Evaluating the Impact of Public Health Policies on Life Expectancy Trends in European Countries

Szabó, Ágoston and Guðmundsson, Sævar and Myint, Thant

15 September 2025

Evaluating the Impact of Public Health Policies on Life Expectancy Trends in European Countries

ABSTRACT

Life expectancy in Europe is influenced not only by socioeconomic conditions and healthcare system performance but also by government-led public health policies. This literature review examines the role of policy interventions in shaping longevity across European populations, focusing on measures such as smoking bans, alcohol regulations, obesity prevention programs, vaccination campaigns, and health promotion initiatives. Evidence indicates that proactive and evidence-based policies, particularly when integrated with equitable healthcare access and supportive social structures, contribute to measurable improvements in life expectancy and reductions in preventable mortality. The review also highlights gaps in current research, including the need for long-term evaluations, analyses of policy interactions, and assessments of equity in outcomes. Findings provide valuable insights for policymakers and public health practitioners seeking to design interventions that maximize longevity and promote health equity across European countries.

KEYWORDS: Public health policy, life expectancy, Europe, preventive interventions, health equity

INTRODUCTION

Life expectancy serves as a central indicator of population health and reflects the effectiveness of societal structures, healthcare systems, and public policy interventions. In Europe, overall longevity has increased steadily over the past decades, yet significant disparities persist between countries and regions, suggesting that not all populations benefit equally from advances in healthcare and social development (Gazilas, 2024; WHO Regional Office for Europe, 2024). While socioeconomic conditions and healthcare access are well-established determinants of life expectancy, there is growing recognition of the critical role that public health policies play in shaping health outcomes. Government-led interventions, such as smoking bans, alcohol taxation, vaccination campaigns, and obesity prevention programs, have the potential to modify health behaviors, reduce preventable mortality, and promote equitable longevity across populations (Steel et al., 2025; Vogt, 2024).

The effectiveness of public health policies is not uniform across countries, however, and depends on a variety of factors including socioeconomic context, healthcare system capacity, and cultural norms. Countries with comprehensive, evidence-based policies often exhibit measurable improvements in life expectancy, while nations with less coordinated or under-resourced interventions frequently experience slower gains and persistent health disparities (OECD, 2024; Eurostat, 2025). For example, anti-smoking regulations and public awareness campaigns have been linked to significant reductions in tobacco-related mortality in several European nations, illustrating the tangible impact of policy on longevity (Steel et al., 2025).

Similarly, strategies aimed at reducing alcohol consumption, promoting healthy diets, and increasing physical activity have contributed to declines in lifestyle-related chronic diseases, further supporting life expectancy improvements (WHO Regional Office for Europe, 2024).

Despite the recognized importance of policy interventions, there remains a lack of integrated analysis examining the relative contributions of specific public health measures to overall life expectancy trends. Many studies focus on individual interventions in isolation or on socioeconomic determinants, without considering how policies interact with healthcare systems, income distribution, and education to produce population-level outcomes (Gazilas, 2024; Nixon & Ulmann, 2024). Understanding these interactions is essential for identifying best practices, informing future policy development, and targeting resources effectively to maximize longevity gains across European populations.

This paper aims to review existing literature on public health policies and their influence on life expectancy in Europe, synthesizing evidence on which interventions have been most effective, how they interact with broader societal factors, and where gaps remain in policy evaluation. By focusing on policy-driven determinants, the review seeks to provide insights into the design and implementation of interventions capable of improving population health, reducing preventable mortality, and promoting equitable longevity. The discussion emphasizes the interplay between preventive strategies, healthcare system performance, and socioeconomic conditions, highlighting the multifaceted nature of policy impact on life expectancy (Gazilas, 2024; Steel et al., 2025; WHO Regional Office for Europe, 2024).

PUBLIC HEALTH INTERVENTIONS AND THEIR IMPACT ON LIFE EXPECTANCY

Public health interventions have long been recognized as essential tools for improving population health and extending life expectancy. In Europe, a variety of policy measures targeting preventable mortality and health-related behaviors have been implemented, ranging from legislation to encourage healthy lifestyles to nationwide disease prevention programs. Evidence indicates that such interventions contribute to measurable improvements in longevity, particularly when they are comprehensive, evidence-based, and integrated within broader social and healthcare systems (Steel et al., 2025; WHO Regional Office for Europe, 2024). Smoking bans, for example, have been associated with declines in tobacco-related illnesses, including cardiovascular disease and lung cancer, which are leading contributors to premature mortality across many European nations. Studies suggest that countries with stringent anti-smoking policies experience higher life expectancy gains compared to those with limited or fragmented tobacco control measures (Steel et al., 2025).

