity from intimate partner violence on average as well (from 93 to 127 YLDs per 100k). Risk of morbidity from high fasting plasma glucose also increased modestly from 2009 (445) to 2023 (516) in the UK by about 16%; the burden from high fasting plasma glucose increased differently across the UK, by about 18% in Northern Ireland (344 to 405), 16% in England (457 to 531), 14% in Scotland (413 to 472), and 10% in Wales (349 to 385). Risk due to low bone mineral density also increased over this period in the UK overall (about 8%, 157 to 169), England (6%, 153 to 163), Northern Ireland (18%, 191 to 226), Scotland (15%, 172 to 197), and Wales (17%, 172 to 201), though it remained about the same on average for comparators. Risk of morbidity from smoking decreased by a modest 19% in the UK overall from 2009 (497 YLDs per 100k) to 2023 (401), seeing a reduction of about 29% in Scotland, about 18% in England and Northern Ireland, and only 9% in Wales. Other comparators also exhibited a reduction in risk due to smoking of about 16% on average (399 to 337). Though high blood pressure was no longer among the top 10 risk factors in the UK, it had only fallen slightly in the UK overall by about 6% (164 to 154 YLDs per 100k).

Table 4. Leading Risk Factors for Morbidity in the UK (YLDs) vs Comparators, 2009
Source: IHME GBD (2023)[19]

Top 10 Risk Factors in the UK, 2009	Morbidity, 2009 (Age-Std. YLDs per 100k) [Risk factor rank within country]					
	UK	England	Northern Ireland	Scotland	Wales	Average, Other Comparators[1]
1. High BMI	700	680 [1]	729 [1]	792 [1]	853 [1]	525 [2]
2. Smoking	497	484 [2]	489 [2]	628 [2]	487 [2]	399 [3]
3. High fasting plasma glucose	445	457 [3]	344 [4]	413 [6]	349 [5]	406 [3]
4. Sexual violence against children	389	378 [4]	383 [3]	515 [3]	353 [4]	302 [5]
5. High alcohol use	339	317 [5]	281 [5]	509 [4]	450 [3]	281 [7]
6. Drug use	295	282 [6]	225 [6]	430 [5]	308 [6]	177 [10]
7. Occupational ergonomic factors	180	178 [7]	174 [9]	191 [8]	191 [8]	173 [9]
8. High blood pressure	164	150 [10]	210 [7]	259 [7]	220 [7]	184 [8]
9. Low bone mineral density	157	153 [9]	191 [8]	172 [9]	172 [9]	233 [7]
10. Intimate partner violence	148	157 [8]	109 [13]	77 [17]	144 [11]	93 [14]

[1] Included in this average are Australia, Canada, China, France, Ireland, Israel, Japan, the Netherlands, Singapore, South Korea, Switzerland, and the USA.

Across the UK and comparators, many causes and risk factors for morbidity remained at similar levels over the 15 years between 2009 and 2023 or increased. Mental disorders remain the leading cause of morbidity, with YLDs from mental disorders increasing by over half since 2009. The burden of diabetes and chronic kidney diseases also worsened modestly over this period within the UK and on average for comparators. The leading risk factors for morbidity were also the same ones from 15 years ago, though some risk factors experienced worsening or, in the case of smoking, modest reduction. Risk of morbidity from intimate partner violence exhibited a considerable increase across the UK, especially, and to a lesser extent, on average, for comparators.

The lack of meaningful change in most causes of and risk factors for morbidity, and the considerable worsening of burden for some, signals the potential for better prevention, policies, and interventions to reduce risk and lessen disease burden across the UK. The leading causes of morbidity, such as mental disorders, diabetes, and chronic kidney diseases, have possible public health interventions aimed at modifying health behaviours, raising awareness, and screening for risk and the disease itself that are perhaps unrealised to their full potential and could make a difference in reducing morbidity. Similarly, public health communications and resources for victims of intimate partner violence may be able to halt the rising risk of injury and help survivors, if operationalised. The modest reduction in smoking across the UK may also demonstrate the effectiveness of existing prevention measures, which should also be studied and considered further.

There is the potential to change risk and burden with effective and well-designed policies. In the next section, we compare prevention policies and interventions across the UK and comparators to generate insights into this potential and ideas for improvement.

Section 3. Comparison of Prevention Policies & Interventions

Understanding differences in preventable mortality and prevention spending requires insight into how prevention is organised, prioritised, and implemented within health systems and across policy domains. While international comparisons frequently document variation in prevention-related outcomes and, to a lesser extent, spending, far less is known about how countries differ in the policy approaches, institutional arrangements, and delivery models that shape prevention in practice. As a result, it remains difficult for policymakers to interpret whether observed differences in preventable mortality reflect variation in prevention effort, the types of prevention prioritised, or broader policy environments that influence exposure to health risks.

Therefore, to bring together the analyses developed in Aims 1 and 2, we examined how prevention-relevant policies and practices vary across countries. The objective was not to attribute outcomes to specific policies or to identify best performers, but to describe and compare how countries approach prevention across the health system and beyond, and to identify areas where policy orientation and prevention-relevant health burdens appear broadly aligned—or misaligned. We selected indicators using the public health prevention model, drawing on measures that capture different stages of prevention and that reflect both factors within the healthcare delivery system and broader policy and environmental conditions outside it.[5] The indicators were intended to provide a broad picture of the prevention landscape, spanning risk-factor exposure, system characteristics that shape access to preventive services, public health policies, and the use of clinical preventive care. No single source captures all aspects of prevention. We drew on multiple international and national databases— including the OECD Data Explorer,[20] the WHO Global Health Observatory,[21] the IHME GBD,[19] and reports from the Commonwealth Fund, among others—to identify indicators that were both policy-relevant and reasonably comparable across countries. For each indicator, we report data from the latest year available for each country; full indicator definitions, sources, years, and additional methodological details are provided in the supplementary table in the Appendix (**Table A1)**. We examined which prevention investments and policy differences could plausibly explain any differentials in population health outcomes, pinpointing potential priority areas for investment and policy exploration to improve population health.

Primordial prevention: risk factors

Primordial prevention refers to preventing the development of risk factors, particularly in otherwise healthy individuals. **Table 5** presents individual-level risk factors in the UK compared with other high-income countries. Population ageing is one risk factor for countries' populations, as individuals tend to become less healthy with age. The UK's population aged 65 years and older fell in the mid-range of comparator countries in 2023 (19%)—below Japan (29%), Germany (22%), and France (21%), but above Israel (13%), Ireland (15%), and the USA (18%). Major risk factors for a wide range of diseases include behavioural factors such as poor nutrition, smoking, and alcohol use. In 2022, obesity prevalence in the UK (27%) was lower than in the USA (42%), though it was substantially higher than in France, Japan, and South Korea (10%, 6%, and 7%, respectively). Smoking prevalence in the UK was among the lowest across comparators in 2023 (13%), like Australia and Canada (both 12%), and well below France (33%), Germany (22%), and China (23%). Alcohol consumption, by contrast, was among the highest in the comparator set at 11 litres (L) per person per year, similar to Australia, France, and Germany, and far exceeding consumption in Israel (3 L), Singapore (2 L), and China (5 L).

Diet is central to primordial prevention—particularly access to healthy, nutritious foods, which directly shapes an individual's risk of both malnutrition and obesity. In 2023, daily caloric intake per person (3435 kcal) was in the mid-to-upper range—lower than Ireland (3921) and the USA (3947) but above Japan (2670) and New Zealand (3122). Dietary risk exposure—quantified by summary exposure value, or SEV—and ultra-processed food consumption were among the highest in the UK. The UK had the second-highest dietary risk SEV (42),

surpassed only by Japan (44) and notably higher than Israel, Ireland, and France (29, 37, and 37, respectively). Within the UK, SEV varied modestly across its constituent countries, ranging from 37 in Scotland to 42 in England, with Wales and Northern Ireland at 41 and 39. People in the UK derived 57% of their calories from ultra-processed foods—nearly identical to the USA (58%) and far exceeding every other country with available data, including Australia (42%), Japan (38%), and South Korea (26%).

Opioid use in the UK (0.7%) was low in the last decade, far below Australia (2%) and the USA (4%), though modestly above Israel, Japan, and the Netherlands (all 0.1%). In 2023 or the latest year with available data, vehicle ownership (UK 475 vs USA 770 per 1000 people) and civilian gun ownership (UK 5.1 vs USA 120.0 per 100 people) were also very low in the UK.

In 2019, male hypertension prevalence in the UK (30%) was the third lowest among comparators—behind only Canada (24%) and Switzerland (26%)—and female hypertension prevalence (23%) was the fifth lowest. Diabetes prevalence in the UK was mid-range in 2024 (7.4%)—above France, the Netherlands, and Ireland (6.5%, 5.0%, and 3.6%, respectively), and below the USA, China, and Singapore (13.7%, 11.9%, and 11.4%, respectively). Mean total, non-high-density lipoprotein (non-HDL), and HDL cholesterol levels had no meaningful variation from comparator countries across either sex.

Primordial prevention: system factors

Risk exposure is also influenced by infrastructure, including how the health system is designed, funded, and who is covered, as well as by the strength of the social safety net and supports such as housing, disability, and unemployment assistance. **Table 6** presents a comparison of various health system factors that can affect access to preventive services. In 2023 or the latest year with available data, the UK's per capita spending on preventive care (€227) was significantly higher than France (€101), Japan (€87), and Israel (€7), but lower than the USA and Canada (€321 and €311, respectively). Social programme expenditure similarly fell in the mid-range [17% of gross domestic product (GDP)], modestly above the USA (16%), Australia (15%), and Canada (15%), and well below France, Switzerland, and the Netherlands (24%, 21%, and 21%, respectively). Unlike the USA, which covered 92% of its population, insurance coverage was 100% in the UK and all other comparator countries.

Risk prevention is also shaped by the healthcare system—how often patients see a doctor, how well doctors assess social needs, and whether patients understand recommendations and feel involved in their care decisions. The UK had the fourth lowest in-person doctor consultations per person (5), with the USA having the lowest (4), and South Korea (18) and Japan (12) having the highest. The proportion of primary care providers (PCPs) seeing more than 150 patients weekly was 22% in the UK, 78% in Germany, and 5% in the USA. PCPs screened 19% of patients for social needs, consistent with Canada (19%) and Switzerland (20%), but below Germany and the USA (both 32%). Patients in the UK (87%) and Canada (73%) were the least likely to report clear explanations from doctors. Similarly, 81% of UK patients reported being involved in decisions about their care, lower than all comparators except France (74%) and Canada (66%).

Primary prevention related to public health policies

Primary prevention refers to preventing the onset of disease in at-risk individuals and reducing exposure to risk factors. We examined this by comparing public health policies and taxation laws across the UK and comparator countries (**Table 7**). All the studied countries have seatbelt laws; the UK first introduced seatbelt legislation in 1983, more than a decade later than New Zealand (1973), but more than two decades earlier than China (2004).

Back-of-pack food labelling is mandatory across all the studied countries, whereas front-of-pack labelling is voluntary in every country except South Korea, where it is completely mandatory.

Cigarette taxes were the highest in the UK in 2022 (84%), equivalent to France and substantially above Germany (64%), Canada (63%), and Switzerland (59%); the USA was far below all other comparators (37%). In 2024, the UK imposed both a specific volume-based excise tax (7%) and a value-added tax (VAT) (17%) on sugar-sweetened beverages, making it one of the few countries—along with Ireland and the Netherlands—that applied a targeted levy alongside a general sales tax. Alcohol taxation in the UK was among the highest compared with the studied countries. The UK imposed a 30% alcohol-content-based excise on beer—one of the highest rates, almost equivalent to Australia's 31%. Likewise, its 46% excise duty on spirits was second only to Australia's 57%.

Primary and secondary prevention in the healthcare delivery system

Table 8 compares how primary and secondary prevention are utilised within the healthcare delivery system, including preventing disease onset in at-risk individuals as well as early detection and management. In 2023 or the latest year for which data are available, the UK's breast and cervical cancer screening rates fell in the mid-range of the comparator countries. The USA had the highest breast cancer screening rate at 80%, while Switzerland (75%) and Ireland (74%) led in cervical cancer screening. In 2023, the UK had the highest colorectal cancer screening rate (72%), followed by the USA (68%) and the Netherlands (67%).

In 2019, the UK had some of the lowest rates of diagnosed hypertension, diagnosing 60% of males and 58% of females, whereas the USA (78% of males and 83% of females) and Canada (80% of males and 75% of females) had the highest proportions of diagnosed hypertension. The UK had a moderately high diagnosed diabetes rate (71%) compared with the other countries in 2024, with Germany, France, and the USA having the highest (80%, 76%, and 75%, respectively).

The influenza vaccination rate in people aged 65 years and older in the UK was 75.5% in 2023, the third highest among all comparators behind South Korea (82.0%) and Ireland (75.7%), and substantially exceeding Germany (40.4%) and Switzerland (39.0%). In 2022, or the most recent year with available data, the pneumonia vaccination rate was moderately high (89%), with Japan (97%) and France (96%) reporting the highest rates and Germany with the lowest (74%). COVID-19 vaccination in older adults (50%) was mid-range among countries with available data, between Ireland's 100% and France and Germany's near-zero rates (1.3% and 1.0%, respectively). The UK introduced the human papilloma virus (HPV) vaccine to national programmes in 2008, a year behind France, Switzerland, and the USA (2006), but well ahead of South Korea (2016) and Japan (2011). Female HPV dose completion by age 15 (77%) was among the highest in the comparator set, behind only Canada (86%) and Ireland (81%), and significantly higher than the USA (52%), France (45%), and Japan (12%).