Alcohol regulation policies also play a critical role in shaping life expectancy trends. Excessive alcohol consumption is a major risk factor for liver disease, cardiovascular conditions, and accidents, all of which negatively impact longevity. In countries where governments have implemented measures such as taxation, restricted sale hours, and public awareness campaigns, a corresponding reduction in alcohol-related mortality has been observed, highlighting the potential of policy interventions to mitigate lifestyle-related health risks (Vogt, 2024; WHO Regional Office for Europe, 2024). Similarly, policies promoting healthy diets and physical activity, including nutritional labeling, school-based programs, and

public exercise initiatives, have demonstrated effectiveness in addressing obesity and related chronic diseases, further contributing to life expectancy improvements.

Vaccination programs represent another cornerstone of public health policy with profound implications for longevity. Across Europe, the implementation of routine immunization schedules has significantly reduced mortality from infectious diseases, particularly among vulnerable populations such as children and the elderly. The success of these programs underscores the importance of preventive healthcare interventions as part of a broader strategy to enhance life expectancy, emphasizing that policy decisions can directly influence population health outcomes (Steel et al., 2025; WHO Regional Office for Europe, 2024).

However, the effectiveness of public health interventions is influenced by contextual factors, including socioeconomic conditions, healthcare system capacity, and cultural acceptance. Policies are more likely to succeed in countries where populations have access to quality healthcare, education, and supportive social structures, highlighting the interdependence of policy measures and broader determinants of health (Gazilas, 2024; OECD, 2024). Conversely, interventions may be less effective in regions with limited resources or persistent inequalities, suggesting that public health policies must be tailored to local conditions to maximize their impact on life expectancy.

Overall, the literature demonstrates that targeted public health interventions can significantly influence longevity in European populations, particularly when implemented as part of a coordinated, multifaceted approach. Policies addressing tobacco use, alcohol consumption, diet, physical activity, and infectious disease prevention have been shown to reduce preventable mortality, improve population health, and contribute to overall life expectancy gains. These findings highlight the critical role of government-led strategies in shaping health outcomes and underscore the necessity of integrating public health policy with socioeconomic and healthcare system considerations to achieve equitable improvements in longevity (Steel et al., 2025; Vogt, 2024; WHO Regional Office for Europe, 2024).

INTERACTION BETWEEN POLICIES, SOCIOECONOMIC CONDITIONS, AND HEALTHCARE SYSTEMS

The effectiveness of public health policies in extending life expectancy cannot be understood in isolation from the broader socioeconomic and healthcare context in which they are implemented. Evidence from European countries indicates that policy interventions yield the greatest benefits when they operate alongside supportive social structures and robust healthcare systems (Gazilas, 2024; OECD, 2024). Socioeconomic conditions, including income distribution, educational attainment, and employment stability, shape individuals' ability to respond to public health initiatives. For instance, anti-smoking campaigns or obesity prevention programs are more effective in populations with higher education levels, where awareness of health risks and access to resources facilitate behavioral change (Vogt, 2024). Conversely, in regions marked by poverty, unemployment, or social exclusion, the impact of such interventions may be limited unless additional measures address underlying inequalities.

Healthcare system capacity further influences the outcomes of policy interventions. Countries with well-funded, efficiently organized health services are better equipped to implement preventive programs, monitor population health, and provide follow-up care, amplifying the

impact of public health measures on longevity (Nixon & Ulmann, 2024; Steel et al., 2025). For example, vaccination campaigns achieve higher coverage and lower mortality rates when supported by strong primary care networks and accessible healthcare facilities. Similarly, chronic disease prevention and management programs, such as those targeting cardiovascular conditions or diabetes, depend on timely access to diagnostic services, medication, and ongoing monitoring, illustrating the synergistic relationship between policy and healthcare infrastructure (WHO Regional Office for Europe, 2024).

The interplay between public health policies, socioeconomic conditions, and healthcare systems also explains the variation in life expectancy gains across European countries. Nations that combine comprehensive preventive policies with equitable healthcare access and supportive social measures tend to achieve the highest improvements in longevity, whereas countries with fragmented policies or systemic inequities often experience smaller gains (Eurostat, 2025; Zheng, 2024). This evidence underscores the necessity of an integrated approach, where policy interventions are designed and implemented in consideration of social determinants and healthcare capacity. It also highlights the importance of evaluating policy outcomes in a multidimensional context, recognizing that interventions targeting lifestyle behaviors, healthcare access, and socioeconomic inequities can mutually reinforce one another to produce substantial improvements in life expectancy.

In sum, the literature suggests that public health policies are most effective when embedded within supportive socioeconomic and healthcare environments. Understanding these interactions is crucial for designing interventions that not only reduce preventable mortality but also address health disparities and promote equitable longevity across European populations. By recognizing the interdependence of policies, social conditions, and healthcare systems, researchers and policymakers can develop strategies that maximize the impact of public health initiatives and contribute to sustained improvements in population health (Gazilas, 2024; Steel et al., 2025; WHO Regional Office for Europe, 2024).

RESEARCH GAPS AND FUTURE POLICY DIRECTIONS

Despite substantial progress in understanding the role of public health policies in shaping life expectancy, several critical gaps remain in the literature. Most studies focus on individual interventions or single-country analyses, limiting the ability to generalize findings across diverse European contexts (Steel et al., 2025; Bragoudakis & Gazilas, 2025). There is a lack of comprehensive evaluations that systematically examine the combined effects of multiple policy measures on longevity, particularly in interaction with socioeconomic conditions and healthcare system capacity. This gap hampers the development of evidence-based strategies capable of maximizing the impact of public health interventions at both national and regional levels.

Additionally, the long-term effectiveness of many public health policies remains underexplored. While short-term outcomes such as reductions in smoking rates or improved vaccination coverage are frequently reported, fewer studies assess how these interventions translate into sustained improvements in life expectancy over decades (WHO Regional Office for Europe, 2024; Vogt, 2024). Evaluating long-term impacts is particularly important given

the delayed manifestation of many health outcomes, including chronic disease prevention and reductions in lifestyle-related mortality.

Another area requiring further attention is the assessment of equity in policy implementation and outcomes. Current research often emphasizes average gains in life expectancy, without adequately examining whether benefits are distributed equitably across socioeconomic groups, regions, or vulnerable populations (O'Donnell, van Doorslaer, Wagstaff, & Lindelow, 2024; Eurostat, 2025). Understanding how policies affect health disparities is essential for designing interventions that not only increase overall longevity but also reduce inequalities.

Future research should prioritize integrative and comparative approaches that consider the interaction of public health policies, socioeconomic determinants, and healthcare system capacity. Longitudinal and multi-country studies could provide valuable insights into which policy combinations are most effective, under what conditions, and for which populations. Moreover, the development of standardized evaluation frameworks and indicators would facilitate cross-country comparisons, enabling policymakers to adopt best practices and tailor interventions to local contexts (OECD, 2024; Zheng, 2024).

Addressing these research gaps will be critical for enhancing the evidence base on policy-driven determinants of life expectancy. By focusing on long-term outcomes, equity, and integrated evaluation, scholars and policymakers can better understand how to design, implement, and optimize public health interventions that improve longevity and population health across Europe.

CONCLUSION

Public health policies play a central role in shaping life expectancy trends across European countries, influencing population health outcomes by targeting preventable mortality and promoting healthier behaviors. Evidence from the literature demonstrates that interventions such as smoking bans, alcohol regulations, obesity prevention programs, vaccination campaigns, and health promotion initiatives contribute significantly to longevity, particularly when implemented as part of a coordinated, evidence-based approach (Steel et al., 2025; WHO Regional Office for Europe, 2024; Vogt, 2024). The effectiveness of these policies is closely linked to broader socioeconomic conditions and the capacity of healthcare systems, highlighting the interdependence of policy measures, social structures, and healthcare infrastructure in determining health outcomes (Gazilas, 2024; Nixon & Ulmann, 2024; OECD, 2024).

Comparative studies indicate that countries combining proactive public health policies with equitable healthcare access and supportive social environments achieve the greatest gains in life expectancy, whereas nations with fragmented interventions or persistent inequalities experience smaller improvements. This underscores the importance of designing policies that are not only evidence-based but also context-sensitive, addressing the unique social, economic, and healthcare realities of each population (Eurostat, 2025; Zheng, 2024). Furthermore, the literature identifies gaps in the evaluation of long-term impacts, interactions between multiple policy interventions, and the equitable distribution of benefits, suggesting

that future research should focus on integrative and comparative approaches to maximize the effectiveness of public health strategies.

In conclusion, public health policies are a critical determinant of life expectancy in Europe, operating in synergy with socioeconomic factors and healthcare system performance to shape population health outcomes. By synthesizing existing research, this review highlights the need for comprehensive, evidence-based, and contextually adapted interventions that not only improve longevity but also reduce health disparities. Insights from this analysis can guide policymakers, researchers, and public health practitioners in developing strategies that optimize the impact of interventions, enhance population well-being, and promote equitable gains in life expectancy across European countries (Gazilas, 2024; Steel et al., 2025; WHO Regional Office for Europe, 2024).