In 2019, hypertension treatment rates (47% of men and 48% of women) and hypertension control rates (31% of men and 29% of women) were among the lowest of all comparators. The USA (66% men, 73% women) and Canada (76% men, 71% women) had the highest rates of treated hypertension; the USA (45% men, 51% women) and Canada (64% men, 57% women) also had the highest rates of controlled hypertension. Rates of untreated stage 2 hypertension in the UK (10% men, 12% women) were mid-range, below the Netherlands and Ireland, but higher than the USA and Germany.

In 2023 or the latest year available, avoidable hospitalisations for chronic conditions varied across the comparator countries. The UK had the third-highest rates for chronic obstructive pulmonary disease and asthma, while it had the second lowest rates for congestive heart failure and diabetes, and the third lowest for

hypertension-related hospitalisations. In contrast, the US had the second-lowest rates for chronic obstructive pulmonary disease and asthma and the first and second highest rates for congestive heart failure, hypertension, and diabetes.

Table 5. Primordial prevention, risk factors

	UK	Australia	Canada	China	France	Germany	Ireland	Israel	Japan	Netherlands	New Zealand	Singapore	South Korea	Switzerland	USA
Risk factors															
Population older than age 65 years (%)	18.8	17.1	18.9	14.3	21.3	22.3	15.3	12.8	29.1	20.4	16.3	17.3	18.2	19.2	17.7
Obesity prevalence (age >18 years, BMI ≥30, age-std., %)	26.8	30.2	26.2	8.3	9.7	20.4	28.4	22.5	5.5	14.5	33.6	13.9	7.3	12.1	42.0
Smoking prevalence (%, age-std.)	13.4	12.0	11.6	23.0	33.4	22.4	18.7	21.5	18.0	20.9	9.8	13.9	19.0	23.4	15.1
Alcohol consumption (annual sales, L per person)	10.9	11.2	10.0	4.5	11.2	11.2	10.6	3.1	6.3	8.7	9.2	2.0	8.4	9.2	9.8
Daily caloric supply per capita (kcal)	3435	3562	3590	3527	3490	3535	3921	3754	2670	3467	3122	-	3430	3402	3947
Dietary risk exposure (summary exposure value; SEV)	41.5	37.2	37.3	40.6	37.0	39.7	36.5	28.5	44.4	35.3	37.4	35.2	38.0	37.4	40.9
Calories from ultra-processed foods (%)	57	42	46	-	-	-	-	-	38	-	-	-	26	-	58
Opioid use in last 12 months (age 15–64 years, %)	0.7[1]	2.3	0.8	-	0.6	0.5	0.7	0.1	0.1	0.1	1.2	-	-	0.4	3.6

	UK	Australia	Canada	China	France	Germany	Ireland	Israel	Japan	Netherlands	New Zealand	Singapore	South Korea	Switzerland	USA
Passenger vehicles (per 1000 people)	475	-	589	-	576	590	454	347	-	507	-	-	-	545	770
Civilian gun ownership (per 100 people)	5.1	14.5	34.7	3.6	19.6	19.6	7.2	6.7	0.3	2.6	26.3	0.3	0.2	27.6	120.0
Male hypertension prevalence (%)	29.9	32.3	24.3	30.2	34.1	34.4	38.2	33.0	40.3	36.2	34.4	35.4	32.0	26.4	34.1
Female hypertension prevalence (%)	23.0	26.3	19.9	24.1	24.4	25.0	26.6	25.3	22.5	24.8	27.6	27.1	21.2	17.5	29.0
Diabetes prevalence (%)	7.4	7.4	7.7	11.9	6.5	7.8	3.6	10.1	8.1	5.0	6.7	11.4	9.6	5.3	13.7
Mean total cholesterol (mmol/L)															
Men	4.7	4.6	4.6	4.6	5.0	4.8	4.5	4.7	5.0	4.7	4.7	5.0	4.8	4.8	4.6
Women	4.9	4.7	4.7	4.7	5.1	5.0	4.8	5.0	5.0	4.8	4.8	5.1	4.8	4.9	4.7
Mean non-HDL cholesterol (mmol/L)															
Men	3.4	3.3	3.3	3.4	3.8	3.4	3.2	3.4	3.5	3.4	3.5	3.8	3.6	3.5	3.3
Women	3.2	3.1	3.1	3.3	3.6	3.3	3.2	3.4	3.2	3.2	3.3	3.7	3.3	3.3	3.2
Mean HDL cholesterol (mmol/L)															
Men	1.4	1.3	1.3	1.2	1.3	1.3	1.3	1.2	1.5	1.2	1.2	1.3	1.3	1.3	1.3
Women	1.7	1.7	1.6	1.4	1.6	1.7	1.7	1.5	1.8	1.6	1.5	1.6	1.5	1.6	1.6

[1] This statistic is an estimate for England & Wales only, not the entire UK.

Table 6. Primordial prevention, system factors

	UK	Australia	Canada	China	France	Germany	Ireland	Israel	Japan	Netherlands	New Zealand	Singapore	South Korea	Switzerland	USA
Expenditure															
Preventive care expenditures per capita [purchasing power parity (PPP)-converted Euros, current prices]	€227	€133	€311	-	€101	€260	€118	€7	€87	€251	-	-	€135	€114	€321
Social programmes expenditure (% of GDP)	17.3	15.4	14.9	-	24.2	21.3	9.5	13.1	14.2	21.3	15.5	-	13.5	21.4	15.9
System-level risk factors															
Health insurance coverage [% of population with public and primary voluntary health insurance (VHI)]	100	100	100	-	99.9	99.9	100	100	-	99.9	100	-	100	100	92.4
Selected doctor–patient interaction indicators															
In-person doctor consultations per capita	5.0	6.0	5.8	-	5.4	9.7	5.8	6.8	12.1	10.1	3.8	-	18.0	4.5	3.5
PCPs seeing more than 150 patients per week (%)	22	27	18	-	-	78	-	-	-	-	6	-	-	12	5
PCPs screening patients for social needs (%)	19	13	19	-	25	32	-	-	-	8	13	-	-	20	32

	UK	Australia	Canada	China	France	Germany	Ireland	Israel	Japan	Netherlands	New Zealand	Singapore	South Korea	Switzerland	USA
Regular doctor[1] providing easy-to-understand explanations (% of patients 16+ years)	86.7	93.1	73.2	-	91.1	93.7	94.2	96.2	94.5	95.2	92.8	-	92.2	92.0	92.1
Regular doctor[1] involving patient in decisions about care and treatment (% of patients 16+ years)	80.6	91.2	65.9	-	74.1	88.6	90.8	83.7	-	92.2	89.6	-	90.0	84.3	89.1

[1] This indicator represents the patients' experiences with their regular doctor, except in Ireland, Japan, and South Korea, where answers regard their "doctor" in general, not necessarily their regular doctor.

Table 7. Primary prevention, public health policies

	UK	Australia	Canada	China	France	Germany	Ireland	Israel	Japan	Netherlands	New Zealand	Singapore	South Korea	Switzerland	USA
Preventive policies															
The introduction of seatbelt legislation	1983	1970s	1976–1988	2004	1973–1979	1976	1979	1975	1985	1975	1972	1973	1990	1981	NY first in 1984; varies by state
Food labelling[1]	M BOPL, V FOPL	M BOPL, V FOPL	M BOPL, MFOPL adopted not yet in effect	M BOPL, V FOPL	M BOPL, V FOPL	M BOPL, V FOPL	-	M BOPL, mixed (M and V) FOPL	-	-	M BOPL, V FOPL	M BOPL, mixed (M and V) FOPL	M BOPL, M FOPL	M BOPL, V FOPL	M BOPL, V FOPL
Cigarette taxes (share of total taxes on retail price of 20-pack most widely sold brand of cigarettes)	83.7%	77.0%	63.3%	52.2%	83.8%	64.4%	76.1%	76.6%	59.9%	77%	82.8%	66.3%	73.8%	59%	37.4%
Sugary drinks taxes (burden of tax on the price of internationally comparable brand of sugar-sweetened carbonated beverage)															
Sugar-content-based specific excise taxes	-	-	-	-	9.5%	-	-	-	-	-	-	-	-	-	-
Sugary drinks volume-based specific excise taxes	7.2%	-	-	-	-	-	5.0%	-	-	7.7%	-	-	-	-	-

	UK	Australia	Canada	China	France	Germany	Ireland	Israel	Japan	Netherlands	New Zealand	Singapore	South Korea	Switzerland	USA
Sugary drinks VAT/sales taxes	16.7%	9.1%	11.5%	11.5%	5.2%	16.0%	18.7%	14.5%	7.4%	8.3%	13.0%	8.3%	9.1%	7.5%	Varies by state
Alcohol taxes, beer (burden of tax on the price of the most sold brand of beer)															
Alcohol-content-based specific excise taxes	30.3%	30.8%	-	-	9.9%	2.1%	14.5%	-	-	15.6%	24.5%	-	-	-	Varies by state
Volume-based specific excise taxes	-	-	21.7%	2.1%	-	-	-	15.0%	28.3%	-	-	-	15.8%	6.6%	Varies by state
Ad valorem excise taxes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Varies by state
Alcohol tax, spirits (burden of tax on the price of most sold type of spirits)															
Alcohol-content-based specific excise taxes	46.1%	57.0%	12.8%	-	20.6%	34.2%	46.6%	44.8%	7.6%	25.3%	18.4%	-	-	17.3%	Varies by state
Volume-based specific excise taxes	-	-	0.9%	3.1%	-	-	-	-	7.6%	-	-	-	-	-	Varies by state
Ad valorem excise taxes	-	-	20.4%	13.3%	-	-	-	-	-	-	-	-	57.6%	-	Varies by state

[1] M=mandatory; V=voluntary; FOPL=front-of-pack label; BOPL=back-of-pack label.

Table 8. Primary and secondary prevention in the healthcare delivery system

	UK	Australia	Canada	China	France	Germany	Ireland	Israel	Japan	Netherlands	New Zealand	Singapore	South Korea	Switzerland	USA
Screening															
Breast cancer screening rate (age 50–69 years, %)	66.4	51.3	59.7	-	46.7	52.0	69.3	70.5	44.7	70.2	67.9	-	70.1	50.0	79.8
Cervical cancer screening rate (age 30–49 years, %)	68.7	73.1	59.1	-	55.8	47.0	74.0	68.7	43.6	49.7	69.5	-	65.4	74.8	72.2
Colorectal cancer screening rate (age 50–74 years, %)	72.0	40.0	59.2	-	34.4	15.0	48.0	64.3	45.9	67.2	57.7	-	41.6	50.6	67.6
Detection															
Men diagnosed from all hypertension (age 30–79 years, %)	59.5	57.7	80.1	47.7	62.2	72.2	47.5	60.5	65.8	48.8	61.2	64.9	67.2	72.7	78.4
Women diagnosed from all hypertension (age 30–79 years, %)	58.4	61.3	75.1	56.4	68.3	70.8	54.2	66.3	68.8	55.0	65.0	67.7	77.5	73.8	82.8

	UK	Australia	Canada	China	France	Germany	Ireland	Israel	Japan	Netherlands	New Zealand	Singapore	South Korea	Switzerland	USA
Diagnosed from all diabetes (age 20–79 years, %)	71.3	72.0	71.1	50.3	75.9	79.6	68.8	71.5	68.7	71.5	74.3	62.7	71.7	71.5	75.2
Vaccinations															
Flu (age 65+ years, annual, %)	75.5	61.1	73.7	-	54.0	40.4	75.7	61.2	-	61.2	67.6	42.2	82.0	39.0	69.8
COVID-19 (age 65+ years, %)	50.0	42.0	-	-	1.3	1.0	100.0	-	-	47.0	-	-	49.0	-	-
Pneumonia (3rd dose, %)	89.1	95.3	85.0	-	95.7	73.8	82.8	94.5	97.1	87.9	86.2	92.7	94.6	89.0	83.5
Year in which HPV vaccination was introduced in the national vaccination programme	2008	2007	2007–2009	-	2006	2007	2010	2010	2011	2010	2008	2010	2016	2006	2006
HPV last dose by age 15 years (females)	77.0	71.0	86.0	-	45.0	55.0	81.0	58.0	12.0	60.0	66.0	67.0	67.0	70.0	52.0
Treatment delivery															
Treated hypertension from all hypertension in	47.4	46.7	75.8	35.1	49.9	61.1	37.6	49.6	45.9	39.6	47.0	58.9	67.2	55.8	66.3

	UK	Australia	Canada	China	France	Germany	Ireland	Israel	Japan	Netherlands	New Zealand	Singapore	South Korea	Switzerland	USA
males (age 30–79 years, %)															
Treated hypertension from all hypertension in females (age 30–79 years, %)	47.9	49.5	70.6	44.6	55.7	65.0	45.1	56.6	51.2	46.5	52.3	62.9	77.5	56.8	73.3
Controlled hypertension from all hypertension in males (age 30–79 years, %)	30.6	24.9	64.0	13.9	23.4	43.2	21.2	24.1	24.1	20.5	24.9	36.2	49.8	35.2	44.8
Controlled hypertension from all hypertension in females (age 30–79 years, %)	29.2	27.0	56.9	17.8	34.6	48.0	27.6	31.0	30.3	26.5	30.2	39.5	57.3	39.4	51.0
Untreated stage 2 hypertension from all hypertension in males (age 30–79 years, %)	9.7	11.7	10.9	17.4	11.1	7.6	14.5	9.0	12.9	14.5	12.6	9.4	7.1	8.7	7.5
Untreated stage 2 hypertension from all hypertension in	12.4	11.5	10.0	12.7	8.9	6.3	15.5	10.3	10.9	18.4	12.8	8.5	3.7	8.8	6.1

	UK	Australia	Canada	China	France	Germany	Ireland	Israel	Japan	Netherlands	New Zealand	Singapore	South Korea	Switzerland	USA
females (age 30–79 years, %)															
Avoidable hospitalisations (per 100k people)															
Chronic obstructive pulmonary disease	194	233	177	-	129	223	272	130	-	144	319	121	99.8	138	100
Asthma	60.5	52	11.4	-	29.8	27.2	34.4	32.4	-	25.1	65.4	94.5	41.1	23	22.4
Congestive heart failure	111	181	158	-	287	380	145	197	-	152	232	185	75.9	216	386
Hypertension	21.2	38.8	16.9	-	40.1	215	68.4	60.6	21.2	12.2	32.1	-	39.4	40.1	158
Diabetes	82.1	141	93.3	-	156	180	93.3	84	-	42.3	153	422	159	82.6	223

Section 4. Summary and Implications for Prevention Policy and Future Study

This report examines prevention from multiple complementary perspectives to provide a more complete understanding of how prevention in the UK compares to that of other high-income countries. The report begins by outlining how prevention can be conceptualised, highlighting the relative strengths and weaknesses of different approaches and the limitations of focusing on any single set of metrics, and uses this framework to interpret the UK's performance in this area. Across these different lenses—spanning outcomes, spending, and policy activities—a consistent picture emerges: the UK's prevention challenges are concentrated in a set of recurring areas—substance use, mental health, metabolic and cardiovascular risk, and cancer—where outcomes remain comparatively poor or improved more slowly than in peer countries. In particular, these analyses suggest that areas with the highest burden are not consistently matched by strong or systematic prevention responses, with the UK performing less well in domains such as early detection, screening, and the timely management of disease, including cardiovascular risk factors such as hypertension and diabetes, compared to peer countries.

Cardiovascular disease

CVD remains one of the largest contributors to avoidable mortality across the UK and comparator countries, and an area where progress has been uneven. While many countries have achieved substantial reductions in avoidable CVD mortality over the past 15 years, improvements in the UK have been more modest and varied across its constituent nations. Northern Ireland has seen relatively larger declines, while England and Wales, and Scotland have experienced smaller reductions. In contrast, countries such as South Korea and Switzerland have achieved more pronounced improvements, resulting in substantially lower current levels of CVD mortality. These differences suggest that while the UK has made progress, it has not kept pace with the rate of improvement observed in some peer countries.

Examining the components of avoidable mortality highlights that reductions in CVD have been driven by both preventable and treatable factors, reflecting the dual importance of risk-factor reduction and effective healthcare. However, patterns in morbidity and risk factors suggest that upstream drivers of CVD remain insufficiently addressed in the UK. High levels of metabolic risk—particularly elevated BMI and fasting plasma glucose—have persisted or increased over time, indicating continued exposure to key risk factors. At the same time, comparatively weaker performance in early detection and management, including the control of hypertension and diabetes, may limit the extent to which improvements in treatment translate into population-level gains. Taken together, these findings suggest that further reductions in CVD burden in the UK will depend on strengthening both population-level prevention and more systematic identification and management of cardiovascular risk within primary care.

A more detailed examination of specific risk factors further reinforces this pattern. Hypertension, diabetes, and obesity remain central drivers of CVD and premature mortality, and their persistence in the UK is consistent with broader evidence linking these conditions to elevated mortality risk across settings. Evidence from UK primary care studies indicates that, despite gradual improvements over time, a substantial proportion of individuals with hypertension remain undiagnosed, with detection rates often leaving a sizeable share of affected individuals unidentified in routine care. This gap in detection reflects not only whether risk is measured, but how consistently it is translated into diagnosis and management.

Across studies, a consistent pattern emerges in which elevated blood pressure is frequently recorded but not systematically followed up to confirm diagnosis or initiate treatment. This points to a form of diagnostic and management inertia within primary care, where opportunities for early intervention are missed despite contact with the health system. The NHS Health Check programme[22] represents a key policy response to this challenge, designed to provide systematic cardiovascular risk assessment for adults aged 40 to 74 years and to support earlier identification of conditions such as hypertension and diabetes. The programme has contributed to improvements in risk detection and has helped establish a population-level approach to prevention. However, its implementation has been uneven, with variation in uptake, follow-up, and integration into primary care pathways. In particular, its effectiveness depends not only on initial risk assessment, but on whether elevated

risk is consistently followed by confirmatory diagnosis, treatment initiation, and sustained management—steps that are not uniformly achieved in practice.[23–25]

At the same time, variation in detection and follow-up reflects broader system constraints, including workforce pressures, limited consultation time, and differences in the organisation of care. Gaps in monitoring and continuity—such as inconsistent follow-up testing and variation in management practices—further limit effective control of hypertension and related conditions, even once patients are engaged with the health system. Evidence from comparative patient experience data further suggests that the UK performs less well than peer countries on measures of communication and involvement in care, including whether patients receive clear explanations and feel engaged in decision-making. These aspects of care are closely linked to adherence, follow-up, and ongoing management of chronic conditions, and may therefore contribute to gaps in the sustained control of cardiovascular risk factors.

Taken together, these findings help explain the patterns observed in this report; while treatment of established disease has improved, the UK appears to lag in the earlier stages of prevention, including the systematic identification, follow-up, and control of cardiovascular and metabolic risk factors. They also suggest that the limitation lies less in the availability of effective tools than in their consistent implementation and integration within routine care. Strengthening these functions—particularly through more proactive case finding, improved follow-up of elevated risk, better integration of programmes such as NHS Health Checks into primary care pathways, and greater emphasis on patient engagement—will be critical for achieving further reductions in avoidable cardiovascular mortality.

Cancer

Cancer is another major contributor to avoidable mortality across the UK and comparator countries, and an area where cross-country differences are substantial. Within the UK, Scotland has particularly high levels of avoidable cancer mortality relative to both other UK nations and international peers. Although cancer mortality has declined over time across most countries, reflecting advances in treatment and, in some cases, prevention, the scale of improvement in the UK has been more limited. Countries such as South Korea, Switzerland, and the Netherlands have achieved larger reductions and maintain lower current levels of avoidable cancer mortality, suggesting differences in how cancer prevention, detection, and care are organised and delivered.

Examining the components of avoidable mortality indicates that improvements in cancer outcomes have been driven by both preventable and treatable factors, though the balance varies across countries. In the UK, reductions in preventable cancer mortality have generally been larger than improvements in the treatable component, indicating progress in reducing some exposures but more modest gains in survival conditional on diagnosis. This pattern points to challenges in earlier stages of the cancer pathway, including timely diagnosis and access to treatment. Differences in screening uptake, diagnostic capacity, and the coordination of care pathways are likely to contribute to these gaps, limiting the extent to which advances in treatment translate into improved population outcomes.

A closer examination of underlying drivers further reinforces the importance of early detection and system performance. Risk factors such as smoking, alcohol use, and obesity continue to shape cancer incidence, but variation in mortality outcomes across countries suggests that differences in detection and treatment play a critical role. Recent data from NHS England show that early diagnosis has improved, with nearly three in five cancers now detected at stages 1 or 2—the highest level on record—but still below the 75% target set for 2028.[26] At the same time, performance against diagnostic and treatment waiting time standards remains below target, indicating persistent delays along the care pathway.[27] Evidence from international comparative analyses, including the 2023 EUROCARE-6 study,[28] highlights that differences in cancer outcomes across countries are closely linked to stage at diagnosis and the effectiveness of treatment pathways, with higher survival in settings

where cancers are detected earlier and managed more systematically. In the UK, comparatively later diagnosis and delays in diagnostic and treatment pathways have been identified as contributing factors to poorer outcomes relative to peer countries. Taken together, these findings suggest that while primary prevention remains important, further gains in cancer outcomes in the UK will depend not only on strengthening early detection and screening, but also on improving the speed and coordination of diagnostic and treatment pathways once patients enter the system.

Mental health

Mental health conditions represent one of the largest and fastest-growing contributors to morbidity in the UK, even though they are less visible in mortality-based measures, such as avoidable mortality. Across comparator countries, mental health disorders consistently rank among the leading causes of YLDs, but the burden in the UK has increased substantially over time and remains elevated relative to peers. This pattern highlights a key limitation of focusing on mortality alone: a significant share of the UK's health burden is concentrated in conditions that affect quality of life, functioning, and long-term health trajectories rather than survival, and may therefore be less visible in metrics that inform policy prioritisation and resource allocation.

Trends over time indicate that mental health conditions—including depression, anxiety, and substance-use disorders—have become increasingly prominent, particularly among younger populations. These conditions often interact with other drivers of health burden, including substance use and socioeconomic disadvantage, and can contribute indirectly to mortality through pathways such as self-harm, suicide, and chronic disease. The persistence and growth of this burden suggest that current approaches to prevention and early intervention have not kept pace with rising need. Compared to some peer countries, where mental health services are more integrated into primary care and community settings, the UK's system remains more fragmented, with variation in access, delays in care, and limited capacity for early intervention.

A closer examination of underlying drivers highlights the importance of both system-level and social determinants. Mental health outcomes are strongly shaped by factors such as income, employment, housing, and education, and the concentration of poor outcomes in more deprived areas suggests that prevention cannot be addressed through the health system alone. Exposure to violence, including domestic violence, represents an important but often under-recognised contributor to mental health burden, with lasting effects on psychological wellbeing and risk of subsequent illness. The presence of these risks reinforces that mental health is shaped by broader social and environmental conditions, not solely by access to clinical care. At the same time, the interaction between mental health and other risk factors—particularly substance use—highlights the need for more coordinated approaches across policy domains. In summary, these findings suggest that reducing the mental health burden in the UK will require a shift toward earlier intervention, stronger integration between health and social care, and greater emphasis on addressing the underlying social conditions that contribute to poor mental health outcomes.

Synthesis and Implications

Taken together, these condition-specific analyses reinforce a broader pattern: the UK's prevention challenges are not confined to a single domain but reflect different types of gaps across the prevention continuum. In CVD, these gaps are most evident in the detection and control of key risk factors such as hypertension and diabetes; in cancer, they are concentrated in delays and fragmentation along diagnostic and treatment pathways, and in mental health, they reflect both limited early intervention and the influence of wider social determinants. At the same time, the UK demonstrates strong capacity in several areas, including regulatory public health policy and elements of primary care, suggesting that the issue is not a lack of tools but how they are deployed.

These findings point to the need for a more coordinated and targeted approach to prevention, in which efforts are more explicitly aligned with the main drivers of health burden and supported by stronger integration across

healthcare, public health, and social policy. Moving forward, improving population health in the UK will depend not only on expanding effective interventions, but on ensuring that prevention is delivered systematically across the life course and across sectors, particularly in areas where current approaches have not kept pace with need. At the same time, these results highlight the importance of strengthening comparative analysis of how prevention is delivered in practice, particularly across the full care trajectory—from risk exposure and early detection through to treatment and long-term management. While aggregate indicators provide important signals of performance, more granular, patient-level, and pathway-based comparisons are needed to better understand where and how prevention efforts break down and to inform more targeted policy responses.

Conclusions

This report identifies substantial unrealised potential for prevention in the UK, concentrated in a small number of high-impact domains—CVD, cancer, mental health, and substance use—where outcomes remain comparatively poor or have improved more slowly than in peer countries. Across these areas, a consistent pattern emerges: the UK has many of the necessary tools for prevention, including strong regulatory policies and a well-developed primary care system, but these are not consistently aligned with the main drivers of health burden. In practice, this results in gaps at different points along the prevention pathway, including insufficient control of modifiable risk factors, delays in diagnosis and treatment, and limited integration between health services and broader social policy.

Addressing these gaps will require more targeted and systematic action in a small number of priority areas. First, strengthening the detection and management of cardiovascular risk—particularly hypertension and diabetes—should be a central focus. This includes improving follow-up of elevated risk identified through routine care and programmes such as NHS Health Checks, ensuring that risk assessment is consistently translated into diagnosis, treatment, and sustained control. Second, improving cancer outcomes will depend on reducing delays across the care pathway, including expanding screening uptake where appropriate, increasing diagnostic capacity, and ensuring timely initiation of treatment once patients enter the system. Third, reducing the growing burden of mental health conditions requires earlier intervention and stronger integration between health, social care, and community services, alongside greater attention to upstream drivers such as deprivation and exposure to violence. Fourth, continued action on diet and alcohol use—where the UK performs less well despite strong regulatory approaches in other areas—will be critical for addressing the metabolic and behavioural risks that underpin multiple conditions.