REFERENCES

1. Bezuneh, M., et al. (2024). Food security and health outcomes in sub-Saharan Africa. Food Policy, 55, 1–10. https://doi.org/10.1016/j.foodpol.2015.06.001
2. Bragoudakis, Z., & Gazilas, E. T. (2025). Does Primary and Secondary Education Contribute to Environmental Degradation? Evidence from the EKC Framework.
3. Eurostat. (2025). EU life expectancy estimated at 81.7 years in 2024. https://ec.europa.eu/eurostat/web/products-eurostat-news/w/ddn-20250911-1
4. Gazilas, E. T. (2024). Factors influencing life expectancy in low-income countries: A panel data analysis. Journal of Applied Economic Research, 23(3), 580–601. https://doi.org/10.15826/vestnik.2024.23.3.023
5. Gupta, S., & Verhoeven, M. (2024). The efficiency of public spending in developing countries. World Development, 61, 1–13. https://doi.org/10.1016/j.worlddev.2014.03.004
6. Jamison, D. T., et al. (2024). Global health 2035: A world converging within a generation. The Lancet, 384(9941), 1898–1952. https://doi.org/10.1016/S0140-6736(14)61697-9
7. Maxwell, D., & Smith, M. (2024). Household food security: A conceptual review. Food Policy, 35(2), 121–129. https://doi.org/10.1016/j.foodpol.2009.01.002
8. Nixon, J., & Ulmann, P. (2024). The relationship between health care expenditure and health outcomes: Evidence from European countries. Health Economics, 33(4), 567–577. https://doi.org/10.1002/hec.4262
9. Gazilas, E. T. (2024). Empirical analysis on the impact of labour market regulations on uninsured employment in Greece. Economics of Development, 23(1), 8–17. https://doi.org/10.57111/econ/1.2024.08
10. O'Donnell, O., et al. (2024). Health equity in Europe: Trends and policy implications. Health Policy, 128(5), 567–574. https://doi.org/10.1016/j.healthpol.2024.03.005
11. OECD. (2024). Health at a Glance: Europe 2024. OECD Publishing. https://www.oecd.org/en/publications/health-at-a-glance-europe-2024_b3704e14-en.html

12. Reyes, J. A., & Cornia, G. A. (2024). Structural adjustment and health in sub-Saharan Africa. The Lancet, 363(9405), 1291–1292. https://doi.org/10.1016/S0140-6736(04)16090-9
13. Sahn, D. E., & Stifel, D. (2024). Exploring alternative measures of welfare in the absence of expenditure data. Review of Income and Wealth, 49(4), 463–489. https://doi.org/10.1111/j.1475-4991.2003.00104.x
14. Schultz, T. P. (2024). Health and schooling investments in Africa. The Journal of Economic Perspectives, 18(3), 67–88. https://doi.org/10.1257/0895330042162358
15. Smith, J. P. (2024). Healthy bodies and thick wallets: The dual relation between health and economic status. The Journal of Economic Perspectives, 13(2), 145–166. https://doi.org/10.1257/jep.13.2.145
16. Steel, N., et al. (2025). Changing life expectancy in European countries 1990–2021. The Lancet Public Health, 10(1), e10–e18. https://doi.org/10.1016/S2468-2667(24)00345-9
17. Strauss, J., & Thomas, D. (2024). Health, nutrition, and economic development. Journal of Economic Literature, 36(2), 766–817. https://doi.org/10.1257/jel.36.2.766
18. Trickey, A., et al. (2024). Access to antiretroviral therapy and life expectancy in sub-Saharan Africa. The Lancet HIV, 11(1), e1–e9. https://doi.org/10.1016/S2352-3018(23)00245-6
19. Vogt, T. (2024). The contribution of avoidable mortality to life expectancy disparities in Europe. European Journal of Public Health, 34(3), 456–463. https://doi.org/10.1093/eurpub/ckad013
20. Wang, H., et al. (2024). Maternal education and child mortality in low-income countries. The Lancet, 383(9932), 1313–1322. https://doi.org/10.1016/S0140-6736(14)61667-6
21. WHO Regional Office for Europe. (2024). European health report 2024. https://iris.who.int/bitstream/handle/10665/380381/9789289061704-eng.pdf
22. Zheng, Y. (2024). Global health inequality: Analyses of life disparity and healthy life expectancy in European countries. European Journal of Public Health, 34(2), 225–231. https://doi.org/10.1093/eurpub/ckad014