A key implication of this analysis is that improving prevention in the UK is not primarily a question of introducing new policies, but of delivering existing interventions more systematically and at scale, particularly in areas where current implementation is uneven. This includes strengthening the integration of prevention within primary care, improving continuity and follow-up, and aligning public health efforts more closely with areas of highest burden. It also requires a shift from a domain-specific approach to prevention toward a more coordinated strategy that spans risk reduction, early detection, and long-term management.

Finally, these findings point to the need to deepen how international comparisons are used to inform policy. While comparisons of aggregate data highlight broad differences in outcomes and policy across countries, they provide limited insight into the mechanisms that generate those differences. Understanding where prevention succeeds or breaks down requires moving beyond summary indicators to examine how care is delivered in practice across the full trajectory—from risk exposure and early detection through to treatment and long-term management. Expanding international collaborations that support these more granular, pathway-based comparisons, such as those developed through initiatives like the ICCONIC project,[29] will be critical for translating cross-country variation into actionable policy insight.[30] By linking patient-level data across settings and stages of care, these approaches can help identify not only where systems differ, but how and why those differences emerge—providing a stronger empirical basis for targeting prevention efforts and improving health system performance.

References

1. Arnold S, Holden J. What is prevention in health? The King's Fund. 18 June 2025. Accessed 6 April 2026. https://www.kingsfund.org.uk/insight-and-analysis/long-reads/what-is-prevention-in-health

2. Kellam SG, Langevin DJ. A framework for understanding "evidence" in prevention research and programs. *Prev Sci* 2003;4(3):137–153. doi:10.1023/A:1024693321963

3. Ishizumi A, Kolis J, Abad N et al. Beyond misinformation: developing a public health prevention framework for managing information ecosystems. *Lancet Public Health* 2024;9(6):e397–e406. doi:10.1016/S2468-2667(24)00031-8

4. Papanicolas I, Sawaya T, Bleich SN et al. Comparing US prevention efforts to other high-income countries. *Lancet Public Health* 2025;10(11):e988–e1000. doi:10.1016/S2468-2667(25)00222-1

5. Reimer J. The 'public health approach' to prevention. Published online September 2023. Accessed 27 January 2026. https://www.isdglobal.org/explainers/the-public-health-approach-to-prevention/

6. Rajan D, Papanicolas I, Karanikolos M et al. Health system performance assessment: a renewed global framework for policy-making. (Lessof S, Muscat NA, Permanand G, Figueras J, North J, Jackson L, eds.). World Health Organization, European Observatory on Health Systems and Policies; 2023. Accessed 6 April 2026. https://eurohealthobservatory.who.int/publications/i/health-system-performance-assessment-a-renewed-global-framework-for-policy-making

7. Gmeinder M, Morgan D, Mueller M. How much do OECD countries spend on prevention? *OECD Health Working Papers*. Published online 15 December 2017. doi:10.1787/f19e803c-en

8. Nolte E, McKee M. Does health care save lives? avoidable mortality revisited. The Nuffield Trust; 2004:139. Accessed 6 April 2026. https://researchonline.lshtm.ac.uk/id/eprint/15535/

9. Castelli A, Nizalova OY. Avoidable mortality: what it means and how it is measured. Centre For Health Economics, The University of York; 2011. https://eprints.whiterose.ac.uk/id/eprint/137339/

10. Holland WW. The 'avoidable death' guide to Europe. *Health Policy* 1986;6(2):115–117. doi:10.1016/0168-8510(86)90001-1

11. OECD/Eurostat. Avoidable mortality: OECD/Eurostat lists of preventable and treatable causes of death (January 2022 version). Published online January 2022. https://www.oecd.org/health/health-systems/Avoidable-mortality-2019-Joint-OECD-Eurostat-List-preventable-treatable-causes-of-death.pdf

12. Papanicolas I, Niksch M, Figueroa JF. Avoidable mortality across US states and high-income countries. *JAMA Intern Med* 2025;185(5):583–590. doi:10.1001/jamainternmed.2025.0155

13. Papanicolas I. International comparisons expose the UK's poor performance on health. Published online 14 July 2023. doi:10.1136/bmj.p1613

14. Blumenthal D, Gumas ED, Shah A et al. Mirror, mirror 2024: a portrait of the failing U.S. health system: comparing health system performance in 10 nations. Commonwealth Fund; 2024. doi:10.26099/TA0G-ZP66

15. WHO. WHO Mortality Database. Accessed 1 December 2025. https://www.who.int/data/data-collection-tools/who-mortality-database

16. Martin S, Lomas J, Claxton K. Is an ounce of prevention worth a pound of cure? Estimates of the impact of English public health grant on mortality and morbidity. Centre For Health Economics, The University of York; 2019.

17. Finch D, Bibby J, Elwell-Sutton T. Taking our health for granted: plugging the public health grant funding gap. The Health Foundation. October 2018. Accessed 6 April 2026. https://www.health.org.uk/reports-and-analysis/briefings/taking-our-health-for-granted

18. NHS England. Technical guide to allocation formulae and convergence for 2025/26 allocations. Published online 24 February 2025. https://www.england.nhs.uk/publication/technical-guide-to-allocation-formulae-and-convergence-for-2025-26-revenue-allocations/

19. IHME. Global Burden of Disease (GBD). Accessed 6 April 2026. https://www.healthdata.org/research-analysis/gbd

20. OECD. OECD Data Explorer. Accessed 6 April 2026. https://data-explorer.oecd.org/

21. WHO. Global Health Observatory. Accessed 6 April 2026. https://www.who.int/data/gho

22. NICE. CVD prevention: NHS Health Checks. Accessed 6 April 2026. https://stpsupport.nice.org.uk

23. Martin A, Saunders CL, Harte E et al. Delivery and impact of the NHS Health Check in the first 8 years: a systematic review. *Br J Gen Pract* 2018;68(672):e449–e459. doi:10.3399/bjgp18X697649

24. Robson J, Dostal I, Sheikh A et al. The NHS Health Check in England: an evaluation of the first 4 years. Published online 1 January 2016. doi:10.1136/bmjopen-2015-008840

25. Baker C, Loughren EA, Crone D et al. A process evaluation of the NHS Health Check care pathway in a primary care setting. *J Public Health (Oxf)* 2015;37(2):202–209. doi:10.1093/pubmed/fdv053

26. NHS England. Early cancer diagnosis in England reaches highest ever level. 2 January 2025. Accessed 6 April 2026. https://www.england.nhs.uk/2025/01/early-cancer-diagnosis-in-england-reaches-highest-ever-level/

27. Price P, Lawler M. Early cancer diagnosis is vital, but treatment delays are causing harm to patients. Published online 14 February 2025. doi:10.1136/bmj.r251

28. Angelis RD, Demuru E, Baili P et al. Complete cancer prevalence in Europe in 2020 by disease duration and country (EUROCARE-6): a population-based study. *Lancet Oncol* 2024;25(3):293–307. doi:10.1016/S1470-2045(23)00646-0

29. Papanicolas I, Figueroa JF. International comparison of patient care trajectories: insights from the ICCONIC project. *Health Serv Res* 2021;56(Suppl 3):1295–1298. doi:10.1111/1475-6773.13887

30. Knight H, Deeny S, Gardner T et al. Caring for older patients with complex needs: how does England compare with 11 OECD countries? The Health Foundation; 2021. Accessed 6 April 2026. https://www.health.org.uk/reports-and-analysis/briefings/caring-for-older-patients-with-complex-needs

Appendix

Aim 2 Methods

In Aim 2, we analysed patterns of avoidable, preventable, and treatable mortality over time (2009 to 2023) by country in the UK (Northern Ireland, Scotland, England & Wales) and relative to 14 comparator countries—Australia, Canada, France, Germany, Hong Kong SAR, Ireland, Israel, Japan, the Netherlands, New Zealand, Singapore, South Korea, Switzerland, and the US. For 2009 to the most recent year available in each country, we obtained internationally comparable, cause-specific mortality data from the WHO Mortality Database, which provides an annual compilation of mortality data by country, age, sex, and cause of death reported by countries from their own Civil Registration and Vital Statistics (CRVS) systems. We utilised the most recent release of WHO Mortality Database data from March 2026, which includes updates for 2022, 2023, and 2024 mortality data across countries.

Though the WHO Mortality Database does provide population estimates, we found that many countries did not have a complete series available; thus, we sourced population estimates to compute mortality rates from the United Nations. There were some limitations to the years of mortality data available for some countries as well—Singapore did not have ICD-10 data prior to 2012, so we were unable to analyse changes in mortality from 2009; Singapore and Ireland's latest available year of mortality data available was for 2022, so we have made an effort to include additional figures in the appendix for each main-text figure to show these additional countries; Germany and New Zealand mortality data were not available for either 2022 or 2023, so they are excluded from our analysis in Aim 2; and finally, mortality data for China as a whole were not available at the necessary level of disaggregation, but we were able to include mortality data for Hong Kong SAR.

We classified deaths as avoidable, preventable, and treatable according to the OECD/Eurostat 2022 list of preventable and treatable causes of death, which provides ICD-10 codes for causes of death considered preventable and treatable for the population. This list was developed by the OECD and Eurostat collaboration with an expert group. Building on researchers' prior work, we examined avoidable, preventable, and treatable mortality overall and by cause-specific category. These categories follow those outlined in the OECD/Eurostat list, and we displayed the greatest contributing categories to avoidable mortality for the UK overall in the figures to reduce visual complexity of the results. Within preventable mortality, we also examine the breakdown of injuries, alcohol- and drug-related deaths into alcohol-related deaths (excluding suicide), drug-related deaths (excluding suicide), suicide, homicide, traffic accidents, and other injuries (accidental or of undetermined intent).

For each country-year, we aggregated the number of avoidable, preventable, and treatable deaths—overall and within the cause-specific categories—by sex and 5-year age groups, to encompass both sexes and the 0–74 years population after age- and sex-standardisation. For comparison with peer countries, we used the UK <75 years population distribution in each year for each 5-year age group and sex to age-sex standardise the mortality rates for each country (comparators, as well as each individual country/geographic region examined separately in the UK). We assumed the UK <75 years population distribution to make the avoidable mortality estimates comparable across countries and more relevant for interpretation in the UK context. All rates are expressed as deaths per 100k population <75 years.

All analyses and visualisations were conducted and produced in R (Version 4.5.3). All data were secondary data from publicly available sources.

Aim 2 Supplementary Figures

Figure A1. All-Cause Avoidable Mortality, UK & Comparators, 2022

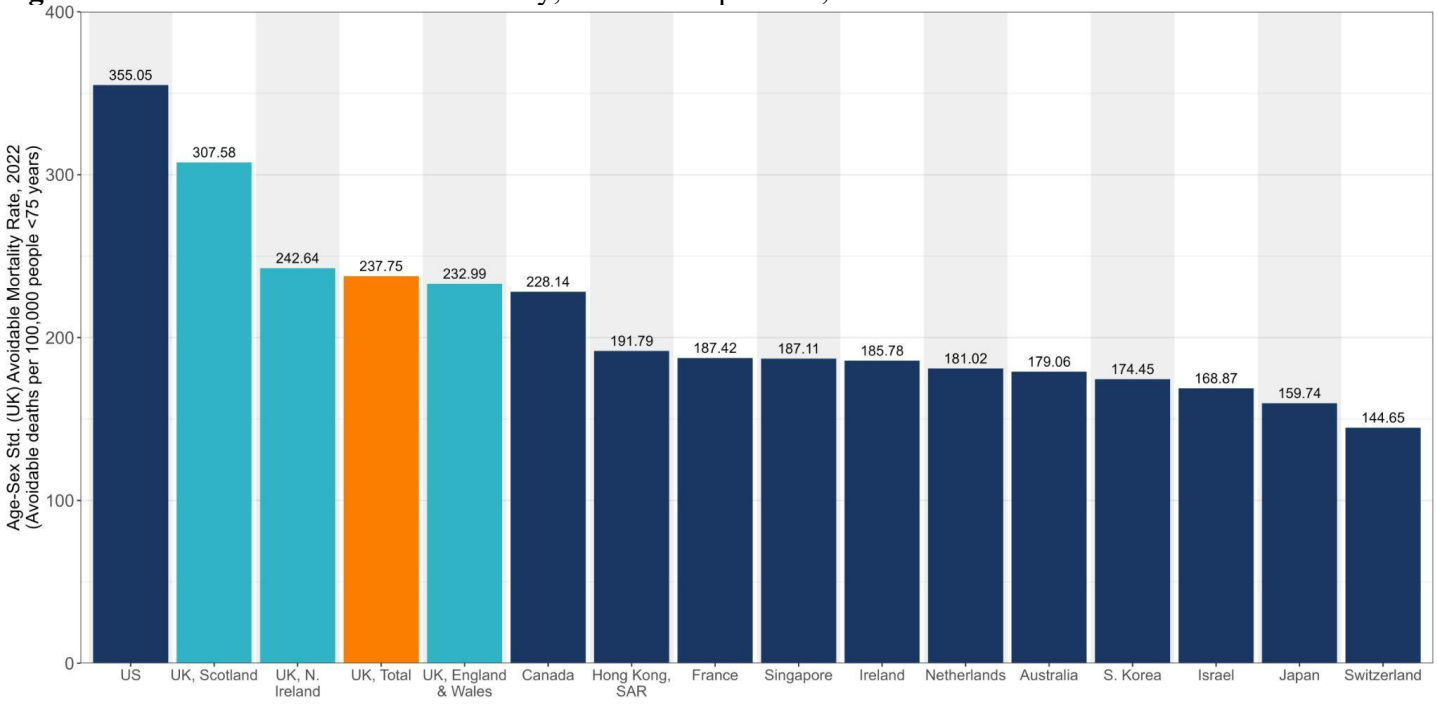


Figure A2. All-Cause Preventable Mortality, UK & Comparators, 2022

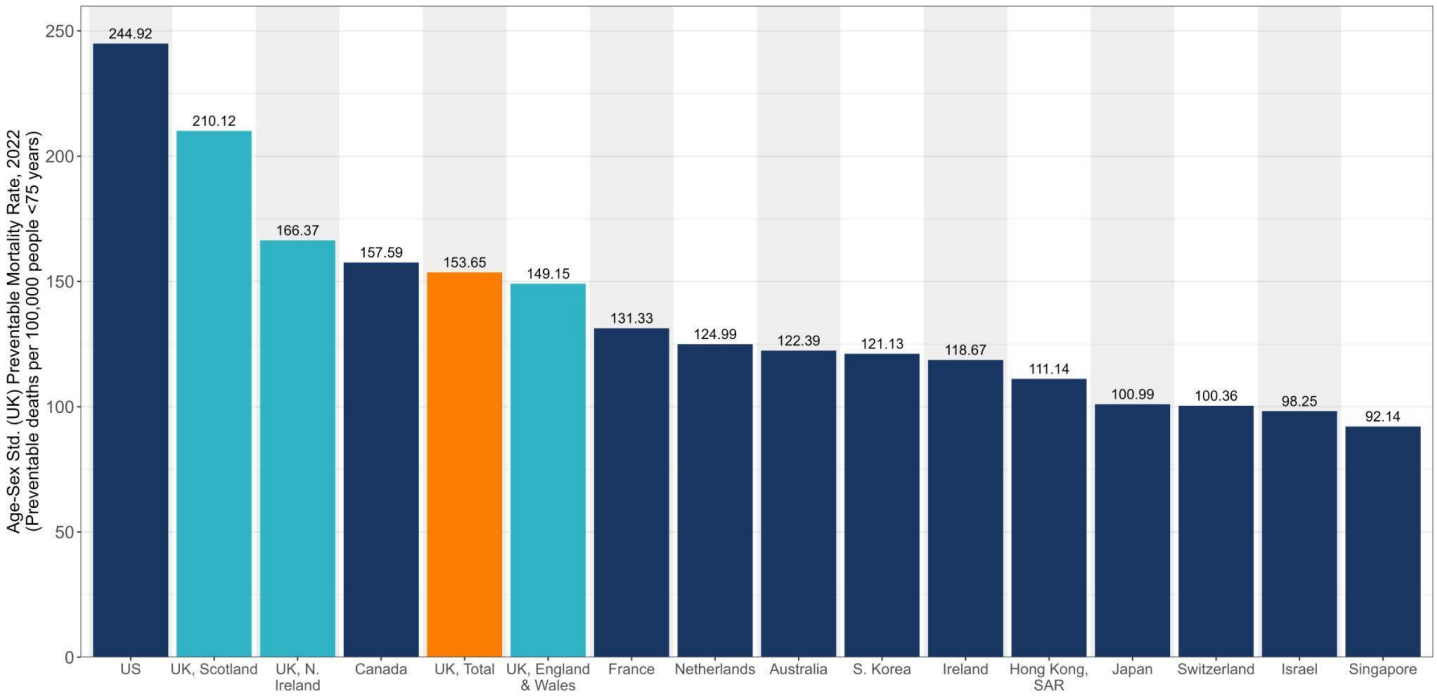


Figure A3. All-Cause Treatable Mortality, UK & Comparators, 2022

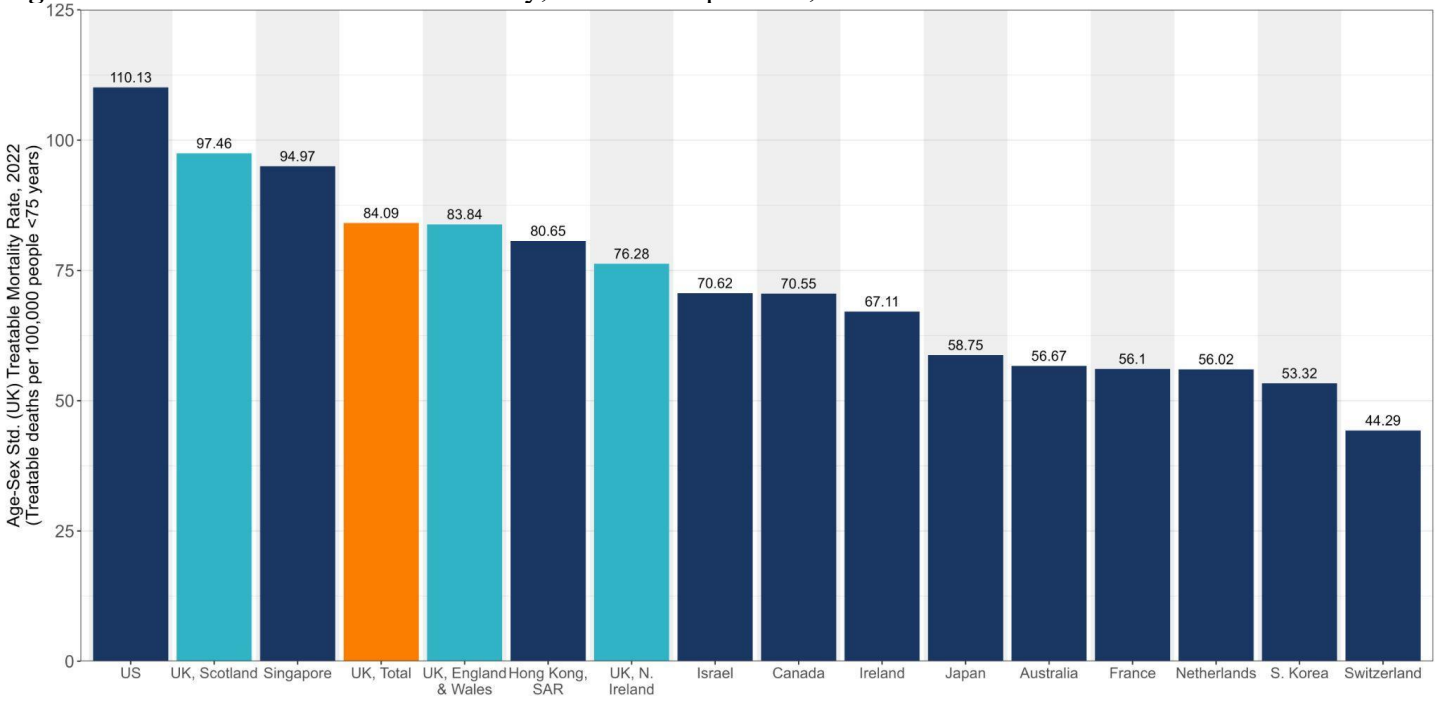


Figure A4. Difference in Levels of All-Cause Avoidable Mortality, UK & Comparators, 2009 to 2022

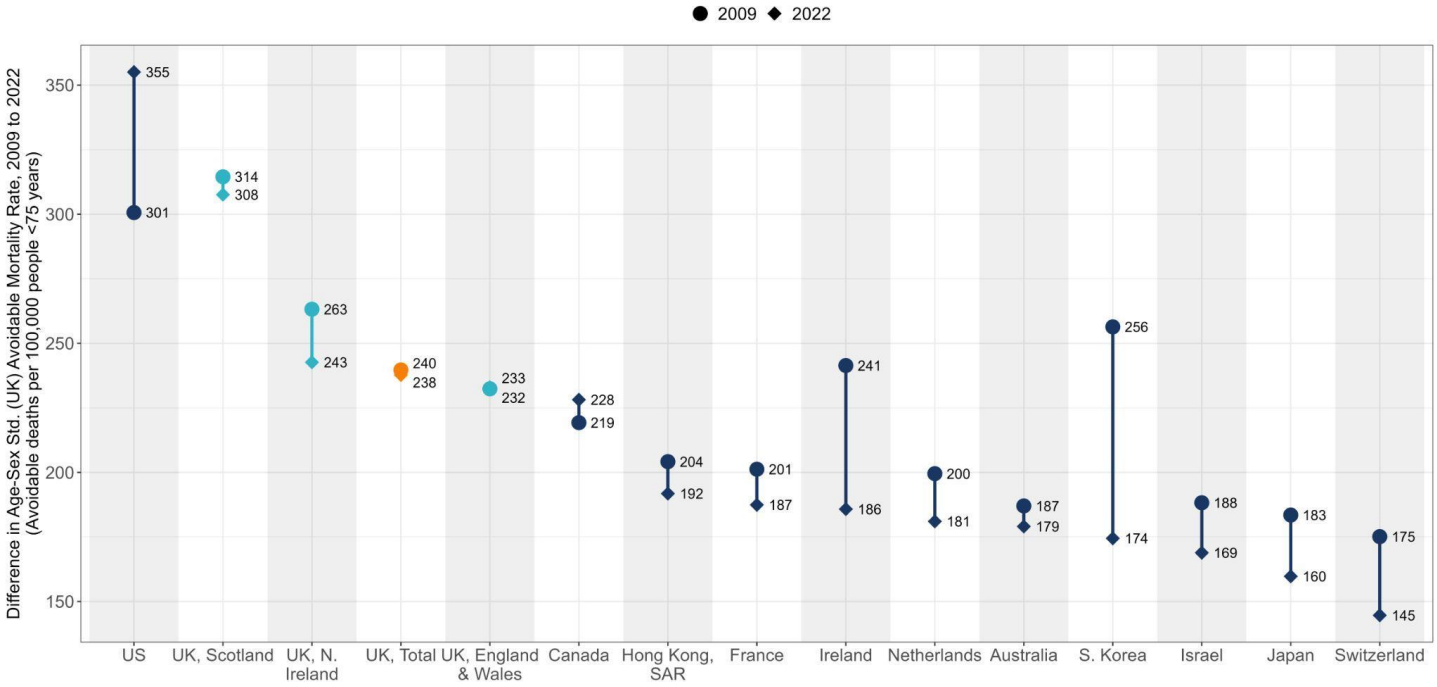


Figure A5. Differences in Levels of All-Cause Preventable Mortality, UK & Comparators, 2009 to 2022

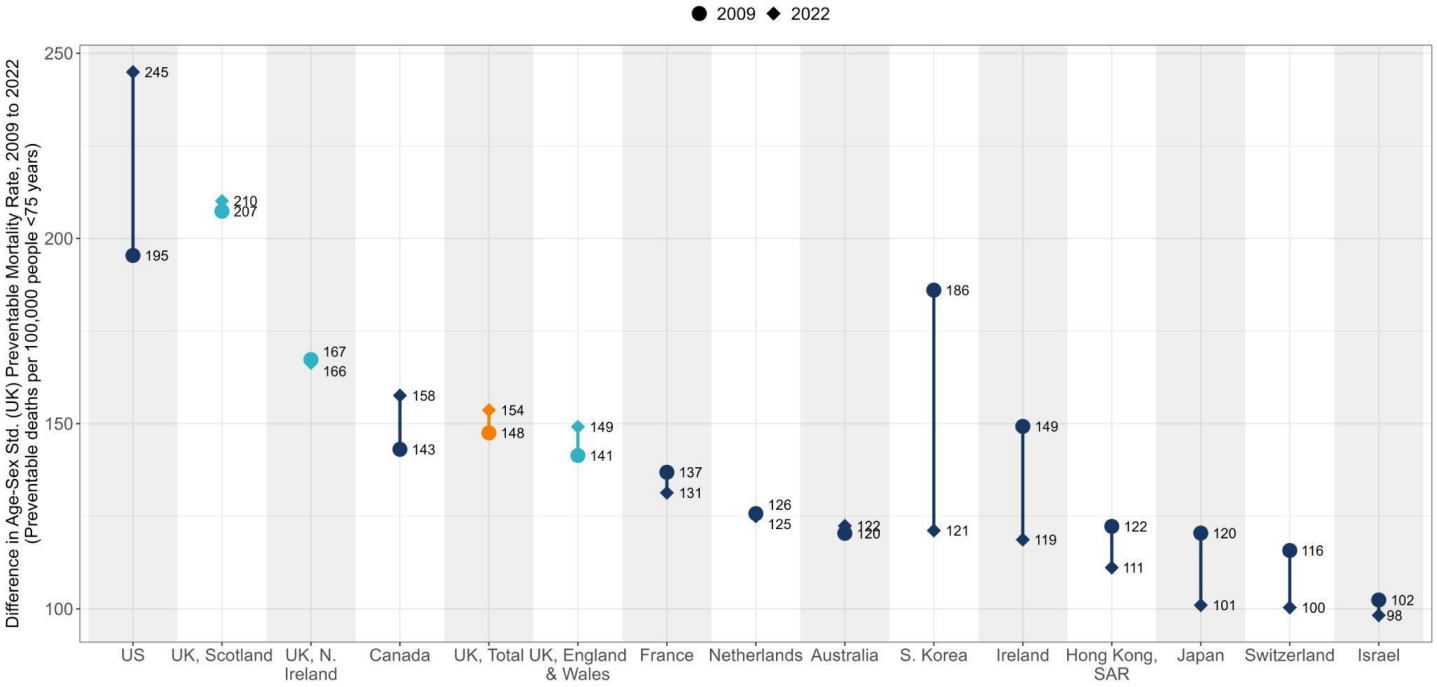


Figure A6. Differences in Levels of All-Cause Treatable Mortality, UK & Comparators, 2009 to 2022

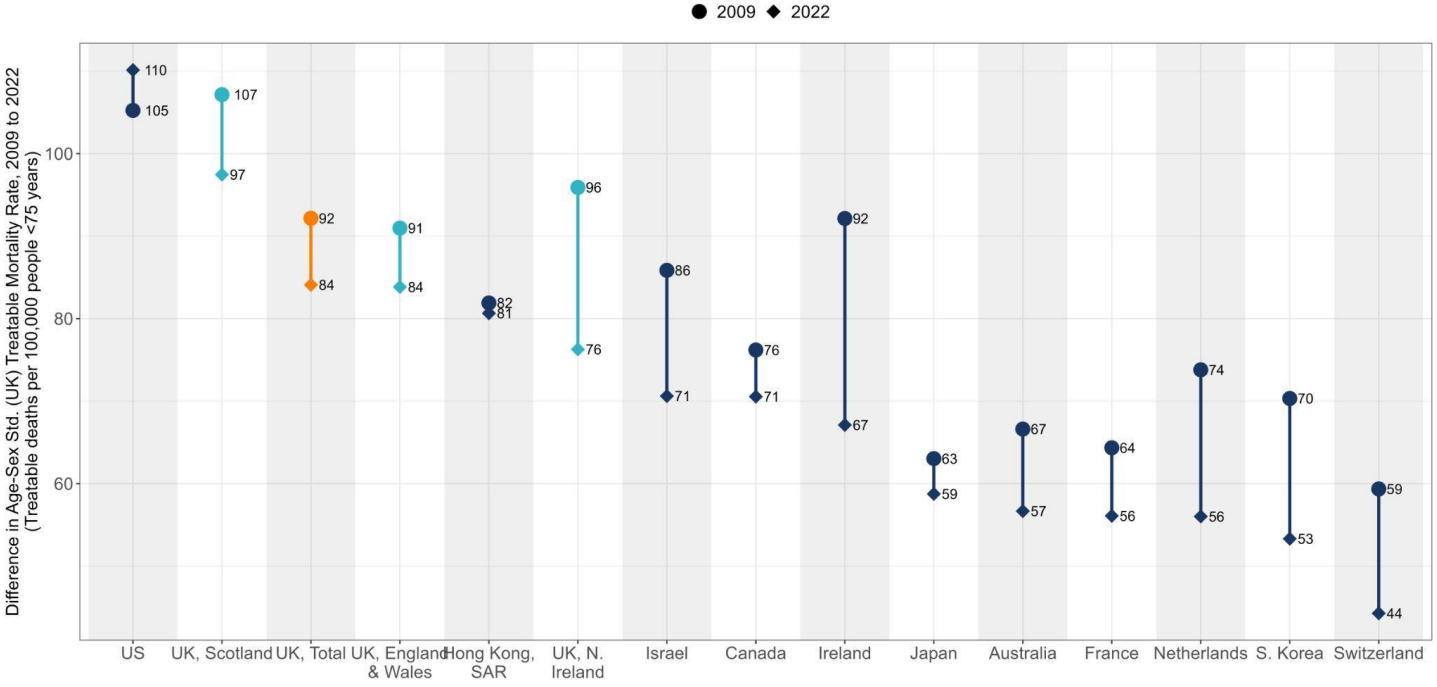


Figure A7. Cause-Specific Avoidable Mortality, UK & Comparators, 2022

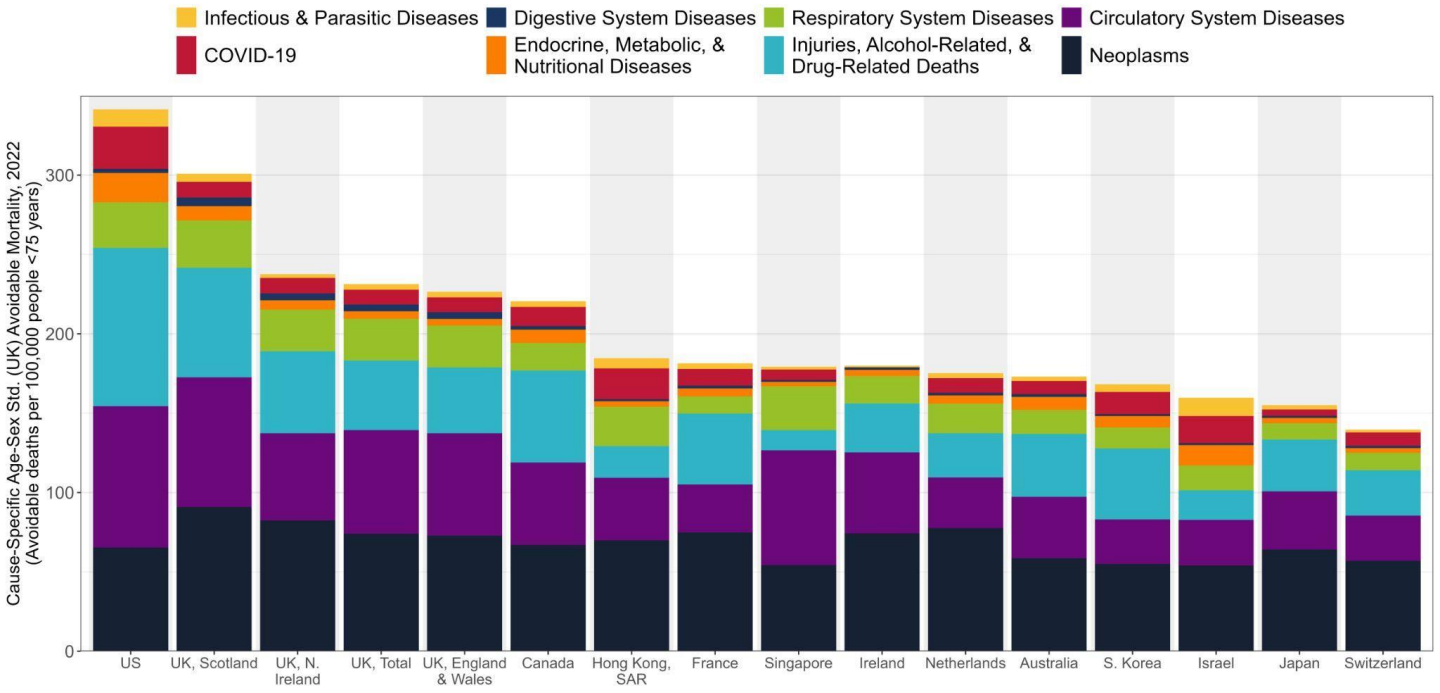


Figure A8. Cause-Specific Preventable Mortality, UK & Comparators, 2022

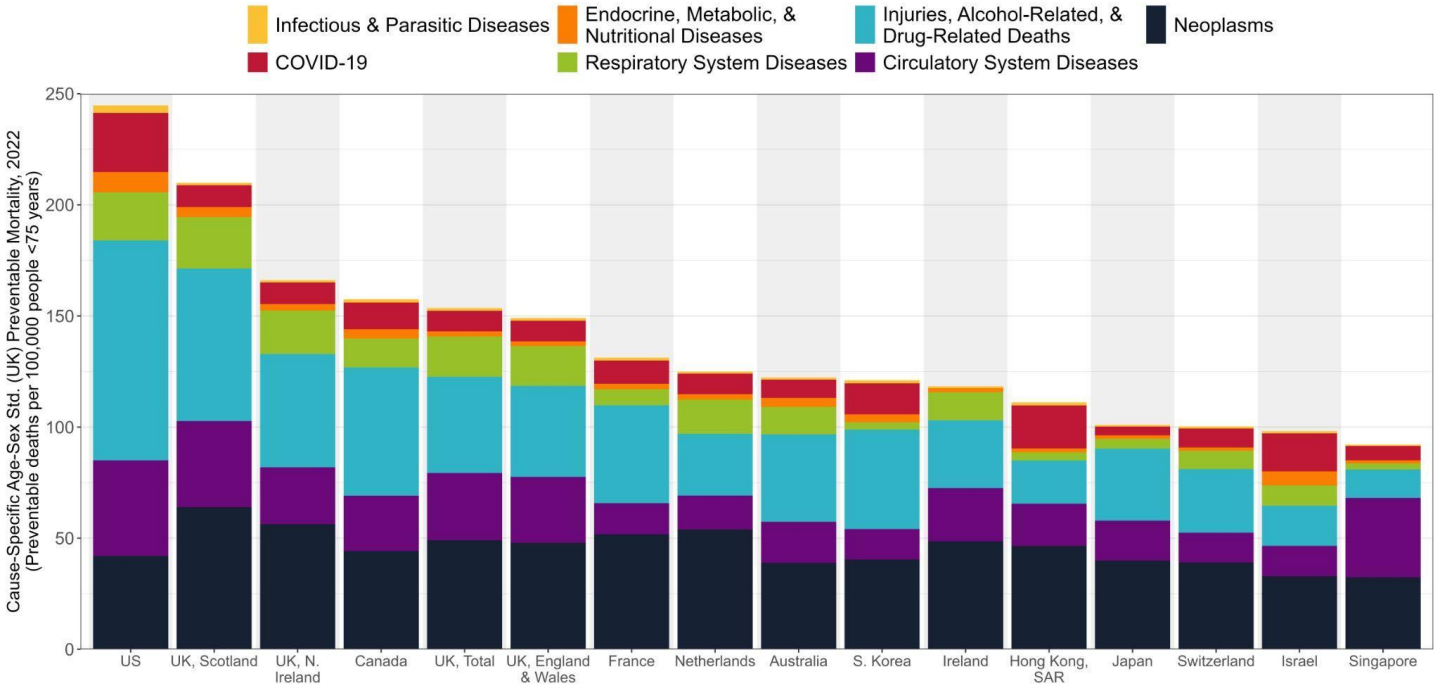


Figure A9. Cause-Specific Treatable Mortality, UK & Comparators, 2022

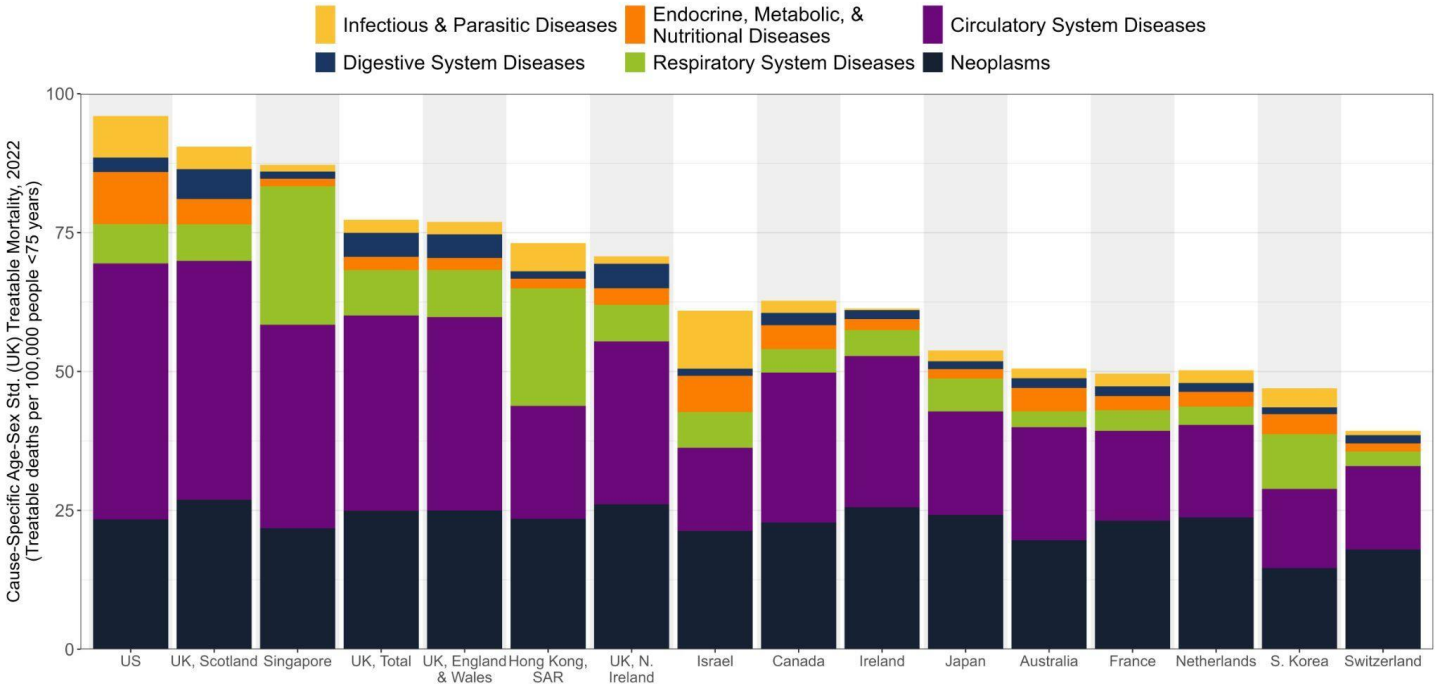


Figure A10. Differences in Levels of Cause-Specific Avoidable Mortality, UK & Comparators, 2009 to 2022

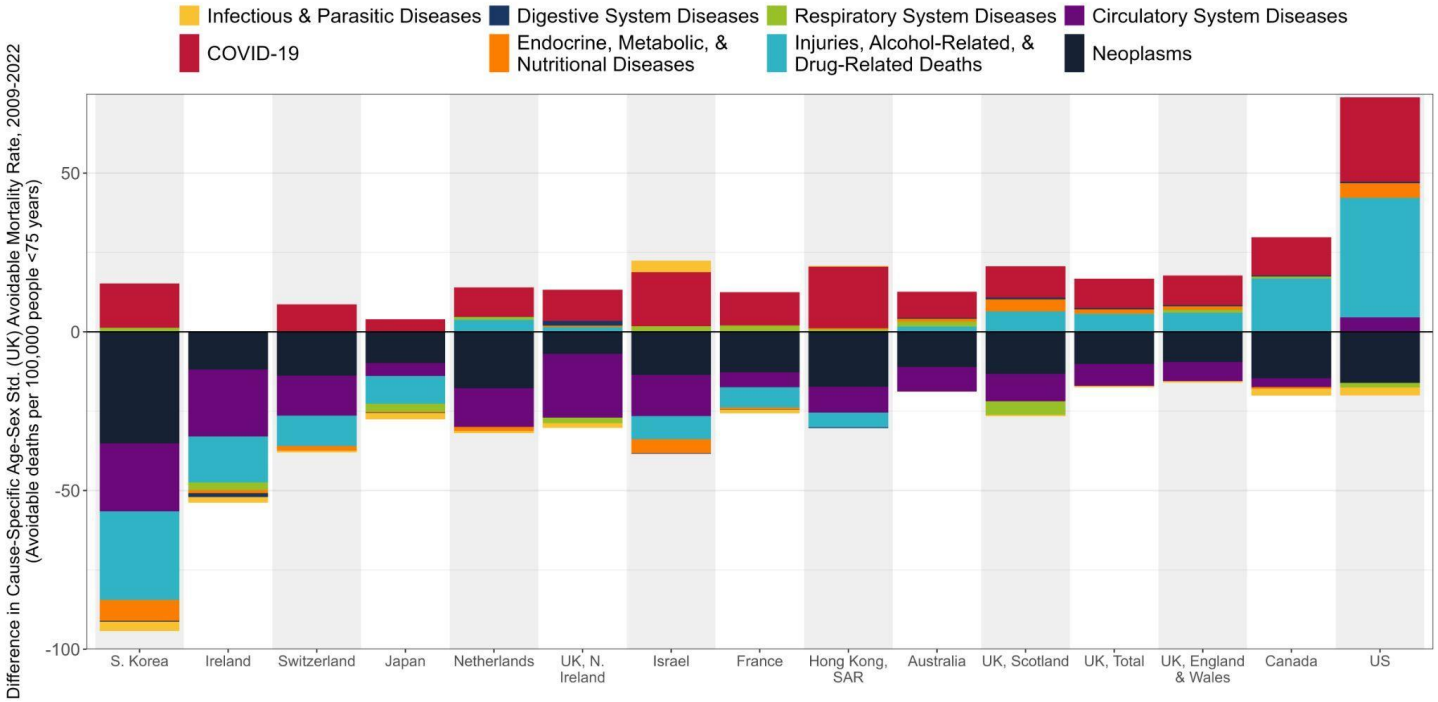


Figure A11. Differences in Levels of Cause-Specific Preventable Mortality, UK & Comparators, 2009 to 2022

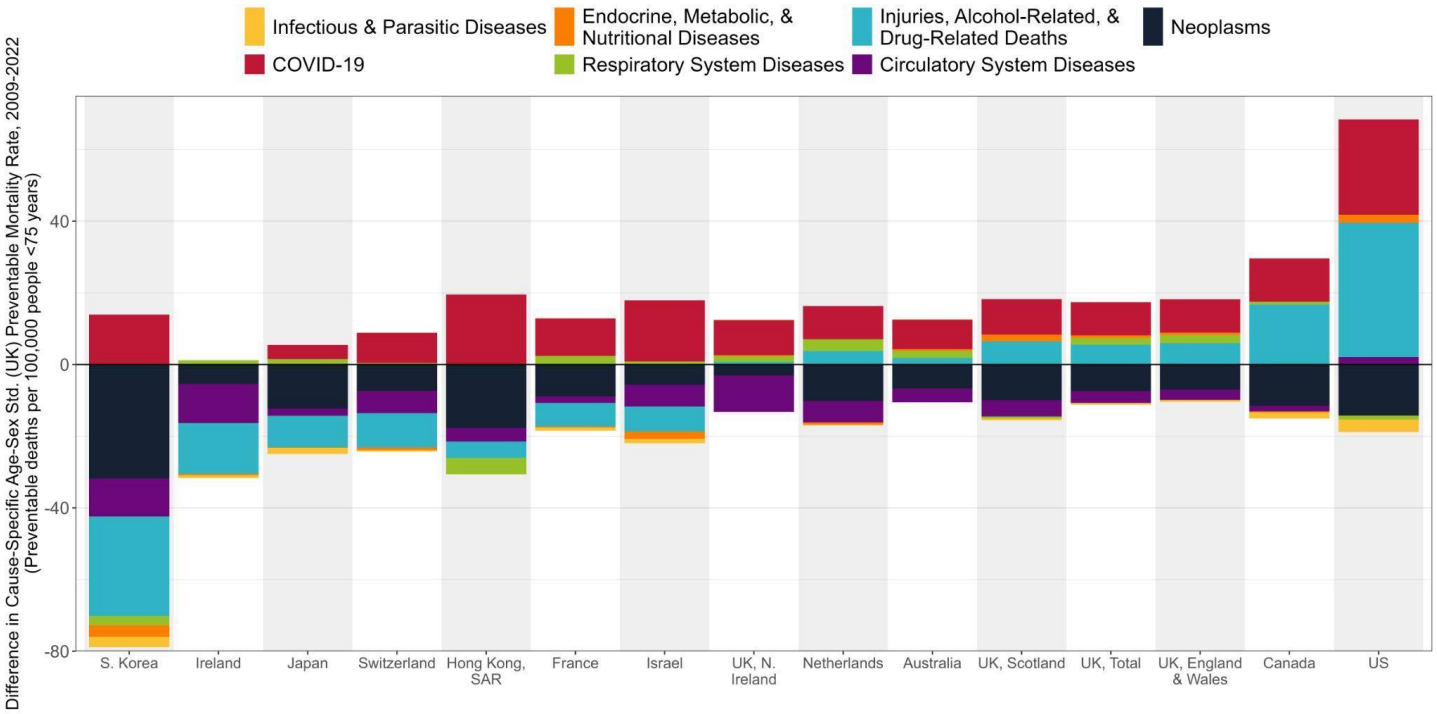


Figure A12. Differences in Levels of Cause-Specific Preventable Injuries, Alcohol- & Drug-Related Mortality, UK & Comparators, 2009 to 2022

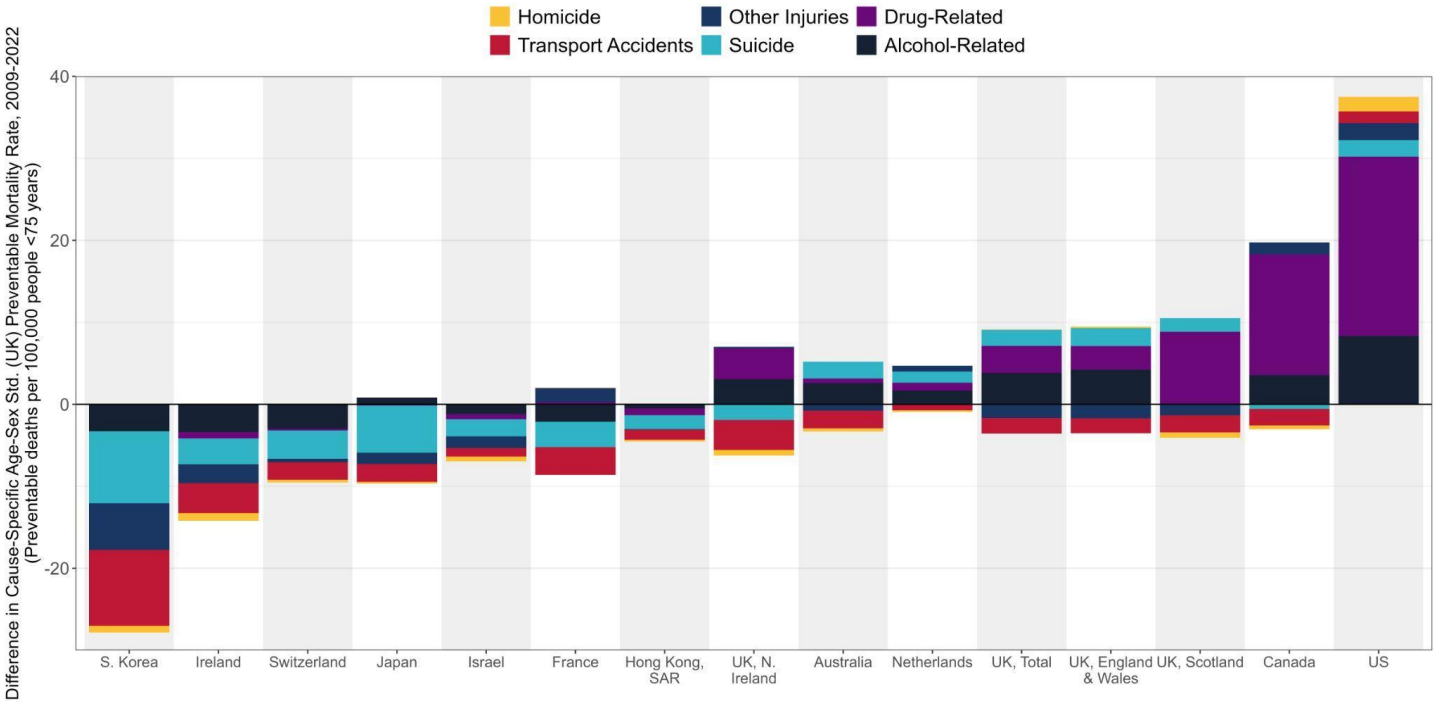
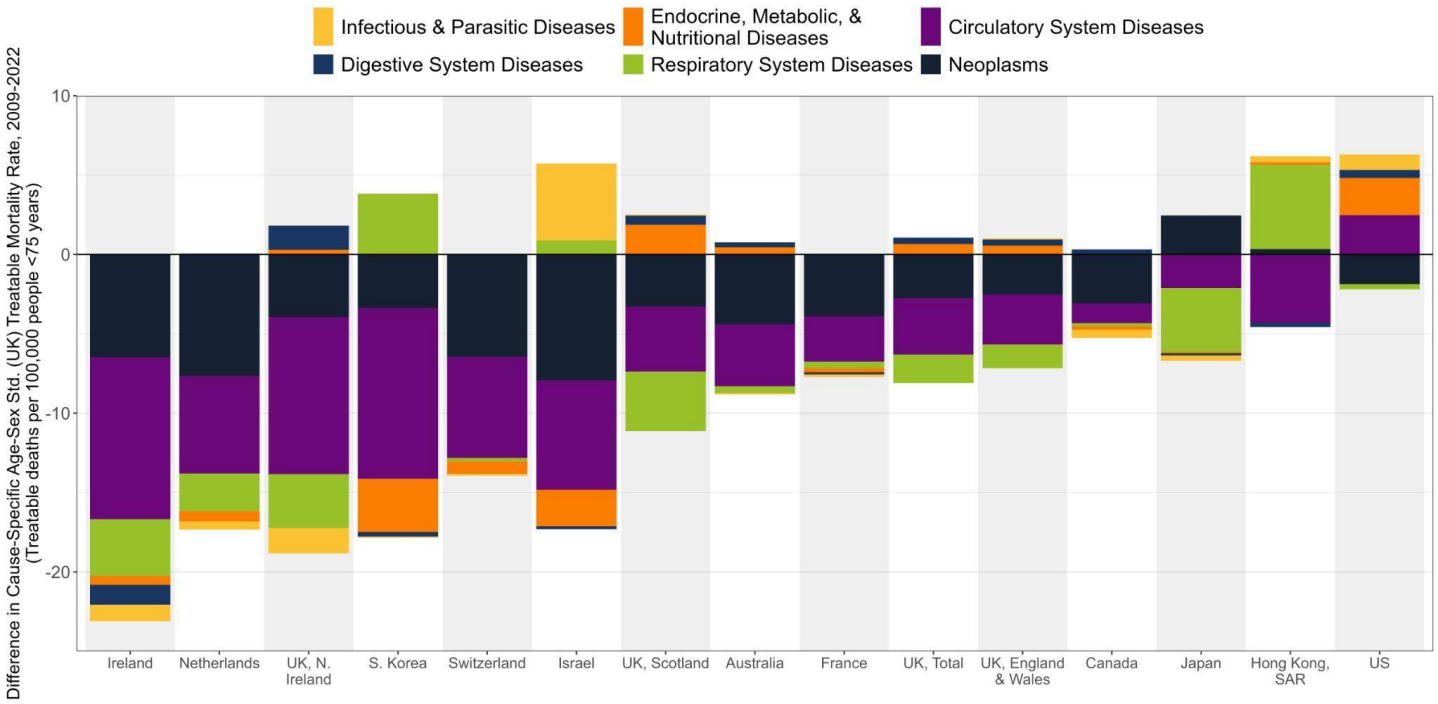


Figure A13. Differences in Levels of Cause-Specific Treatable Mortality, UK & Comparators, 2009 to 2022



Aim 3 Definitions and Sources

Table A1. Aim 3 Indicator Definitions and Sources

Prevention Level	Indicator	Definition	Source
Risk factors	Population over 65 years	Percentage of country's population that is aged 65 years or older	*OECD Data Explorer, Historical population data*
	Obesity prevalence	Age-standardised prevalence (%) of obesity among adults (18+), defined as having a BMI ≥ 30	*WHO Global Health Observatory*
	Smoking prevalence	Age-standardised prevalence (%) of the population aged 15+ who currently smoke tobacco products (including cigarettes, pipes, cigars, cigarillos, waterpipes etc.)	*WHO Global Health Observatory*
	Alcohol consumption	Total alcohol consumption (in litres of pure alcohol) per capita in the population aged 15+	*WHO Global Health Observatory*
	Daily caloric supply per capita	Daily calories available for consumption, kilocalories per person per day	*Our World in Data*
	Exposure to dietary risks (summary exposure value, SEV)	Age-standardised SEV of 15 dietary risks, including estimates of daily individual intake of calcium, fibre, fruits, legumes, milk, nuts and seeds, seafood omega-3 acids, processed meat, polyunsaturated fatty acids, red meat, sodium, sugar-sweetened beverages, trans fatty acids, vegetables, and whole grains	*IHME Global Burden of Disease, 2023*
	Calories from ultra-processed foods	Percentage of the average daily caloric intake attributed to ultra-processed foods, defined as edible products formulated from food-derived substances, along with additives that heighten their appeal and durability (typically calorie-	*UNC Chapel Hill Global Food Research Program*

		dense and high in free sugars, refined starches, unhealthy fats, and sodium)	
	Opioid use	Opioid use (including both opioids and opiates) in the last year among people aged 15–64 years (%)	*OECD, Health at a Glance, 2025*
	Passenger vehicles	Passenger vehicle ownership per 1000 inhabitants; passenger vehicles defined as road motor vehicles other than moped or motorcycle intended for the carriage of passengers and designed to fit no more than nine people (including the driver), registered as of 31 December in given year	*UNECE Transport Statistics Database*
	Civilian gun ownership	Civilian guns (defined as firearms in civilian possession) owned per 100 people	*World Population Review*
	Hypertension prevalence	Estimated proportion of the population aged 30–79 years (%) with hypertension, defined as having a systolic blood pressure of 140 mmHg or more, or a diastolic blood pressure of 90 mmHg or more, or being on pharmacological treatment for hypertension	*NCD Risk Factor Collaboration*
	Diabetes prevalence	Age-standardised prevalence of all diabetes in the population aged 20–79 years (%)	*International Diabetes Federation, Diabetes Atlas*
	Mean total, HDL, and non-HDL cholesterol, by sex	Mean total, non-HDL, and HDL counts by sex across countries (non-HDL used in lieu of LDL, as not all countries collect LDL cholesterol)	*NCD Risk Factor Collaboration*
Primordial prevention: system factors	Preventive care expenditures per capita	Preventive care expenditures per capita, expressed in PPP-adjusted Euros per capita The System of Health	*OECD Data Explorer, Health expenditure and financing*

		Accounts (SHA) defines preventive care expenditures as expenditures on: information, education, and counselling programmes; immunisation programmes; early disease detection programmes; healthy condition monitoring programmes; epidemiological surveillance and risk and disease control programmes; and preparing for disaster and emergency response programmes. For more information on preventive care expenditures, refer to Aim 1.	
	Social programme spending (% of GDP)	Social programme spending includes public and private spending for nine main social policy areas: "Old age", "Survivors", "Incapacity-related benefits" (disability), "Health", "Family", "Active labour market programmes", "Unemployment", "Housing", and "Other social policy areas". We included all social programme spending except that from the "Health" category, expressed as % of GDP	*OECD Data Explorer, Social expenditure aggregates*
	Health insurance coverage (%)	Percentage of the population with public health insurance and primary voluntary health insurance (VHI)	*OECD Data Explorer, Healthcare Coverage*
	In-person doctor consultations per capita	Average number of consultations/visits with a physician (medical doctor) per person per year	*OECD Data Explorer, Consultations*
	Proportion of PCPs seeing more than 150 patients per week	Primary care physician (PCP) experiences of time spent on patient care delivery; percentage of PCPs who have burnout and reported that they see more than 150 patients, on average, during a typical work	*Commonwealth Fund, International Health Policy Survey of Primary Care Physicians in "The causes and impacts of burnout among primary care physicians in 10 countries"*

		week	
	Percentage of PCPs screening patients for social needs	Percentage of PCPs who reported that they or other personnel in their practice usually screen or assess patients for at least one social need (i.e. problems with housing, financial security, food insecurity, transportation needs, domestic violence, and social isolation or loneliness)	*Commonwealth Fund, International Health Policy Survey of Primary Care Physicians in "Finger on the Pulse: the state of primary care in the U.S. and nine other countries"*
	Doctor providing easy-to-understand explanations (%)	Percentage of patients aged 16 years and older who reported that their doctor (regular doctor except for Ireland, Japan, and Korea) provided easy-to-understand explanations	*OECD Data Explorer, Healthcare quality and outcomes*
	Doctor involving patient in decisions about care and treatment (%)	Percentage of patients aged 16 and older who reported that their doctor (regular doctor except for Ireland and Korea) involved them in decisions about care and treatment	*OECD Data Explorer, Healthcare quality and outcomes*
Primary prevention: public health policies	Seatbelt legislation		*International Transport Forum, Road Safety Annual Report 2022*
	Cigarette taxes	Share (burden) of total taxes on the retail price of a 20-pack of the most widely sold brand of cigarettes Total taxes include specific excise taxes, ad valorem excise taxes, value-added taxes and sales taxes, import duties, and any other taxes	*WHO Global Health Observatory*
	Food labelling requirements	Whether the country has mandatory and/or voluntary front-of-pack labelling national policies; front-of-pack labelling is aimed at providing convenient, relevant, and readily understood nutrition	*WHO Global Database on the Implementation of Food and Nutrition Action (GIFNA), Front-of-pack and other interpretive nutrition labelling*

		information or guidance on the front of food packaging	
	Sugary drinks taxes	Share (burden) of total excise taxes on the price of internationally comparable brand of sugar-sweetened carbonated beverages Excise taxes include volume-based specific excise taxes (tax applied per certain volume of the beverage), sugar-content-based specific excise taxes (tax applied proportionate to the sugar content the beverage), and ad valorem excise taxes (generally applied to the value of the transactions between the manufacturer and retailer/wholesaler	*WHO Global Health Observatory*
	Alcohol taxes, beer and spirits	Share (burden) of total excise taxes on the retail price of the most sold brand of beer or the most sold type of spirits Excise taxes include volume-based specific excise taxes (tax applied per certain volume of the beverage), alcohol-content-based specific excise taxes (tax applied proportionate to the alcohol concentration of the beverage), and ad valorem excise taxes (generally applied to the value of the transactions between the manufacturer and retailer/wholesaler	*WHO Global Health Observatory*
Primary and secondary prevention in the healthcare delivery system	Breast cancer screening rate	Percentage of women aged 50–69 years who were screened for breast cancer Estimates come from programme data, except for the US, Switzerland, and Japan, which use survey data	*OECD Data Explorer, Screening*

	Cervical cancer screening rate	Percentage of women aged 30–49 years who were screened for cervical cancer Estimates come from programme data, except for the US, Switzerland, and Japan, which use survey data	*OECD Data Explorer, Screening*
	Colorectal cancer screening rate	Percentage of people aged 50–74 years who were screened for colorectal cancer Estimates come from programme data, except for the US, Switzerland, and Japan, which use survey data	*OECD Data Explorer, Screening*
	Diagnosed hypertension from all hypertension, by sex	Proportion of the population aged 30–79 years old diagnosed with hypertension, from all estimated cases of hypertension; hypertension was defined as systolic blood pressure of 140 mmHg or more, or diastolic blood pressure of 90 mmHg or more, or being on pharmacological treatment for hypertension	*NCD Risk Factor Collaboration*
	Diagnosed diabetes from all diabetes	The International Diabetes Foundation's original indicator provides the share of undiagnosed diabetes from all estimated cases of diabetes in the population aged 20–79 years old; we calculated the share of *diagnosed* diabetes in the 20–79 years population by subtracting the undiagnosed share from 100%	*International Diabetes Federation, Diabetes Atlas*
	Influenza vaccination rate in older adults	Percentage of population 65 years and older who received an influenza vaccination in the given year; data are from administrative data in each country	*WHO/UNICEF Joint Reporting Form on Immunization (JRF), Influenza vaccination coverage*

	COVID-19 vaccination coverage in older adults	Percentage of population 65 years and older who received a COVID-19 vaccine dose in 2024	*WHO, COVID-19 Vaccination Insights Report (Reporting period: January – December 2024)*
	Pneumococcal conjugate vaccine coverage, 3rd dose	Percentage of population who received a 3rd dose of a pneumococcal conjugate vaccine in the given year; official coverage reported where available, otherwise administrative coverage was used	*WHO/UNICEF Joint Reporting Form on Immunization (JRF), Pneumococcal vaccination coverage*
	Human papillomavirus, year vaccination introduced to national programmes	Year of introduction of HPV vaccine into the national immunisation programme	*WHO, Introduction of HPV (Human Papillomavirus) vaccine*
	Human papillomavirus, vaccination coverage rate	Percentage HPV immunisation coverage estimates among the primary target cohort (girls aged 9–14 years)	*WHO Global Health Observatory*
	Treated hypertension from all hypertension, by sex	Percentage of people aged 30–79 years, by sex, taking medication for hypertension, out of all people aged 30–79 years for that sex with hypertension	*NCD Risk Factor Collaboration*
	Controlled hypertension from all hypertension, by sex	Percentage of people aged 30–79, by sex, whose blood pressure was controlled, out of all people aged 30–79 years for that sex with hypertension	*NCD Risk Factor Collaboration*
	Untreated stage 2 hypertension from all hypertension, by sex	People aged 30–79 years, by sex, with stage 2 hypertension, defined as having a systolic blood pressure of 160 mmHg or more, or a diastolic blood pressure of 100 mmHg or more, or who were not taking hypertension medication; out of all people with hypertension aged 30–79 years, by sex	*NCD Risk Factor Collaboration*
	Chronic obstructive pulmonary disease	Number of hospital admissions with a primary diagnosis of	*OECD Data Explorer, Healthcare quality and*

	(COPD) avoidable hospitalisations	COPD among people aged 15 years and older, per 100k population (age-sex standardised)	*outcomes*
	Asthma avoidable hospitalisations	Number of hospital admissions with a primary diagnosis of asthma among people aged 15 years and older, per 100k population (age-sex standardised)	*OECD Data Explorer, Healthcare quality and outcomes*
	Congestive heart failure (CHF) avoidable hospitalisations	Number of hospital admissions with a primary diagnosis of CHF among people aged 15 years and older, per 100k population (age-sex standardised)	*OECD Data Explorer, Healthcare quality and outcomes*
	Hypertension avoidable hospitalisations	Number of hospital admissions with a primary diagnosis of hypertension among people aged 15 years and older, per 100k population (age-sex standardised)	*OECD Data Explorer, Healthcare quality and outcomes*
	Diabetes avoidable hospitalisations	Number of hospital admissions with a primary diagnosis of diabetes among people aged 15 years and older, per 100k population (age-sex standardised)	*OECD Data Explorer, Healthcare quality and outcomes*